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Program learning outcomes (PLOs)

&

Course learning outcomes (CLOs)

The college offers curriculum prescribed by the Nilamber Pitamber University and POs & COs are displayed on the college website as well as university and communicated to the teachers and students in the following ways: The college has well-developed system for the communication of COs, PSOs and POs keeping the outcome based education (OBE) at central place.

UG COs & POs - Summary

Program outcomes of Bachelor of Arts:

- Arts PO- To develop a detailed knowledge and understanding of the all college students all disciplines in Arts, (humanities, social sciences and languages.) and Commerce, Understand the methods of Arts, and can explain why scientific knowledge is both contestable testable by future inquiry.

- PO2 Apply appropriate methods to solve the problem and can apply appropriate methods to solve problem in Arts.

Program outcomes of Bachelor of Commerce Commerce

- PO- To apply basic mathematical and statistical skills a bachelor can apply basic mathematical operations and statistical skills necessary,

- PO2 To apply basic mathematical and statistical skills a bachelor can apply basic mathematical operations and statistical skills necessary, which is necessary for analysis of a range of problems in economics actuarial studies, Accounting, Marketing, Management and Finance etc.

- PO3 Sound knowledge of commercial, economical and taxation laws: Impact on changes of taxation, economical and commercial law Creation of Social responsibility and general awareness Inculcation of human values Awareness on Environmental protection and sustainability Conceptual understanding and techniques of core and complementary disciplines

Program outcomes of Bachelor of Science

The Bachelor of Science (B.Sc.) courses require full time study consisting of six semesters. College offers five science subjects stream Botany, Zoology, Physics, Chemistry, and Mathematics

DIRECT METHOD: Continuous evaluation is followed to analyse the attainment levels of POs, PSOs and COs for UG programmes.

EXTERNAL ASSESSMENTS

- University End Semester Exam

- Project and Field Work

- Viva-Voce

INTERNAL ASSESSMENTS

- Class Tests

- Assignments

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- Seminars

FEEDBACK ON ATTAINMENT OF COs & POs by STUDENTS

- Self-assessment by students

- Comprehensive questionnaire

- Communicating ATR

**Defining of Attainment Levels for Cos, PSOs & POs (INDIRECT METHOD) Achievements in:**

- Cultural activities

- Sports and Games

- Progression to higher education

The institute evaluates the attainment of COs, POs and PSOs through its evaluation system and through the process is mentioned below.

OVERALL CO ATTAINMENT Computation of Attainment of COs in a course = 75% of Direct CO Attainment+ 25% of Indirect CO Attainment

PO and PSO Attainment: Evaluations of attainment of POs and PSOs based on 75% of direct assessment + 25% of indirect assessment combined to arrive at the Final Evaluation
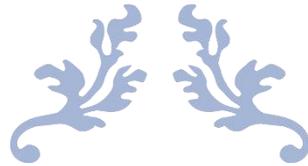
FYUGP

ENGLISH HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

A meeting of the **Board of Studies** was held in the University Department of English on 31 May 2023 at **12.30 pm** to discuss the **Revised NEP-2020 Syllabus** of **Four-Year Undergraduate Programme (FYUGP) in English** to be implemented in all the Degree colleges under Ranchi University, Ranchi from the session 2023-2023 onwards.

The following members of the Board of Studies were present in the meeting:

Chairman : Dr. V.C. Mahto, Head,
University Department of English, R.U., Ranchi

External Member : Dr. B.P. Sinha, Former Head,
Department of English Studies and Former Dean,
School of Languages, Central University of Jharkhand, Ranchi

External Member : Dr. Vinay Bharat, Assistant Professor,
Department of English D.S.P.M.University, Ranchi

Member : Dr. Supriya, Ranchi Women's College, Ranchi

Member : Dr. P.N. Sahay, University Department of English, R.U., Ranchi

Member : Dr. Shakil Ahmad, S.S. Memorial College, Ranchi

Member : Dr. Eva M. Hansdak, Gossner College, Ranchi

Member : Dr. Achal Sinha, St. Xavier's College, Ranchi

Member : Dr. Samira Sinha, University Department of English, R.U., Ranchi

Member : Dr. Sumit Kumar Dey, University Department of English, R.U., Ranchi

Member : Dr. Madhu Mishra, University Department of English, R.U., Ranchi

Member : Dr. Radha Shyam Dey, Yogoda Satsang College, Ranchi

Member : Dr. Janet Andrew Shah, Nirmala College, Ranchi

Resolution: The following changes have been made in the **Revised NEP-2020 Syllabus** of **Four-Year Undergraduate Programme (FYUGP) in English:**

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Students are Instructed to Refer Syllabus of Allied/ Opted Subjects from R.U. Website

HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1st of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:
    a) Odd Semester: **From first Monday of August to third Saturday of December**
    b) Even Semester: **From first Monday of January to third Saturday of May**
- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional

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time.

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
  - ➢ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
  - ➢ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
  - ➢ Bachelor's Degree after a 3-year (6 semesters) programme of study,
  - ➢ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
  - ➢ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

a) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.

One credit for Theory   = 15 Hours of Teaching i.e., 15 Credit Hours
One credit for Practicum   = 30 Hours of Practical work i.e., 30 Credit Hours

b) For credit determination, instruction is divided into three major components:

Hours (L) – Classroom Hours of one-hour duration.
Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.

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- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

i. The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

ii. No student will be detained in odd Semesters (I, III, V & VII).

iii. To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

iv. To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

v. To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

vi. However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

vii. Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

viii. To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year.

ix. A student has to pass in minimum 3 papers out of the total 4 papers.

x. It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result of the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)													
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)													
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree													
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4
Exit Point: Bachelor's Degree with Hons. /Hons. with Research												**160**	**224**

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Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME
2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	AEC-1	Language and Communication Skills (MIL 1 - Hindi/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Hindi)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4

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IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2
	VAC-2	Value Added Course-2	2
	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4

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RC/	Research Internship/Field Work/Dissertation OR	12/
AMJ-1	Advanced Major paper-1 (Disciplinary/Interdisciplinary Major)	4
AMJ-2	Advanced Major paper-2 (Disciplinary/Interdisciplinary Major)	4
AMJ-3	Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	Total Credit	**160**

NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	i. Discipline/ Interdisciplinary courses and ii. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64
Minor	i. Discipline/ Interdisciplinary courses and	24	32

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	ii. Vocational Courses		
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

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Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Double Major Courses		Credits
	Code	Papers	
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:
AEC   Ability Enhancement Courses
SEC   Skill Enhancement Courses
IAP   Internship/Apprenticeship/ Project
MDC   Multidisciplinary Courses
MJ   Major Disciplinary/Interdisciplinary Courses
DMJ   Double Major Disciplinary/Interdisciplinary Courses
MN   Minor Disciplinary/Interdisciplinary Courses
AMJ   Advanced Major Disciplinary/Interdisciplinary Courses
RC   Research Courses

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AIMS OF BACHELOR'S DEGREE PROGRAMME IN ENGLISH

The broad aims of bachelor's degree programme in English are:

The Honours programme in any subject is, in effect, a bridge between secondary and tertiary level education and postgraduate education. So it is important to make the courses in this programme as inclusive and broad as possible even as they also carry the imprints of specialized programmes of study. Honours courses are specialised and remain within the boundaries of accepted and current knowledge. The importance of student research is an integral part of any Honours Programme, particularly the English Honours programme.

The objectives of the FYUGP in English, therefore, revisit traditional expectations of teaching and learning English by centre-staging outcomes that are demonstrable through five key attributes: understanding, use, communication, expansion, and application of subject knowledge with a clear awareness and understanding of one's location in the immediate and global environment.

In order to maximize the advantages of FYUGP, the objectives are synced to outcomes. So the FYUGP document highlights (i) the basic philosophy of teaching English as an Honours subject; (ii) the core objectives of English (Literary Studies and Language through Literature) by way of imparting subject knowledge, life skills, awareness of human values, respect for different locations and life forms, and professional skills; (iii) translation of each skill into demonstrable outcomes in terms of basic and critical communication, social engagement, personal growth and ability enhancement; (iv) application and use of domain knowledge as a bridge to society and the world at large; (v) demonstration of professional awareness and problem solving skills; (vi) demonstration of basic knowledge of digital knowledge platforms; (vi) ability to recognize the professional and social utility of the subject; and (vi) in the process understand, appreciate and imbibe values of life.

The broad objectives of the Learning Outcomes-based Curriculum Framework (FYUGP) in English Literature (Honours) can therefore be outlined through the following points:

1 **Prospects of the Curriculum:** Formulating graduate attributes, qualification descriptors, programme learning outcomes and course learning outcomes that are expected to be demonstrated by the holder of a degree student with Honours in English;

2 **Core Values:** Enabling prospective students, parents, employers and others to understand the nature and level of learning outcomes (knowledge, skills, attitudes and human and literary values) or attributes for English Literature (Honours);

3 **Bridge to the World:** Providing a framework to see the subject as a bridge to the world in such a way that while recognizing the different conditions in pluralistic society, the students also are aware of a core of shared values such as (i) a commitment to the knowledge to understand the world and how to make a contribution to it; (ii) development of each person's unique potential; (iii) respect for others and their rights; (iv) social and civic responsibility, participation in democratic processes; social justice and cultural diversity; and (v) concern for the natural and cultural environment;

4 **Assimilation of Ability, Balance, harmony and Inclusiveness:** Identifying and defining such aspects or attributes of English Literature (Honours) that a graduate of the subject should be able to demonstrate on successful completion of the programme of study;

5 **Frame for National Standards:** Providing a frame of reference for maintaining national standards with international compatibility of learning outcomes of English Literature (Honours) and academic standards to ensure global competitiveness, and to facilitate student/graduate mobility;

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6 **Pliability:** Formulating outcomes that are responsive to social and technological changes in order that the pedagogy will meet student's needs arising from the changes. FYUGP encourages effective use of new technologies as tools for learning and provide a balance between what is common to the education of all students and the kind of flexibility and openness required for education;

7 **Pedagogy:** Providing higher education institutions an important point of reference for designing teaching-learning strategies, assessing student learning levels, and periodic review of programmes and academic standards for English Literature (Honours) with shift from domain knowledge to processes of realising the outcomes;

8 **Development:** Providing HEIs a developmental approach through FYUGP that would accommodate social needs and provide students a clear direction of learning.

The specific objectives of the BA programme in English Literature (Honours) are to develop in the student the ability to demonstrable the following outcomes:

1   Disciplinary Knowledge of English Literature and Literary Studies
2   Communication Skills
3   Critical Thinking
4   Analytical Reasoning
5   Problem Solving
6   Research-Related Skills
7   Self-Directing Learning
8   Multicultural Competence
9   Values: Moral and Ethical, Literary and Human
10   Digital Literacy

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PROGRAM LEARNING OUTCOMES

The broad aims of bachelor's degree programme in English are:

The fundamental premise underlying the learning outcomes-based approach to curriculum planning and development is that higher education qualifications such as a Bachelor's Degree (Hons/Research) programmes are earned and awarded on the basis of (a) demonstrated achievement of outcomes (expressed in terms of knowledge, understanding, skills, attitudes and values) and (b) academic standards expected of graduates of a programme of study.

The expected learning outcomes are used as reference points that would help formulate graduate attributes, qualification descriptors, programme learning outcomes and course learning outcomes which in turn will help in curriculum planning and development, and in the design, delivery and review of academic programmes.

Learning outcomes-based frameworks in any subject must specify what graduates completing a particular programme of study are (a) expected to know, (b) understand and (c) be able to do at the end of their programme of study.

To this extent, FYUGP in English is committed to allowing for flexibility and innovation in (i) programme design and syllabi development by higher education institutions (HEIs), (ii) teaching-learning process, (iii) assessment of student learning levels, and (iv) periodic programme review within institutional parameters as well as FYUGP guidelines, (v) generating framework(s) of agreed expected graduate attributes, qualification descriptors, programme learning outcomes and course learning outcomes.

The key outcomes that underpin curriculum planning and development at the undergraduate level include Graduate Attributes, Qualification Descriptors, Programme Learning Outcomes, and Course Learning Outcomes.

The FYUGP for undergraduate education is based on specific learning outcomes and academic standards expected to be attained by graduates of a programme of study. However, an outcome-based approach identifies moves way from the emphasis on what is to be taught to focus on what is actually learnt by way of demonstrable outcomes. This approach provides greater flexibility to the teachers to develop—and the students to accept and adopt—different learning and teaching pedagogy in an interactive and participatory ecosystem. The idea is to integrate social needs and teaching practices in a manner that is responsive to the need of the community. HEIs, on their turn, shall address to the situations of their students by identifying relevant and common outcomes and by developing such outcomes that not only match the specific needs of the students but also expands their outlook and values.

Moreover, it is borne in mind that outcome based curriculum does not obviate fact that the focus is not just on domain knowledge or outcomes only but on processes and approaches to be employed in pedagogical transactions. Processes are as important as the outcome. Else the outcomes would remain confined to the paper.

SEMESTER WISE COURSES IN ENGLISH MAJOR-1 FOR FYUGP　　2022 onwards

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Courses			Examination Structure		
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	British Poetry-I (From Chaucer to the Transitional Poets)	4	25	75	---
II	MJ-2	British Drama-I (From Medieval Age to Anti-Sentimental Comedy)	4	25	75	---
	MJ-3	British Fiction-I (18th and 19th Century)	4	25	75	---
III	MJ-4	Indian Writing in English and in Translation-I (Poetry and Drama)	4	25	75	---
	MJ-5	British Poetry-II (From Romantic Age to Post-Modern Age)	4	25	75	---
IV	MJ-6	Indian Writing in English and in Translation-II (Fiction)	4	25	75	---
	MJ-7	British Drama-II (From Modern Age to Post-Modern Age)	4	25	75	---
	MJ-8	British Fiction-II (20th Century Novel and Short Story)	4	25	75	---
V	MJ-9	Indian Classical Literature	4	25	75	---
	MJ-10	Western Classical Literature	4	25	75	---
	MJ-11	Language and Linguistics-I	4	25	75	---
VI	MJ-12	English Prose (Essay)	4	25	75	---
	MJ-13	Language and Linguistics-II	4	25	75	---
	MJ-14	Literary Criticism	4	25	75	---
	MJ-15	American Literature-I (Poetry and Drama)	4	25	75	---
VII	MJ-16	Introduction to Literary Theories	4	25	75	---
	MJ-17	American Literature-II (Fiction and Short Story)	4	25	75	---
	MJ-18	Modern European Drama	4	25	75	---
	MJ-19	Popular Literature	4	25	75	---
VIII	MJ-20	Postcolonial Literature	4	25	75	---
	AMJ-1	Women's Writings	4	25	75	---
	AMJ-2	Dalit and Tribal Literature	4	25	75	---
	AMJ-3	World Literature	4	25	75	---

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	or RC-1	Research Methodology	4	25	75	---
	RC-2	Project Dissertation/ Research Internship/ Field Work	8	---	---	200
		Total Credit	**92**			

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Skill Enhancement Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	Business Communication-I	3	---	75	---
II	SEC-2	Business Communication-II	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	**9**			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Minor Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	English Poetry	4	25	75	---
III	MN-1B	English Short-Fiction	4	25	75	---
V	MN-1C	English Fiction	4	25	75	---
VII	MN-1D	English Drama	4	25	75	---
		Total Credit	**16**			

Table 10: Semester wise Course Code and Credit Points for Elective Courses:

Semester	Language Elective Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I/ II	AEC-2	English Communication	2	---	50	---

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III	AEC-3	English Elective I	2	---	50	---
IV	AEC-4	English Elective II	2	---	50	---
		Total Credit	**6**			

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INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There will be Only One Semester Internal Examination in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

A. (SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

B. (SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Conversion of Attendance into score may be as follows:

Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

A. (ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

B. (ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of

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1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

C. **(ESE 100 marks):**

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

<div>

Subject/ Code

F.M. =10   Time=1Hr.   Exam Year

General Instructions:
   i.   **Group A** carries very short answer type compulsory questions.
   ii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
   iii. Answer in your own words as far as practicable.
   iv. Answer all sub parts of a question at one place.
   v. Numbers in right indicate full marks of the question.

Group A

1.   [5x1=5]

    i.   ....
    ii.   ....
    iii. ....
    iv. ....
    v.   ....

Group B

2. ....   [5]
3. ....   [5]

Note: There may be subdivisions in each question asked in Theory Examination.

</div>

Question format for **20 Marks**:

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Subject/ Code

F.M. =20   **Time**=1Hr.   Exam Year

General Instructions:
    i.   **Group A** carries very short answer type compulsory questions.
    ii.   **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
    iii.   Answer in your own words as far as practicable.
    iv.   Answer all sub parts of a question at one place.
    v.   Numbers in right indicate full marks of the question.

Group A

1.   [5x1=5]
              i.   ....
              ii.   ....
              iii.   ....
              iv.   ....
              v.   ....

2.   ....   [5]

Group B

3.   ....   [10]
4.   ....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION
Question format for **50 Marks**:

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Subject/ Code

F.M. =50   **Time**=3Hrs.   Exam Year

General Instructions:

    i.   **Group A** carries very short answer type **compulsory** questions.

    ii.   **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.

    iii.   Answer in your own words as far as practicable.

    iv.   Answer all sub parts of a question at one place.

    v.   Numbers in right indicate full marks of the question.

Group A

1.   [5x1=5]

    i.   ....
    ii.   ....
    iii.   ....
    iv.   ....
    v.   ....

Group B

2. ....   [15]
3. ....   [15]
4. ....   [15]
5. ....   [15]
6. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **60 Marks**:

Subject/ Code

F.M. =60   **Time**=3Hrs.   Exam Year

General Instructions:

    i.   **Group A** carries very short answer type **compulsory** questions.

    ii.   **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.

    iii.   Answer in your own words as far as practicable.

    iv.   Answer all sub parts of a question at one place.

    v.   Numbers in right indicate full marks of the question.

Group A

1.   [5x1=5]

    i.   ....
    ii.   ....
    iii.   ....
    iv.   ....
    v.   ....

2. ....   [5]
3. ....   [5]

Group B

4. ....   [15]
5. ....   [15]
6. ....   [15]
7. ....   [15]
8. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

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Question format for **75 Marks**:

Subject/ Code

F.M. = 75   **Time**=3Hrs.   Exam Year

General Instructions:
- i.   **Group A** carries very short answer type **compulsory** questions.
- ii.   **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
- iii.   Answer in your own words as far as practicable.
- iv.   Answer all sub parts of a question at one place.
- v.   Numbers in right indicate full marks of the question.

Group A

1.   [5x1=5]
   - i.   ....
   - ii.   ....
   - iii.   ....
   - iv.   ....
   - v.   ....

2.   ....   [5]

3.   ....   [5]

Group B

4.   ....   [15]
5.   ....   [15]
6.   ....   [15]
7.   ....   [15]
8.   ....   [15]
9.   ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

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<table>
<tr><td colspan="3">Subject/ Code</td></tr>
<tr><td>F.M. = 100</td><td>Time=3Hrs.</td><td>Exam Year</td></tr>
</table>

General Instructions:
i.   **Group A** carries very short answer type **compulsory** questions.
ii. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
iii. Answer in your own words as far as practicable.
iv. Answer all sub parts of a question at one place.
v.   Numbers in right indicate full marks of the question.

Group A

1.   [10x1=10]

i.	....	vi.	....
ii.	....	vii.	....
iii.	....	viii.	....
iv.	....	ix.	....
2. ...v...........:...............		x	[5]
3.			[5]

Group B

4. ....   [20]
5. ....   [20]
6. ....   [20]
7. ....   [20]
8. ....   [20]
9. ....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

SEMESTER I

I.   MAJOR COURSE –MJ 1:
BRITISH POETRY-I
(From Chaucer to the Transitional Poets)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) Theory: 60 Lectures

Course Objectives:
The course will seek to achieve the following objectives:
1. to expose students to the history of English Poetry
2. To develop an understanding of various types of Poetry
3. To develop an understanding of traditions of various poetic ages from the Age of Chaucer to the Transitional Poets. To expose students to short but representative poetry of each age

Course Learning Outcomes:
At the end of the course students will be able to:
1. Understand the traditions of English Poetry and the effect produced by use of poetic devices on the basis of texts prescribed
2. Engage with this specific genre of English Literature and develop fundamental skills required for close reading and critical thinking with reference to texts and concepts

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3. Appreciate and analyze the poems in the larger socio- political and religious context of the time

Course Content:
Unit – I
1. Forms of Poetry: Lyric, Elegy, Sonnet, Ode, Epic, Ballad, Dramatic Monologue, Mock Epic
2. Literary Terms: Simile, Metaphor, Alliteration, Personification, Onomatopoeia, Imagery, symbol, Conceit, Allegory, Satire, Wit, Irony, Metre and Rhyme-scheme.

Unit – II
History of English Poetry: The Age of Chaucer, Elizabethan Poetry, Metaphysical Poetry, Neo-Classical Poetry, Transitional Poets.

Unit – III
1. Edmund Spenser – 'Like as a Huntsman'
2. William Shakespeare – 'Sonnet 60'
3. John Donne – 'The Sunne Rising'
4. Andrew Marvel – 'To his Coy Mistress'
5. George Herbert – 'The Pulley'

Unit – IV
1. Alexander Pope – 'Ode on Solitude'
2. John Milton – 'On His Blindness'
3. John Dryden – 'Mac Flecknoe'
4. William Blake – 'The Chimney Sweeper'

Suggested Reading:
1. M.H. Abrams, 'A Glossary of Literary Terms', Language Learning India Pvt. Ltd (Latest Edition)
2. Edward Albert, 'History of English Literature'.
3. Philip Sidney, 'An Apology for Poetry', Ed. Forest G. Robinson, Indianapolis: Bobbs Merrill,1970
4. A.G. George, 'Studies in Poetry' Heinemann Educational Books Ltd, 1971
5. The Penguin Dictionary of Literary Terms and Literary theory. ed. J.A. Cuddon, Penguin Books

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II. SKILL ENHANCEMENT COURSE- SEC 1:
BUSINESS COMMUNICATION-I

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) **Theory: 45 Lectures**
Course Objectives:
1. Introduction to the Essentials of Business Communication: Theory and Practice
2. Citing references, and using bibliographical and research tools
3. Writing a project report
4. Writing reports on field work/visits to industries, business concerns etc. /business negotiations.
5. Writing minutes of meetings
6. E-correspondence
7. Spoken English for business communication
8. Making oral presentations

Course Learning Outcomes:
At the end of the course students will be able to demonstrate a good understanding of:
1.   effective business writing
2.   effective business communication
3.   try their hand at creative writing
4.   develop a critical sense in evaluating business writing

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5.   the effective oral communication

Course Content:

Unit – I

1. Definition, Role, Elements and Process of Communication in Business
2. Objectives of Communication
3. Verbal and Non-Verbal Communication
4. Formal and Informal Communication
5. Barriers to Communication
6. Principles of Effective Communication

Unit – II

1. Oral Communication: Advantages and Limitations
2. Principles of Effective Listening
3. Interview: Types of interview, Candidate's Preparation, Interviewer's Preparation
4. Presentation Skill: Essentials of Effective Presentation
5. Minutes: Meaning, Objectives, Procedure of writing minutes

Suggested Readings:

1. R. K. Sharma & Nidhi Singh, *Essential English for Better Communication*, Cambridge University Press.
2. R. C. Bhatia, *Business Communication*, Ane Books Pvt Ltd, New Delhi
3. Rai & Rai, *Busines Communication*. Himalaya Publishing House
4. Vikram Bisen and Priya. *Business Communication*. New Age International (P) Limited Publishers, New Delhi
5. V. C. Mahto & Sushmita Chakraborty, *Basics of Communication: Opportunities and Challenges*, Rudra Publishers and Distributors, New Delhi
6. Scot, O.; Contemporary *Business Communication*. Biztantra, New Delhi.
7. Ludlow, R. & Panton, F.; *The Essence of Effective Communications*, Prentice Hall
8. Of India Pvt. Ltd., New Delhi

SEMESTER II

I.   MAJOR COURSE- MJ 2:
BRITISH DRAMA-I
(From Medieval Age to Anti-Sentimental Comedy)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) Theory: 60 Lectures

Course Objectives:
The course will seek to achieve the following objectives:
1. to understand the history of drama from the medieval age to the 17th Century
2. to understand different types of plays
3. to understand various aspects of drama- plot, structure, character, dialogue and mode of delivery
4. to gain knowledge of major themes- religious, socio-cultural among others

Course Learning Outcomes:
At the end of the course students will be able to:
1. identify the major characteristics of different ages and various forms of drama
2. analyze critically key themes in representative texts of different ages
3. critically evaluate texts in terms of plot construction, socio-cultural contexts of the genre
4. analyze techniques in order to appreciate and interpret the texts

Course Content:
Unit – I
History of British Drama: Medieval Plays: Mystery, Miracle and Morality Plays, The University Wits, Shakespearean Tragedy, Shakespearean Comedy, Jacobean Drama, Restoration Comedy, Sentimental and Anti-Sentimental Comedy.

Unit – II
Literary Terms: The Three Unities, Character, Plot, Action, Dialogue, Tragedy, Comedy, Tragic Hero, Hamartia, Catharsis, Catastrophe, Denouement, Soliloquy, Aside.

Unit – III
1. Christopher Marlowe – 'Doctor Faustus', O.U.P.
2. William Shakespeare – 'Macbeth'

Unit – IV
1. William Shakespeare – 'Merchant of Venice'
2. Oliver Goldsmith – 'She Stoops to Conquer'

Suggested Reading:
1. Marjoric Boulton, 'The Anatomy Drama'.
2. Aristotle, 'Poetics'.
3. Lisa Hopkins, 'Beginning Shakespeare', Viva Books, 2010
4. G. Wilson Knight, 'The Wheel of Fire'.
5. Edward Albert, 'History of English Literature'.
6. Richard G. Moulton, 'Shakespeare as a Dramatic Artist'.
7. A.C. Bradley, 'Shakespearean Tragedy'
8. Critical Essays on Shakespeare's *Macbeth*, Atlantic Publishers (P) Ltd., 2022.

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II.   MAJOR COURSE- MJ 3:
BRITISH FICTION-I
(18th and 19th Century)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1.   understand the factors that influenced the rise of the novel
2.   understand different forms of narration
3.   understand the conflict between self and society reflected in fiction
4.   understand different aspects of prose

Course Learning Outcomes:
At the end of the course students will be able to:
1.   Identify and analyze the socio-economic-political contexts that are to be found in the fiction of theparticular period.
2.   Identify and analyze conflict between self and society
3.   Link the rise of the novel to the expansion of Colonialism
4.   Trace the shift from chronological narration to psychological narration and the changing concept of time

Course Content:
Unit – I
History of English Fiction: Definition and Scope of the Novel, Rise of the Novel in 18th Century, Gothic Novel, Historical Novel, Victorian Novel, Epistolary Novel, Picaresque Novel.

Unit – II
Literary Terms: Fiction, Plot, Setting, Character- Flat Character and Round Character, Protagonist, Climax and Anti- Climax, Prose Satire, Art of Characterization, Narrator.

Unit – III
1.   Jonathan Swift: 'Gulliver's Travels' (Books I and II)
2.   Jane Austen: 'Pride and Prejudice'

Unit – IV
1.   Emily Bronte: 'Wuthering Heights'
2.   Charles Dickens: 'David Copperfield'

Suggested Reading:
1.   Walter Allen, 'The English Novel: A Short Critical History' Pelicon, 1958.
2.   Percy Lubbock, 'The Craft of Fiction'
3.   R. A Scott James, 'The Making of Literature' Kalyani Publishers, 1999.

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III.   SKILL ENHANCEMENT COURSE- SEC 2:
BUSINESS COMMUNICATION-II

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03)   **Theory: 45 Lectures**

Course Objectives:
1. Introduction to the Essentials of Business Communication: Theory and Practice
2. Citing references, and using bibliographical and research tools
3. Writing a project report
4. Writing reports on field work/visits to industries, business concerns etc. /business negotiations.
5. Writing minutes of meetings
6. E-correspondence
7. Spoken English for Business Communication
8. Making Oral Presentations

Course Learning Outcomes:
At the end of the course students will be able to demonstrate a good understanding of:
1. effective business writing
2. effective business communication
3. try their hand at creative writing
4. develop a critical sense in evaluating business writing

Course Content:
1. Essentials of Effective Writing
2. Business Letters: Types, structure and layout of Business Letters
3. Report Writing: Types and Structure of Reports, Specimen Reports
4. Meetings: Notice, Agenda and Resolutions
5. Job Application and preparing Resume
6. Letters to Applicants: Recommendations and Testimonials, Enquiries about candidates, Appointments, Confirmation, Promotion, Warning Memo, Letters of Goodwill and Appreciation
7. Press Release: Characteristics of a Good Press Release
8. Email writing: Advantages and Etiquettes
9. Seminar, Workshop and Conference

Suggested Readings:
1. R. C. Bhatia, *Business Communication*, Ane Books Pvt Ltd, New Delhi
2. Rai & Rai, *Busines Communication*. Himalaya Publishing House
3. Vikram Bisen and Priya. *Business Communication*. New Age International (P) Limited Publishers, New Delhi
4. V. C. Mahto & Sushmita Chakraborty, *Basics of Communication: Opportunities and Challenges*, Rudra Publishers and Distributors, New Delhi
5. R. K. Sharma & Nidhi Singh, *Essential English for Better Communication*, Cambridge University Press.
6. Scot, O.; Contemporary *Business Communication*. Biztantra, New Delhi.
7. Ludlow, R. & Panton, F.; *The Essence of Effective Communications*, Prentice Hall
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SEMESTER III

IV.   MAJOR COURSE- MJ 4:
INDIAN WRITING IN ENGLISH AND IN TRANSLATION-I
(Poetry and Drama)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1.   to make students appreciate the diversity of modern Indian literatures and the similarities between them
2.   to make students value and critically appreciate the role of Translation into English as an important practice of popularizing Modern Indian writing across regional Indian language literatures
3.   to make students creatively engage with literary movements in various Indian literatures
4.   to make students engage with a corpus of representative texts of modern Indian literatures and their translation into English
5.   to make students understand the historical trajectories of Indian literatures

Course Learning Outcome:
At the end of the course students will be able to:
1.   appreciate the diversity of modern Indian literatures and the similarities between them
2.   understand and creatively engage with the notion of nation and nationalism
3.   appreciate the impact of literary movements on various Indian literatures
4.   critically engage with significant social issues like caste and gender
5.   understand the historical trajectories of Indian literatures

Course Content:
Unit – I
   History of Indian Writing in English: Poetry and Drama

Unit – II
1. Toru Dutt: 'Our Casuarina Tree'
2. H.L.V. Derozio: 'The Harp of India'
3. Kamala Das: 'My Grandmother's House'
4. Nissim Ezekiel: 'The Night of the Scorpion'.
5. Sarojini Naidu: 'The Palanquin Bearers'

Unit – III
Mahesh Dattani: 'Final Solutions'

Unit – IV
Dharamvir Bharati: 'Andha Yug' (Translated by Alok Bhalla, O.U.P)

Suggested Reading:
1.   "History of Indian Literature in English" – Ravi Nandan Sinha
2.   "History of Indian English Literature" – M. K. Naik

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3.   "Modern Indian Poetry in English" – Bruce King
4.   "Contemporary Indian Drama: Astride Two Traditions" – Urmil Talwar and Bandana Chakraborty
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V.   MAJOR COURSE- MJ 5:
BRITISH POETRY-II
(From Romantic Age to Post-Modern Age)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1. To expose students to the history of English Poetry
2. To develop an understanding of various types of Poetry
3. To develop an understanding of traditions of various poetic ages from Romantic Age to Post-Modern Poetry
4. To expose students to slightly longer and representative poetry of each age

Course Learning Outcomes:
At the end of the course students will be able to:
1. Understand the traditions of English Poetry and the effect produced by use of poetic devices on the basis of texts prescribed
2. Engage with this specific genre of English Literature and develop fundamental skills required for closereading and critical thinking with reference to texts and concepts
3. Appreciate and analyse the poems in the larger socio- political and religious context of the time

Course Content:
Unit – I
Literary Terms: Blank Verse, Free Verse, Heroic Couplet, Diction, Metonymy, Synecdoche, Pun, Hyperbole, Willing Suspension of Disbelief, Negative Capability, Objective Correlative.

Unit – II
History of English Poetry: Romantic Poetry, Victorian Poetry, Modern Poetry, Post-Modern Poetry.

Unit – III
1. William Wordsworth – 'Lines Written a Few Miles Above Tintern Abbey'
2. Samuel Taylor Coleridge – 'Kubla Khan'
3. John Keats – 'Ode on a Grecian Urn'
4. Percy Bysshe Shelley – 'Ode to the West Wind'
5. Lord Byron – 'The Destruction of Sennacherib'

Unit – IV
1. Lord Tennyson – 'Ulysses'
2. Matthew Arnold – 'Dover Beach'
3. Robert Browning – 'My Last Duchess'
4. W.B. Yeats – 'The Second Coming'
5. T.S. Eliot – 'The Hollow Men'

Suggested Reading:
1. Boris Ford (Ed.) – 'The Pelican Guide to English Literature'- Vol. I to VIII.
2. Harold Bloom and Lionel Trilling(Ed.) – 'Romantic Prose and Poetry', OUP, 1973
3. Samuel Taylor Coleridge, 'Biographia Literaria' Chapter XIII, Ed. George Wedcon, Everyman, 1993.
4. Bloomsbury Guide to English Literature, Bloomsbury, 1992.
5. The New British Poetry – Gillian Allnutt.

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VI.   SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

A Common Syllabus for FYUGP   (Credits: Theory-03)
45 Hours

Instruction to Question Setter for
End Semester Examination (ESE):
There will be **objective type test** consisting of **Seventy-five questions of 1 mark each**. *Students are required to mark their answer on* **OMR Sheet** *provided by the University.*

Course Objectives:
The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

A.   INTRODUCTION TO COMPUTER SYSTEM
1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU)   **(3 Lecture)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer
                (4 Lecture)

3. Operating system: What is an Operating System, Operating System Examples, Functions of Operating System(Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting
                (6 Hours)
4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages
        (4 Hours)

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails.
                (6 Hours)

B.   MICROSOFT OFFICE 2016 AND LATEST VERSIONS
6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents   **(7 Hours)**

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation, slide show, Master Slides, Creating photo album, Rehearse timing and record narration
        (5 Hours)

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9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning

(4 Hours)

Reference Books

1. Nishit Mathur, Fundamentals of Computer, APH publishing corporation (2010)
2. Neeraj Singh, Computer Fundamentals (Basic Computer), T Balaji, (2021)
3. Joan Preppernau, Microsoft Power Point 2016 step by step, Microsoft press (2015)
4. Douglas E Corner, The Internet Book 4th Edition, prentice –Hall (2009)
5. Steven Welkler, Office 2016 for beginners, Create Space Independent Publishing Platform (2016)
6. Wallace Wang, Microsoft Office 2019, Wiley (January 2018)
7. Noble Powell, Windows 11 User Guide For Beginners and Seniors, ASIN, (October 2021)

SEMESTER IV

VII.   MAJOR COURSE- MJ 6:
INDIAN WRITING IN ENGLISH AND IN TRANSLATION-II
(Fiction)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:

The course will seek to achieve the following objectives:
1. to make students appreciate the diversity of modern Indian literatures and the similarities between them
2. to make students value and critically appreciate the role of Translation into English as an important practice of popularizing Modern Indian writing across regional Indian language literatures
3. to make students creatively engage with literary movements in various Indian literatures
4. to make students engage with a corpus of representative texts of modern Indian literatures and theirTranslation into English
5. to make students understand the historical trajectories of Indian literatures

Course Learning Outcome:
At the end of the course students will be able to:
1. appreciate the diversity of modern Indian literatures and the similarities between them
2. understand and creatively engage with the notion of nation and nationalism
3. appreciate the impact of literary movements on various Indian literatures
4. critically engage with significant social issues like caste and gender
5. understand the historical trajectories of Indian literatures

Course Content:
Unit – I
1. History of Indian Writing in English- Novel and Short Stories.

Unit – II
1. Premchand- 'Godan' (trans. Jai Ratan & P. Lal)

Unit – III
1. R. K. Narayan- 'The Guide'

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Unit – IV
  1. Bhabani Bhattacharya- 'He Who Rides a Tiger'

Unit – V
  1. Arvind Adiga- 'The White Tiger'

Suggested Reading:
  1. "History of Indian Literature in English" – Ravi Nandan Sinha
  2. "History of Indian English Literature" – M. K. Naik

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VIII. MAJOR COURSE- MJ 7:
BRITISH DRAMA-II
(From Modern Age to Post-Modern Age)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1. to understand the history of drama from Modern Age to Post-Modern Age
2. to understand different types of plays
3. to understand various aspects of drama plot, structure, character, dialogue and mode of delivery
4. to gain knowledge of major themes – religious, socio-cultural among others

Course Learning Outcome:
At the end of the course students will be able to:
1. identify the major characteristics of different ages and various forms of drama
2. analyze critically key themes in representative texts of different ages
3. critically evaluate texts in terms of plot, construction, socio-cultural contexts of the genre
4. analyze techniques in order to appreciate and interpret the texts

Course Content:
Unit – I
1. History of English Drama: Modern Realistic Drama, Modern Poetic Drama, Theatre of the Absurd, Closet Drama

Unit – II
1. Literary Terms: Chorus, Action, Plot, Dramatic Irony, Exposition, Conflict, Climax, Anti-Climax, Alienation Effect.

Unit – III
1. G.B. Shaw: 'Pygmalion'
2. T.S. Eliot: 'Murder in the Cathedral'

Unit – IV
1. J.M. Synge: 'Playboy of the Western World'
2. John Osborne: 'Look Back in Anger'

Suggested Reading:
1. Jeremy Collier 'A Short View of the Immorality and Profaneness of the English Stage', Routledge, 1996.
    2. Ed. John Gassner and Edward Quinn, 'The Reader's Encyclopedia of World Drama', Dover Publications, Inc, 2002.

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IX.   MAJOR COURSE- MJ 8:
BRITISH FICTION-II
(20th Century Novel and Short Story)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1. understand the factors that influenced the diversification of fiction
2. understand different forms and techniques of narration
3. understand the conflict between self and society reflected in fiction
4. understand different aspects of prose

Course Learning Outcome:
At the end of the course students will be able to:
1. identify and analyse the socio-economic and political contexts that is to be found in the fiction of the particular period.
2. identify and analyse conflict between self and society
3. explore the representation of Postcolonialism in fiction
4. trace the shift from chronological narration to psychological narration and the changing concept of time, narrator and character

Course Content:
Unit – I
History of English Fiction:, Science Fiction, Dystopian Novel, Regional Novel, Stream of Consciousness Novel, Psychological Novel.

Unit – II
Literary Terms: Realism, Socialism, Social Comedy, Wit, Humour, Irony, Stream of Consciousness, Magic Realism, Symbolism.

Unit – III
1. D.H. Lawrence – 'Sons and Lovers'

Unit – IV
1. James Joyce – 'Ulysses'

Unit – V
1. Somerset Maugham – 'The Vessel of Wrath'
2. Katherine Mansfield – 'The Fly'
3. George Orwell – 'The Spike'
4. H.H. Munro – 'The Interlopers'
5. Virginia Woolf- 'To the Lighthouse'

Suggested Reading:
1. Walter Allen, 'The Short Story in English' available on e-platforms pub.1973
2. A.C. Ward, 'Twentieth Century Prose', The English Language book Society.
3. Percy Lubbock, 'The Craft of Fiction', Midwest Journal Press, 1921

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SEMESTER V

X.   MAJOR COURSE- MJ 9:
INDIAN CLASSICAL LITERATURE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1.   to make students understand the spirit of the age that produced Indian classical literature from its early beginning till 1100 AD
2.   to make students appreciate the pluralistic and inclusive nature of representation in the Indian classical literature
3.   to make students relate the classical literature and diverse literary cultures from India, mainly fromSanskrit, but also Tamil, Prakrit and Pali
4.   to make students develop comparative perspectives involving various texts from different literary andcultural traditions of the phase of the Indian classical literature
5.   to develop interest in the classics and engage in research in the field

Course Learning Outcome:
At the end of the course students will be able to:
1.   explain the eco-socio-political-cultural context of the age that produced Indian classical literature fromits early beginning till 1100 AD
2.   appreciate the pluralistic and inclusive nature of Indian classical literature and its attributes
3.   historically situate the classical literature and diverse literary cultures from India, mainly from Sanskrit,but also Tamil, Prakrit and Pali by focusing on major texts in the principal genres
4.   trace the evolution of literary culture(s) in India in its/their contexts, issues of genres, themes and critical cultures
5.   understand, analyze and appreciate various texts with comparative perspectives

Course Content:
Unit – I
Indian Poetics: Selections from Natyashastra, trans. Manmohan Ghosh– Chapter 6: 'The Sentiments' and Chapter 7: 'The Emotional and Other States'.
Unit – II
R.K. Narayan: The Mahabharata: A Shortened Modern Version of the Indian Epic.
Unit – III
Kalidasa: Abhijnanasakuntalam. Trans. Chandra Ranjan, in Kalidasa: 'The Loom of Time'.
Unit – IV
Sudraka: 'The Mrichchhakatika' Trans. M. R. Kale
Suggested Reading:
1.   Ami Upadhyay, A Handbook of The Indian Poetics and aesthetics, Prakash Book Depot, Bareilly.
2.   Ravi Nandan Sinha and Narendra Kumar, 'Indian Poetics and Introduction to Kavyashastra'. Orient Black Swan.
3.   Bharata, Natyashastra, tr. Manmohan Ghosh, vol. I, 2nd edn. Calcutta: Granthalaya, 1967.
4.   J.A.B. Van Buitenen, 'Dharma and Moksa', in Roy W. Perrett, ed., Indian Philosophy, vol.V,
5.   Theory of Value: A Collection of Readings (New York: Garland, 2000) pp. 33–40.
6.   A.V. Kieth, History of Sanskrit Literature. Oxford: OUP, 1920.
7.   A.K. Warder, Indian Kavya Literature, 8 Volumes. Delhi: Motilal Banarsidas, 2011.
8.   Maharishi Valmiki's "Aranyakanda"(The Book of Forest Trek) Book-III The Ramayana,

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Chapter-18,19,20. Retold by
9.   C. Rajagopalachari. Edited by Jay Mazo, American Gita
10.   Veda Vyasa. "Adi Parva" The Mahabharata Book- I, Only sub-Chapters – Swayamvara Parva &Vaivahika Parva, Translation by Kisori Mohan Ganguli, Published by Pratap Chandra Roy, Bharat Press, Calcutta.
11.   Kalidas,Shakuntala. Trans by Sir William Jones or Arthur W. Ryder or M.R. Kale.
12. Bharata, Natyashastra, tr. Manmohan Ghosh, vol. I, 2nd edn. Calcutta: Granthalaya, 1967.

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XI.   MAJOR COURSE- MJ 10:
WESTERN CLASSICAL LITERATURE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1. to make students understand the historical context behind classical European, i.e., Greek and Latin literary cultures with reference to their society, polity and culture
2. to make students appreciate the classical literary traditions of Europe from the beginning till the 5thcentury AD
3. to make students read and use literary texts across a wide range of classical authors, genres and periodswith comparative perspectives
4. to make students pursue research in the field of classics
5. to make students learn about human and literary values of classical period and apply them for various practical purposes in life

Course Learning Outcome:
At the end of the course students will be able to:
1. understand, analyze and appreciate various texts with comparative perspectives
2. historically situate classical European, i.e., Greek and Latin literary cultures and their socio-political-cultural contexts
3. engage with classical literary traditions of Europe from the beginning till the 5th century AD
4. grasp the evolution of the concept of classic and classical in the European literary thinking and its reception over a period of time
5. appreciate classical literature of Europe and pursue their interests in it
6. examine different ways of reading and using literary texts across a wide range of classical authors, genres and periods with comparative perspectives
7. develop ability to pursue research in the field of classics
8. develop academic and practical skills in terms of communication and presentation and also learn abouthuman and literary values of classical period

Course Content:
Unit – I
Aristotle: Poetics, trans, Malcolm Heath (Penguin Books)- Ch. 2- Imitation, Ch. 3- Aristotle's history of poetry, Ch. 4- Analysis of tragedy, Ch. 5- Plot: the basics & Ch. 11- Epic

Unit – II
Homer – 'The Iliad', trans. E.V. Rieu (Non-detailed study)

Unit – III
Sophocles- 'Oedipus the King' trans. Robert Fagles in 'Three Theban Plays'.

Unit – IV
Horace – 'Satires' 1:4 in 'Satires and Epistles by Horace and Satires by Persius', trans. Niall Rudd, Penguin Classics

Suggested Reading:
1. Richard Rutherford: Classical Literature: A Concise History. Oxford: Blackwell Pub. 2005.
2. Homer, The Iliad. Tr. E.V. Rieu. Harmondsworth: Penguin, 1985.
3. Sophocles, Oedipus the King. Tr. Robert Fagles in Sophocles: The Three Theban Plays. Harmondsworth: Penguin, 1984.
4. Alighiedri, Dante. Divine comedy. Trans. H.F. Cary. www.guthenberg.org
5. Virgil. Aeneid. Trans. H.R. FAirclough. www.theoi.com/text/VirgilAeneid2.html Nomer, TheIlliad.Trans.Ian Johnston. www.johnstoniatexts.X10host.com Sophocles. Antigone

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XII.   MAJOR COURSE- MJ 11:
LANGUAGE AND LINGUISTICS-I

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1.   to make students grasp the structure and various parts of English language.
2.   to make students understand the language, dialects and factors governing the relationship thereof.
3.   to make students appreciate various functions that a language performs.
4.   to make students recognize that language acquisition and learning can take place without the fear of making errors.

Course Learning Outcome:
At the end of the course students will be able to:
1.   recognize/understand the structure and various parts of the language.
2.   understand the existence of language in the form of different dialects based on a set of established factors.
3.   identify the various functions a language performs and the roles assigned to it.
4.   understand that all languages behave alike and develop a tolerance for other languages.
5.   understand that making errors is a process of learning and not hesitate to use the language for fear of making errors.

Course Content:
Unit – I
Definition and Characteristics of Language; How Human Language is different from Animal Communication; Unique Properties of Human Language; Varieties of Language.

Unit – II
Definition and Nature of Linguistics; Linguistics as a Science; Scope of Linguistics- Descriptive, Comparative and Historical Linguistics; Levels of Linguistic Analysis, Some Major Linguistic Concepts- Synchrony and Diachrony, Langue and Parole, Competence and Performance, Substance and Form, Syntagmatic and Paradigmatic Relationships.

Unit – III
Definition and Branches of Phonetics; Speech Mechanism- the Organs of Speech; Phonology- Phoneme and Allophone; Classification and Description of the Consonants and Vowels of English.

Unit – IV
The Syllable- The Structure of the Syllable in English; Word Stress; Stress and Rhythm in Connected Speech; Intonation.

Suggested Reading:
1.   George Yule. The Study of Language.
2.   T. Balasubramanian. A Textbook of English Phonetics for Indian Students.
3.   Puspinder Syal and D.V. Jindal. An Introduction to Linguistics: Language, Grammar and Semantics.
4.   S. K. Verma and N. Krishnaswamy. Modern Linguistics: An Introduction
5.   Thakur. The Phonetics and Phonology of English: A Handbook.
6.   R. K. Sharma Fundamentals of Linguistics. New Delhi: Atlantic Press, 2014.
7.   R. K. Sharma and S. S. Haider. Introducing Phonetics. New Delhi: Atlantic Press, 2016.
8.   R. L. Varshney. An Introductory Textbook of Linguistics & Phonetics.
9.   K. Pattanayak. Linguistics Made Easy.

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SEMESTER VI

XIII.   MAJOR COURSE- MJ 12:

ENGLISH PROSE

(Essay)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1.   To introduce students to the various selection of Prose.
2.   To understand the central, formal and thematic concerns of the period.
3.   To show the formal development of Prose, both non- fiction and fiction.
4.   To introduce students to the different approaches in non- fictional prose

Course Learning Outcome:
At the end of the course students will be able to:
1.   Students will be able to have a fair idea of the different types of non- fictional prose and the periods in which it is set.
2.   Students are able to appreciate the different genres of different texts.
3.   Students will have adequate exposure to the rich creative minds across the globe.

Course Content:
Unit – I
  1. History of the English Essay
  2. Essay as a form of Literature
  3. Types of Essays- Personal and Impersonal (Didactic, Dramatic, Persuasive, Humorous, Descriptive, Factual, Narrative)
  4. A.C. Benson – 'The Art of the Essayist'

Unit – II
   1. Francis Bacon – 'Of Studies'
   2. Joseph Addison – 'Sir Roger at Home'
   3. Richard Steel – 'Recollections of Childhood'
   4. Henry David Thoreau – 'The War of the Ants'

Unit – III
   1. Oliver Goldsmith – 'On National Prejudices'
   2. A.G. Gardiner – 'On Superstitions'
   3. Hilaire Belloc – 'In Praise of Ignorance'
   4. G.K. Chesterton – 'On the Pleasures of No Longer Being Young'.

Unit – IV
   1. Virginia Woolf – 'The Death of the Moth'
   2. D.H. Lawrence – 'Cocksure Women and Hensure Men'
   3. George Orwell – 'Shooting an Elephant'
   4. J.B. Priestly – 'On Getting off to Sleep'

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Recommended Book: Most of the essays are available in 'English Essayists' Ed. Susanta K. Sinha, O.U.P

Suggested Reading:
1. Ed. Robert Scholes et.al. 'Elements of Literature', O.U.P
2. Modern Masters, An Anthology of English Prose, Orient Longman
3. A Choice of Prose and Poetry, OUP
4. Bloomsbury Guide to English Literature, Ed. Marion Wynne- Davis, Bloomsbury.
5. Bertrand Russell, 'The Basic Writings of Bertrand Russell, Routledge

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XIV. MAJOR COURSE- MJ 13:
LANGUAGE AND LINGUISTICS-II

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1. to make students grasp the structure and various parts of English language.
2. to make students understand the language, dialects and factors governing the relationship thereof.
3. to make students appreciate various functions that a language performs.
4. to make students recognize that language acquisition and learning can take place without the fear of making errors.

Course Learning Outcome:
At the end of the course students will be able to:
1. recognize/understand the structure and various parts of the language.
2. understand the existence of language in the form of different dialects based on a set of establishedfactors.
3. identify the various functions a language performs and the roles assigned to it.
4. understand that all languages behave alike and develop a tolerance for other languages.
5. understand that making errors is a process of learning and not hesitate to use language for fear of making errors.

Course Content:
Unit – I
Morphology- Morpheme, Morph and Allomorph; Classification of Morphemes; Morphophonemics; Process of Word Formation.

Unit – II
Traditional Grammar; Structural Grammar; Immediate Constituent (IC) Analysis; Phrase Structure Rules; Transformational Generative Grammar.

Unit – III
Semantics- Relationship of Semantics with Pragmatics; Sentence, Utterance, Proposition; Denotation and Connotation; Sense and Reference; Entailment; Lexical Relations– Synonymy, Antonymy, Homonymy, Polysemy, Hyponymy and Collocation.

Unit – IV
Status of English in India; Difference between British R.P. and General Indian English (G.I.E); Methods and Approaches of English Language Teaching.

Suggested Reading:
1. George Yule. The Study of Language.
2. T. Balasubramanian. A Textbook of English Phonetics for Indian Students.
3. Puspinder Syal and D.V. Jindal. An Introduction to Linguistics: Language, Grammar and Semantics.
4. S. K. Verma and N. Krishnaswamy. Modern Linguistics: An Introduction
5. D. Thakur. The Phonetics and Phonology of English: A Handbook.
6. D. Thakur. Linguistics simplified Morphology.
7. D. Thakur. Linguistics Simplified Syntax.
8. D. Thakur. Linguistics Simplified Semantics.
9. R. K. Sharma Fundamentals of Linguistics. New Delhi: Atlantic Press, 2014.
10. R. K. Sharma. Exploring English Syntax. Cambridge University Press.
11. R. L. Varshney. An Introductory Textbook of Linguistics & Phonetics.
12. B. K. Pattanayak. Linguistics Made Easy.

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13. M. F. Patel and Praveen M. Jain. English Language Teaching.
14. S. P. Dhanavel. English Language Teaching in India: Shifting Paradigms
15. Nishevita Jayendran, Anusha Ramanathan and Surbhi Nagpal. Language Education: Teaching English in India

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XV.   MAJOR COURSE- MJ 14:
LITERARY CRITICISM

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1. to understand the fundamentals of literary criticism
2. to understand the role and function of criticism, the critic, the artist, the tradition, the literary canon
3. to understand the function and value of literature
4. to understand the difference between literary and other kinds of discourse, literary aesthetics, responding to works of literature
5. to understand the difference between literary criticism and literary theory

Course Learning Outcome:
At the end of the course students will be able to:
1. understand the historical and philosophical contexts that led to the development of literary criticism and its practice in different traditions and periods
2. learners will be able to understand fundamental literary and critical concepts and underlying distinctions amongst them (e.g., difference between literary criticism and literary theory)
3. learners will be able to grasp a wide range of literary philosophers and critics whose works have informed and shaped the discourse of literary theory
4. learners will be able to identify the theoretical and critical concepts with critics/texts/movements with which they are associated and understand them in their contexts
5. learners will be able to strengthen and deepen their interpretative skills
6. show an understanding of historical and philosophical contexts that led to the development of literary theory and its practices
7. develop awareness of various literary theories and the way they enrich and change our thinking about language, literature and society
8. sharpen interpretative skills in the light of various theoretical frameworks

Course Content:
Unit – I
1. Philip Sidney – 'An Apology for Poetry'
2. John Dryden – 'An Essay on Dramatic Poesy'
3. Dr. Samuel Johnson- 'Preface to Shakespeare'

Unit – II
1. William Wordsworth- 'Preface to the Lyrical Ballads'
2. S. T. Coleridge – 'Biographia Literaria' (Chapter XIII & XIV)

Unit – III
1. Matthew Arnold – 'The Study of Poetry'
2. T.S. Eliot – 'Tradition and Individual Talent'

Unit – IV
1. I.A. Richards – 'Principles of Literary Criticism' (Chapter 6: Value as an Ultimate Idea & Chapter 7: A Psychological Theory of Value)
2. Roland Barthes- 'From Work to Text'

Suggested Reading:
1. Abrams, M. H. and Geoffrey Harpham. A Glossary of Literary Terms. Boston: Wadsworth Publishing, 2008.
2. Burke, Edmund. "On Taste", A Philosophical Inquiry into the Origin of our Ideas of the Sublime and Beautiful, (1759).

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3.   Das, B. and J. M. Mohanty. Literary Criticism: A Reader. New Delhi: OUP, 1997.
4.   Devy, G. N. Ed. Indian Literary Criticism: Theory and Interpretation. Hyderabad: Orient Blackswan,2014.
5.   Habib, M. A. R. Literary Criticism from Plato to the Present: An Introduction. Sussex:/ Wiley-Blackwell, 2011.
6.   Lodge, David and Nigel Wood. Modern Criticism and Theory: A Reader. New York: Routledge, 2017.
7.   Waugh, Patricia, Ed. Literary Theory and Critics. OUP, 2006.
8.   Wimsat, W.K. and Monroe Beardsley. 'The Intentional Fallacy' (1946). Critics and Criticism: Ancient and Modern - R. S. Crane.
9.   The Use of Poetry and the Use of Criticism - T. S. Eliot.
10. Concept of Criticism - R. Welleck
11. Criticism and Literary Theory - Chris Baldwick
12. Literary Criticism: A Short History - Wimsat and Brook
                    13. A History of English Criticism - George Saintsbury
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XVI.   MAJOR COURSE- MJ 15:
AMERICAN LITERATURE-I
(Poetry and Drama)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1. to understand the depth and diversity of American literature from the point of view of the history and culture of the United States of America.
2. To understand the historical, religious and philosophical contexts of the American spirit in literature.
3. To appreciate the complexity of the origin and reception of American Literature given its European descent (Anglo-Saxon, French, Dutch and Hispanic) as well as writers from black and non-European writing traditions. (varying from African, American Indian and Asian)

Course Learning Outcome:
At the end of the course students will be able to:
1. critically engage with the complex nature of American society
2. critically appreciate the diversity of American Literature in the light of regional variation in climate,cultural traits and economic priorities
3. critique issues of exclusion in societies relevant to their learning experience
4. explore and understand the nature of relationships of humans to other human beings and other life forms after reading representative texts across genres
5. Will be able to analyze the American mind from global and Indian perspectives and situate the Americanin the contemporary world

Course Content:
Unit – I
   1. Wall Whitman – 'Song of Myself' (Sections 1 to 5)
   2. Robert Frost – 'Mending Wall'
   3. Emily Dickinson – 'Because I could not stop for Death'

Unit – II
   1. Langston Hughes: 'The Negro Speaks of Rivers'
   2. Sylvia Plath – 'Daddy'
   3. Maya Angelou: 'Still I Rise'

Unit – III
   1. Arthur Miller: 'Death of a Salesman'

Unit - IV
   1. Tennessee Williams: 'A Streetcar Named Desire'

Suggested Reading:
   1. Richard Chase, 'History of Amarican Literature'
   2. Kathryn Van Spanckeren, 'Outline of American Literature': Revised Edition, published by The United States Department of State.
   3. Raghukul Tilak. 'History of American literature' Prakash Kathryn Van Spanckeren.   Book Depot, 2009.
   4. Radhashyam Dey, 'A Critical Study of Arthur Miller's Popular Plays', Asian Press Books, Kolkata
   5. Radhashyam Dey, 'A Thematic Study of Tennessee William's Major Plays', Asian Press Books, Kolkata

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SEMESTER VII

XVII. MAJOR COURSE- MJ 16:
INTRODUCTION TO LITERARY THEORIES

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1.	to make students understand contributions of major literary theorists, particularly of the 20th century
2.	to make students sharpen interpretative skills in the light of various theoretical frameworks
3.	to make students apply various theoretical frameworks and concepts to literary and cultural texts
4.	to make students understand various literary theories and the way they enrich and change our thinking about language, literature and society
5.	to make the students aware of important terms of literary criticism and their meaning

Course Learning Outcome:
At the end of the course students will be able to:
1.	have a historical overview of major literary theorists, particularly of the 20th century
2.	show an understanding of historical and philosophical contexts that led to the development of literary theory and its practices
3.	develop awareness of various literary theories and the way they enrich and change our thinking about language, literature and society
4.	historically situate literary theorists whose works had informed and shaped various literary theoretical discourses
5.	identify theoretical concepts with theorists and movements with which they are associated and, in the process, understand their contexts
6.	apply various theoretical frameworks and concepts to literary and cultural texts
7.	evaluate and analyze strengths and limitations of theoretical frameworks and arguments
8.	sharpen interpretative skills in the light of various theoretical frameworks
9.	apply understanding of literary terms to literary texts in critical evaluation

Course Content:
Unit – I
1.	New Criticism and Russian Formalism
2.	Structuralism
3.	Poststructuralism and Deconstruction
Unit – II
1.	Marxism
2.	Modernism
3.	Postmodernism
Unit – III
1.	Feminism- Definition, Waves of Feminism and Feminist Criticism
2.	Psychoanalytic Theory
3.	Postcolonial Theory

Suggested Reading:
1.	Peter Barry- Beginning Theory

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2.   Pramod K. Nayar- Contemporary Literary and Cultural Theory
3.   Sara Upstone- Literary Theory: A Complete Introduction
4.   Thomas a. Schmitz- Modern Literary Theory and Ancient Texts: An Introduction
5.   Lois Tyson- Critical Theory Today

XVIII. MAJOR COURSE- MJ 17:
AMERICAN LITERATURE-II
(Fiction and Short Story)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1. To understand the depth and diversity of American literature from the point of view of the history and culture of the United States of America.
2. To understand the historical, religious and philosophical contexts of the American spirit in literature.
3. To appreciate the complexity of the origin and reception of American Literature given its European descent (Anglo-Saxon, French, Dutch and Hispanic) as well as writers from black and non-European writing traditions (varying from African, American Indian and Asian).

Course Learning Outcome:
At the end of the course students will be able to:
1. critically engage with the complex nature of American society
2. critically appreciate the diversity of American Literature in the light of regional variation in climate,cultural traits and economic priorities
3. critique issues of exclusion in societies relevant to their learning experience
4. explore and understand the nature of relationships of humans to other human beings and other life forms after reading representative texts across genres.
5. analyse the American mind from global and Indian perspectives and situate the American in the contemporary world.

Course Content:
Unit – I
1. Mark Twain: 'The Adventures of Huckleberry Finn'

Unit – II
1. F. Scott Fitzgerald – 'The Great Gatsby'

Unit – III
1. Earnest Hemmingway – 'The Old Man and the Sea'

Unit - IV
1. Toni Morrison – 'The Bluest Eye'

Unit – V
1. Ray Bradbury – 'The Fog Horn' from 'Golden Apples of the Sun'.
2. Edgar Allen Poe – 'The Purloined Letter'.

Suggested Reading:
1. Richard Chase, 'History of Amarican Literature'
2. Kathryn Van Spanckeren, 'Outline of American Literature': Revised Edition, Published by The United States Department of State.
3. Raghukul Tilak. 'History of American literature' Prakash Kathryn VanSpanckeren.   Book Depot, 2009.

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XIX. MAJOR COURSE- MJ 18:
MODERN EUROPEAN DRAMA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1. to make students understand the role of theatre and drama in the introduction and shaping of modernity
2. to make students understand concepts like Realism, Naturalism, Symbolism, Expressionism, theAvant Garde, the Epic Theatre, The Theatre of the Absurd, etc.
3. to make students understand how meaning is created in theatre
4. to make students grasp the importance of innovations introduced into theatrical practice in the late 19th and the 20th century

Course Learning Outcome:
At the end of the courses students will be able to:
1. understand the role of theatre and drama in the introduction and shaping of modernity
2. understand and engage with concepts like Realism, Naturalism, Symbolism, Expressionism, the Avant Garde, the Epic Theatre, The Theatre of the Absurd, etc.
3. understand how meaning is created in theatre
4. be able to write about innovations introduced into theatrical practice in the late 19th and 20th century

Course Content:
Unit – I
1. Henrik Ibsen – 'A Doll's House'

Unit – II
1. Bertolt Brecht – 'The Good Woman of Setzuan'

Unit – III
1. Samuel Beckett – 'Waiting for Godot'

Unit – IV
1. Eugene Ionesco – 'Rhinoceros'

Suggested Reading:
1. Marjorie Boulton. The Anatomy of Drama. Kalyani Publishers Reprinted 2016
2. Anthony Toyne. An English Reader's History of England. Oxford 1971
3. W. H. Hudson: An Outline History of English Literature
4. S.C. Mundra: History of English Literature
5. Emile Legouis: A Short History of English Literature
6. S.C. Smith. T.S. Eliot's Poetry and Plays, London, 1974
7. Norman A. Jeffares. W.B. Yeats: Man and Poet, London, 1962
8. A Nicoll. British Drama
9. William Raymond. Drama from Ibsen to Brecht
10. H. S. Davies. Realism in Drama
11. Brian Docherty Twentieth-Century European Drama. Palgrave Macmillan UK,1994
12. Nirupama Sinha. 'James Matthew Barrie: The Maker of Myth', Satyam Publishing House, 2003.

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XX.   MAJOR COURSE- MJ 19:
POPULAR LITERATURE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1.   trace the early history of print culture in England and the emergence of genre fiction and best sellers
2.   engage with debates on high and low culture, canonical and non-canonical literature
3.   articulate the characteristics of various genres of non-literary fiction
4.   investigate the role of popular fiction in the literary polysystem of various linguistic cultures
5.   demonstrate how popular literature belongs to its time
6.   Use various methods of literary analysis to interpret popular literature

Course Learning Outcome:
At the end of the courses students will be able to:
1.   Understand the history of print culture and the emergence of the genre Popular Literature.
2.   Understand the features and characteristics of Popular Literature.
3.   Understand the role of Popular Literature in the literary polysystem of various linguistic cultures.
4.   Understand how Popular Literature belongs to its time.
5.   Learn various methods of literary analysis to interpret Popular Literature.

Course Content
Unit – I
Children's Literature:
    1. J. R. R. Tolkien – 'The Hobbit'

Unit – II
Detective Fiction:
    1. Arthur Conan Doyle – 'The Hound of the Baskervilles'

Unit – III
Science Fiction:
    1. Isaac Asimov – 'Nightfall'

Unit – IV
Romance Literature:
    1. Daphne De Maurier – 'Rebecca'

Suggested Readings
1.   Leslie Fiedler, 'Towards a Definition of Popular Literature', in *Super Culture: American Popular Culture and Europe*, ed. C.W.E. Bigsby
2.   Felicity Hughes, 'Children's Literature: Theory and Practice', *English Literary History*, vol. 45, 1978,
3.   Christopher Pawling, 'Popular Fiction: Ideology or Utopia?' in *Popular Fiction and Social Change*, ed. Christopher Pawling
4.   Tzevetan Todorov, 'The Typology of Detective Fiction', in *The Poetics of Prose*
5.   Darco Suvin, 'On Teaching SF Critically', in *Positions and Presuppositions in Science Fiction*
6.   Janice Radway. 'The Institutional Matrix, Publishing Romantic Fiction', in *Reading the Romance: Women, Patriarchy, and Popular Literature*
7.   Edmund Wilson, 'Who Cares Who Killed Roger Ackroyd?', *The New Yorker*, 20 June 1945. Hilllary Chute, "Comics as Literature? Reading Graphic Narrative', *PMLA* 123(2)
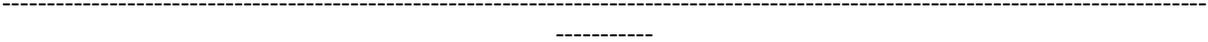
SEMESTER VIII

I.   MAJOR COURSE- MJ 20:
POSTCOLONIAL LITERATURE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1.   to make students understand the social-historical-political-economic contexts of Colonialism and Postcolonialism in India and other countries affected by colonial rule
2.   to make students engage with a corpus of representative postcolonial texts from different colonial locations: the effects of colonial rule on the language, culture, economy and habitat of specific groups of people affected by it
3.   to make students understand how racism and imperialism worked during and after colonial occupation
4.   to make students grasp and appreciate the changing role and status of English in postcolonial literatureswhile linking colonialism to modernity

Course Learning Outcome:
At the end of the courses students will be able to:
1.   understand the social-historical-political-economic contexts of colonialism and postcolonialism in India and other countries affected by colonial rule
2.   understand the scope of postcolonial literature in India and elsewhere, primarily as a response to thelong shadow of colonialism, not just of colonial occupation
3.   see through a corpus of representative postcolonial texts from different colonial locations: the effects of colonial rule on the language, culture, economy and habitat of specific groups of people affected by it
4.   appreciate and analyze the growing spectres of inequality arising out of colonial occupation and the roleplayed by postcolonial literatures to resist it in India and similar locations
5.   critically engage with issues of racism and imperialism during and after colonial occupation
6.   appreciate the changing role and status of English in postcolonial literatures link colonialism to modernity

Course Content:
Unit – I
1. Derek Walcott – 'A Far Cry from Africa'
2. David Malouf –'Wild Lemons'
3. Pablo Neruda – 'Tonight I can Write'
Unit – II
1. Chinua Achebe – 'Things Fall Apart'
Unit – III
1. Jean Rhys – 'Wide Sargasso Sea'
Unit – IV
1. Fakir Mohan Senapati – 'Six Acres and a Third'

Suggested Reading:
1. Franz Fanon, 'The Negro and Language', in Black Skin, White Masks, tr. Charles Lam Markmann (London: Pluto Press, 2008) pp. 8–27.
2. Ngugi wa Thiong'o, 'The Language of African Literature', in Decolonising the Mind (London:

James Curry, 1986) chap. 1, sections 4–6.

3.   Gabriel Garcia Marquez, the Nobel Prize Acceptance Speech, in Gabriel Garcia Marquez: New Readings, ed. Bernard Mc Guirk and Richard Cardwell (Cambridge: Cambridge University Press, 1987).

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

5.   John McLeod, 'Beginning Postcolonialism', Viva Books, 2010

6.   Meenakshi Mukherjee, "Divided by a Common Language" in 'The Perishable Empire' (N.Delhi OUP, 2000)

7.   Salman Rushdie, "Commonwealth Literature does not Exist", in 'Imaginary Homelands', (London Granta Books 1991)

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II.   ADVANCED MAJOR COURSE- AMJ 1:
WOMEN'S WRITINGS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60**
Lectures

Course Objectives:
The course will seek to achieve the following objectives:
1.   Understand the importance of gender specificity in Literature.
2.   Understand the difference between the feminine and feminist as opposed to female.
3.   Understand the role of socio-cultural-economic contexts in defining women and gender politics.
4.   Understand the complexity of social and biological constructs of manhood and womanhood.

Course Learning Outcome:
At the end of the course students will be able to:
1.   recognize the importance of gender specific literature
2.   analyze and appreciate representation of female experience in literature
3.   link the status of women to social discrimination and social change
4.   draw a location specific trajectory of female bonding and empowerment
5.   Examine the relationship of women to work and production

Course Content:
Unit – I
Poetry:
1.   Eunice de Souza: 'Advice to Women'.
2.   Kamla Das: 'An Introduction'.
3.   Emily Dickinson: 'I'm Wife, I've Finished That'

Unit – II
Fiction:
1.   Rokeya Hossain: 'Sultana's Dream'

Unit – III
Fiction:
1. Alice Walker: 'The Colour Purple'

Unit – IV
Drama:
1.   Mahashweta Devi: 'Mother of 1084'

Unit – V
Short Story:
1.   Ismat Chugtai: 'Lihaf'
2.   Charlotte Perkins Gilman: 'The Yellow Wallpaper'.

Suggested reading:
1.   Doris Lessing: The Golden Notebook
2.   Mary Wolstonecraft: A Vindication of the Rights of women (New York Norton, 1988)
3.   Mary Clements: The Unnatural and Accidental Women
4.   Ed. Wilfred L. Geurin et. Al.: A Handbook of critical approaches to literature
5.   Peter Barry: Beginning Theory
6.   Virginia Wolf: A Rooms of One's Own
7.   Susie Thorn and K. Lalita, eds., Women's Writing in India, New Delhi OUP, 1989.

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III.   ADVANCED MAJOR COURSE- AMJ 2:
DALIT AND TRIBAL LITERATURE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1. Acquaint Students with the rise of Dalit and Tribal Literature of India
2. Make the Students familiar with the intent and contents Dalit and Tribal of Literature
3. Provide comprehensive understanding of Subaltern context and different paradigms of Dalit and Tribal Literature

Course Learning Outcomes:
At the end of the course students will be able to
8. Understand the meaning of Subaltern Literature
9. Learn the rise of Dalit and Tribal Literature in India
10. Know the intent and contents of Dalit and Tribal Literature
11. Understand the different contexts and paradigms Dalit and Tribal Literature

Unit-I
1. Omprakash Valmiki: 'Joothan: An Untouchable's Life'

Unit-II
1. Bama: 'Kurukku'

Unit-III
1. Ram Dayal Munda and Ratan Singh Manki: 'Sosobonga'

Unit-IV
1. Namdeo Dhasal: 'Hunger'
2. Sarankumar Limbale: 'White Paper'
3. Mamang Dai: 'Mountains and the River'
4. Jacinta Kerketta: 'The River, The Mountain and The Bazaar'

Unit-V
1. Urmila Pawar: 'Sixth Finger'
2. Gogu Shyamala: 'Father May be an Elephant and Mother only a Small Basket, But…'
3. Temsula Ao: 'The Journey'
4. Hansda Showendra Shekhar: 'The Adivasi Will Not Dance'

Suggested Reading:
1. Gayatri Chakravorty Spivak- Can the Subaltern Speak?
2. Homi K. Bhabha- unsatisfied notes onvernacular cosmopolitanism
3. Ranajit Guha- Subaltern Studies
4. Saratchandra Muktibodh- What is Dalit Literature?
5. Debjani Ganguli- Caste and Dalit Life Worlds: Postcolonial Perspectives
6. Anand Mahanand- Tribal Literature in India
7. Anand Mahanand- Lo(k)cal Knowledge: Perceptions on Dalit, Tribal and Folk Literature
8. G. N. Devy- Painted Words: An Anthology of Tribal Literature
9. The Johar Journal. Publisher- Ivy Imogene Hansdak. Website- https://joharjournal.org/

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IV.   ADVANCED MAJOR COURSE- AMJ 3:
WORLD LITERATURE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1.   to make students understand concepts related to world literature, e.g. national literature, generalliterature, comparative literature and Vishwa Sahitya.
2.   to make students analyze and appreciate literary texts from different parts of the world and receive themin the light of one's own literary traditions.
3.   to make students analyze and interpret literary texts in their contexts and locate them
4.   to make students interpret literary and cultural texts from various world literatures in the light of varioustheoretical frameworks
5.   to make students understand enrich their thinking about language, literature and society involvingnotions of global human aspirations and significant international experiences and political developments
6.   to make students appreciate the Indian diasporic consciousness and the literary features of diasporic texts

Course Learning Outcome:
At the end of the course students will be able to:
1.   explain the concept of World Literature and its evolution in relation to other related concepts e.g.national literature, general literature, comparative literature and Vishwa Sahitya.
2.   appreciate the connectedness and diversity of human experiences and literary responses to them indifferent parts of the world.
3.   analyze and appreciate literary texts from different parts of the world and receive them in the light ofone's own literary traditions.
4.   analyze and interpret literary texts in their contexts and locate them.
5.   Understand the concept of 'diaspora' in its historical and cultural contexts

Course Content:
Unit – I
1.   Franz Kafka – 'Metamorphosis'

Unit – II
1.   Naguib Mahfouz – 'Palace Walk'

Unit – III
1.   Gabriel Gocia Marquez – 'Hundred Years of Solitude'.

Unit – IV
1.   Sally Morgan – 'My Place'

Suggested Reading:
1.   Ngugi wa Thiong'o: Decolonizing the Mind
2.   Ed. Bernard Mc Guirk and Richard Cardell: Gabriel Garcia Marques: New Readings
3.   Migration, Multiculturism, Globalization.
4.   "Introduction: The diasporic imaginary" in Mishra, V. (2008). Literature of the Indian diaspora. London:Routledge
5.   "Cultural Configurations of Diaspora," in Kalra, V. Kaur, R. and Hutynuk, J. (2005). Diaspora &hybridity. London: Sage Publications.
6.   "The New Empire within Britain," in Rushdie, S. (1991). Imaginary Homelands. London: Granta Books

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COURSES OF STUDY FOR FYUGP IN **"ENGLISH" MINOR**

MINOR COURSE-1A
(SEM-I)

V.   MINOR COURSE- MN 1A:
ENGLISH POETRY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1.   to help students explore poetry in a range of political, philosophical and cultural milieu.
2.   to familiarize the students with some representative literary text of the age referred therein.
3.   to make the students understand the influence of English literature on the literature of other countries

Course Learning Outcome:
At the end of the course students will be able to:
1.   appreciate different kinds of poetry.
2.   understand the influence of socio-cultural facts on the development of Poetry.

Course Content:
Unit – I
1.   Edmund Spenser – 'Sweet Warrior'
2.   William Shakespeare – 'Sonnet 18'
3.   John Milton – 'On His Blindness'
4.   John Donne – 'Good Morrow'
5.   George Herbert – 'The Pulley'

Unit – II
1.   Alexander Pope – 'Ode on Solitude'
2.   William Wordsworth – 'The Solitary Reaper'
3.   S.T. Coleridge – 'Dejection: An Ode'
4.   John Keats – 'Ode on a Grecian Urn'

Unit – III
1.   Robert Frost – 'Stopping by Woods on a Snowy Evening'
2.   R.N. Tagore – 'Where the Mind is Without Fear'
3.   Sarojini Naidu – 'Palanquin Bearers'
4.   Toru Dutta – 'Our Casuarina Tree'

Unit – IV
1.   Kamala Das – 'An Introduction'
2.   Nissim Ezekiel – 'Night of the Scorpion'
3.   Jayant Mahapatra – 'Dawn at Puri'
4.   Vikram Seth – 'The Frog and the Nightingale'

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Suggested Reading:

1. Marjorie Boulton, 'The Anatomy of Poetry', Kalyani Publishers.
2. Ravi Nandan Sinha, 'History of Indian Literature of English'.
3. Bruce King, 'Modern Indian Poetry in English'.

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MINOR COURSE-1B
(SEM-III)

VI.   MINOR COURSE- MN 1B:
ENGLISH SHORT-FICTION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1.   To introduce students to the various selection of Prose.
2.   To understand the central, formal and thematic concerns of the period.
3.   To show the formal development of Short Story.

Course Learning Outcome:
At the end of the course students will be able to:
1.   have a fair idea of the different periods in which it is set.
2.   appreciate the different genres of different texts.
3.   have adequate exposure to the rich creative minds across the globe.

Course Content:
Unit – I
1.   Edgar Allan Poe – 'The Tell Tale Heart'
2.   Shirley Jackson – 'The Lottery'
3.   Charlottc Perkins Gilman – 'The Yellow Wallpaper'

Unit – II
1.   Henry – 'The Gift of Magi'
2.   R.L Stevenson – 'The Body Snatcher'
3.   Oscar Wilde – The Happy Prince'

Unit – III
1.   R.N. Tagore – 'Kabuliwallah'
2.   R.K. Narayan – 'An Astrologer's Day'
3.   Mulk Raj Anand – 'The Barber's Trade Union'

Unit – IV
1.   Anton Chekhov – 'The Bet'
2.   Guy De Maupassant – 'The Necklace'
3.   Leo Tolstoy – 'The Three Questions'

Suggested Reading:
1.   A.C Ward. 'Twentieth Century Prose'.
2.   Walter Allen. 'The English Novel: A Short Critical History' Pelican, 1958.
3.   Walter Allen. 'The Short Story in English'
4.   T. Singh. 'A History of English Literature'

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MINOR COURSE-1C
(SEM-V)

VII.   MINOR COURSE- MN 1C:
ENGLISH FICTION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1.   to introduce students to the various selection of Prose
2.   to understand the central, formal and thematic concerns of the period
3.   to show the formal development of novel

Course Learning Outcome:
At the end of the course students will be able to:
1.   have a fair idea of the different periods in which it is set.
2.   appreciate the different genres of different texts.
3.   have adequate exposure to the rich creative minds across the globe.

Course Content:
Unit – I
1.   Emily Bronte – 'Wuthering Heights'

Unit – II
1.   Aldons Huxley – 'Brave New World'

Unit – III
1.   Harper Lee – 'To Kill A Mockingbird'

Unit – IV
1.   R. K. Narayan- 'The Vendor of Sweets'

Suggested Reading:
1.   A.C Ward. 'Twentieth Century Prose'.
2.   Walter Allen. 'The English Novel: A Short Critical History' Pelican, 1958.
3.   Walter Allen. 'The Short Story in English'
4.   T. Singh. 'A History of English Literature'

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MINOR COURSE-1D   **(SEM-VII)**

VIII.   MINOR COURSE- MN 1D:
ENGLISH DRAMA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course will seek to achieve the following objectives:
1.   To introduce students to select dramatists and select works so that they get first-hand knowledgeof the important literary works.
2.   To stimulate further interest and reading so as to obtain a fuller understanding of the texts prescribed.

Course Learning Outcome:
At the end of the course students will be able to:
1.   get an idea of the process of continuous evolution in Drama.
2.   understand the cases behind such apparent shifts in both form and content.
3.   appreciate the richness in content and craftsmanship in Drama.

Course Content:
 Unit- I
   1   William Shakespeare- The Merchant of Venice

 Unit- II
   1. Oscar Wilde- The Importance of Being Earnest

 Unit- III
   1. G. B. Shaw- Pygmalion

 Unit- IV
   1. Vijay Tendulkar- Silence! The Court is in Session

Suggested Reading:
1.   T. Singh, 'A History of English Literature'.
2.   Marjorie Boulton, 'The Anatomy of Drama'.
      3.   Indian Drama in English and English Translation, ed. Uttiya De and Jaydip Sarkar.

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COURSES OF STUDY FOR **ABILITY ENHANCEMENT COURSE** IN **"ENGLISH"**

ABILITY ENHANCEMENT COURSE-AEC 2;
(SEM-I/ II)

IX.   ENGLISH COMMUNICATION:

Marks: 50 (ESE: 1.5 Hrs) = 50	Pass Marks: Th (SIE) = 20

(Credits: Theory-02) **30 Hours**

Course Objectives:
The course will seek to achieve the following objectives:
1.   Knowing the Learner
2.   Teaching structures of English Language
3.   Teaching Reading Skill
4.   Teaching Writing Skill
5.   Evaluating Reading and Writing Skills

Course Learning Outcomes:
At the end of the course students will be able to:
1.   get rid of their present flaws of reading skill
2.   get rid of their present flaws of writing short compositions
3.   get rid of their present flaws of writing long compositions

Unit – I
What is communication? Definition and Aspects

Unit – II

Reading Comprehension, Note-making and Summarising

Unit – III
Short compositions: Notice, Advertisement, Posters, Invitation

Unit – IV
Letter writing: Letter of Enquiry, Letter of Placing Order, Letter of Complaint, Letter of Request, Letter to the Editor, Letter to the Principal, Application for Job

Unit – V
Article writing, Resume writing

Suggested Reading:
1.   V. C. Mahto & Sushmita Chakraborty, *Basics of Communication: Opportunities and Challenges*, Rudra Publishers and Distributors, New Delhi
2.   Prescribed Text: R. K. Sharma & Nidhi Singh, *Essential English for Better Communication*, Cambridge University Press
3.   Reader's Digest- How to Write and Speak Better
4.   Gangal & Dere- Developing Writing Skills in English
5.   N. Lal- New Style English Grammar and Composition

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ABILITY ENHANCEMENT COURSE-AEC 3
(SEM-III)

X.   ENGLISH ELECTIVE - 1:

Marks: 50 (ESE: 1.5 Hrs) = 50	Pass Marks: Th (SIE) = 20

(Credits: Theory-02) **30 Hours**

Course Objectives:
The course will seek to achieve the following objectives:
1. to make students use simple and acceptable English to convey their ideas in English in writing
2. to make students communicate information clearly and effectively in all kinds of environment and contexts
3. to sensitize students to creative expression
4. to make students use the language effectively

Course Learning Outcomes:
At the end of the course students will be able to:
1. convey their ideas in English using simple and acceptable English in writing
2. develop a love for Literature
3. try their hand at creative writing
4. develop the ability to use the language correctly and effectively

Course Content:
Unit-I
1. Paragraph Writing: Writing short paragraphs on given subjects
2. Story Writing: Constructing readable stories from the given outlines
3. Expansion: Expanding sentences or short passages into paragraphs
4. Paraphrasing: Paraphrasing short poems/stanzas
5. Essay writing

Unit-II
1. Subject-Verb Agreement: Using correct form of verbs in sentences
2. Modals: Using appropriate modals in sentences
3. Positive, Comparative and Superlative Degree: Changing the degree of comparison without changing the meaning
4. Synthesis of Sentences: Combining two simple sentences into one sentence
5. Sounds of English: symbols of different consonants and vowels used in dictionary

Suggested Reading:
1. R. K. Sharma & B. Singh – A Comprehensive English Grammar, Atlantic Publishers, New Delhi
2. Reader's Digest- How to Write and Speak Better
3. Wren and Martin- High School English Grammar and Composition
4. Gangal & Dere- Developing Writing Skills in English
5. B. N. Lal- New Style English Grammar and Composition

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ABILITY ENHANCEMENT COURSE-AEC 4
(SEM-IV)

XI.   ENGLISH ELECTIVE - 2:

Marks: 50 (ESE: 1.5 Hrs) = 50	Pass Marks: Th (SIE) = 20

(Credits: Theory-02) **30 Hours**

Course Objectives:
The course will seek to achieve the following objectives:
1.   to make students use simple and acceptable English to convey their ideas in English in writing
2.   to make students communicate information clearly and effectively in all kinds of
environment andcontexts
3.   to sensitize students to creative expression
4.   to make students use the language effectively

Course Learning Outcomes:
At the end of the course students will be able to:
1.   convey their ideas in English using simple and acceptable English in writing
2.   develop a love for Literature
3.   try their hand at creative writing
4.   develop the ability to use the language correctly and effectively

Course Content:
Unit I
1. Autobiography Writing: Writing imaginary autobiography pretending to be an animal or an
object
2. Dialogue Writing: Writing an imaginary conversation between two people
3. Report Writing: Reporting an event or incident
4. Process Writing: Factual description of a process
5. Appreciation of Poetry: Questions on the substance and form of a given poem
6. Book and Movie Reviews

Unit II
1. Determiners: Using suitable determiners in sentences
2. Prepositions: Using appropriate prepositions
3. Active and Passive Voice: Changing sentences from Active voice to Passive voice and vice-
versa
4. Direct and Indirect Speech: Changing sentences from Direct to Indirect Speech and vice-versa

Suggested Readings:
1.   Reader's Digest- How to Write and Speak Better
2.   Wren and Martin- High School English Grammar and Composition
3.   Gangal & Dere- Developing Writing Skills in English
4.   B. N. Lal- New Style English Grammar and Composition

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FYUGP

SOCIOLOGY HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented from 3rd Semester of Academic Session 2022-26

& From 1st Semester of Session 2023-27 Onwards

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UNIVERSITY DEPARTMENT OF SOCIOLOGY

Ranchi University, Ranchi - 834 008 (Jharkhand)

Ref. No. 506/22-566/23   Date 23/06/23

Members of Board of Studies (Sociology) for preparing Syllabus of the Four-Year Undergraduate Programme (FYUGP) as per NEP – 2020

1. **Chairman –**

   Dr. Paras Kumar Choudhary
   Associate Professor & Head,
   University Department of Sociology, Ranchi University, Ranchi

2. **Internal Members –**

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   Associate Professor,
   University Department of Sociology, Ranchi University, Ranchi

   ii. **Dr. Mithilesh Kumar**
   Associate Professor,
   University Department of Sociology, Ranchi University, Ranchi

   iii. **Dr. Deepali Aparajita Dungdung**
   Assistant Professor,
   University Department of Sociology, Ranchi University, Ranchi

   iv. **Dr. Nikhil Kumar Lakra**
   Assistant Professor & Head
   Department of Sociology
   J. N. College, Dhurwa, Ranchi University, Ranchi

   v. **Mr. Kamil Manmod Dhan**
   Assistant Professor & Head
   Department of Sociology
   R.L.S.Y. College, Ranchi University, Ranchi

3. **External Members –**

   i. **Prof. Dr. Jitendra Prasad**
   Professor (Retd.)
   Department of Sociology,
   M.D. University, Rohtak, Haryana

   ii. **Dr. Pramod Kumar Choudhary**
   Associate Professor
   P. G. Department of Sociology,
   Magadh University, Bodh Gaya (Bihar)

Members of Board of Studies (Sociology) for preparing Syllabus of the Four-Year Undergraduate Programme (FYUGP) as per NEP – 2020

DIRECTOR
IQAC, RANCHI UNIVERSITY
RANCHI-834 001

Head
University Department of Sociology
Ranchi University, Ranchi

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FYUGP

HINDI HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented from 3rd Semester of Academic Session 2022-26

& From 1st Semester of Session 2023-27 Onwards

AK SINGH COLLEGE ,JAPLA, PALAMU

विश्वविद्यालय हिन्दी विभाग

राँची विश्वविद्यालय, राँची
मानविकी भवन, मोराबादी, राँची – 834008

पत्रांक : ....   दिनांक : 8/8/2023

Members Board of Studies for the syllabus of Hindi under the provision of NEP 2020
FYUGP as per Guidelines of the Ranchi University, Ranchi

आज दिनांक 30/05/2023 दिन मंगलवार को पूर्वाहन 11:00 बजे विश्वविद्यालय हिन्दी विभाग में विभागाध्यक्ष (डॉ0 चंद्रिका ठाकुर) की अध्यक्षता में स्नातक पाठ्यक्रम NEP (BOS) की बैठक हुई, जिसमें निम्नांकित सदस्य उपस्थित हुए :

पाठ्यक्रम समिति के सदस्यगण

अध्यक्ष -   डॉ0 चंद्रिका ठाकुर

विभागाध्यक्ष, स्नातकोत्तर हिंदी विभाग

राँची विश्वविद्यालय, राँची

सदस्यगण -   1. डॉ0 हीरा नंदन प्रसाद

2. डॉ0 कुमुद कला मेहता

3. डॉ0 जितेंद्र कुमार सिंह

4. डॉ0 नियति कल्प   -   नियति कल्प

5. डॉ0 सुनीता कुमारी गुप्ता   -

6. डॉ0 सुनीता कुमारी   -   सुनीता कुमारी

बाह्य सदस्यगण - 1. डॉ0 जिन्दर सिंह मुण्डा

अध्यक्ष, हिंदी विभाग, डीएसपीएम विश्वविद्यालय, राँची।

2. डॉ0 सुनीता यादव

राँची महिला महाविद्यालय, राँची विश्वविद्यालय, राँची।

3. डॉ0 रेणु सिन्हा

निर्मला कॉलेज, राँची विश्वविद्यालय, राँची।

4. डॉ0 मंजु लाल

डोरंडा महाविद्यालय, राँची विश्वविद्यालय, राँची।

उक्त बैठक में स्नातक (UG) के पाठ्यक्रम पर विचार विमर्श कर चौथे वर्ष के पाठ्यक्रम को सुनिश्चित किया गया तथा पाठ्यक्रम को तैयार किया गया। तत्पश्चात बैठक समाप्त की गई।

**DIRECTOR
IQAC, RANCHI UNIVERSITY
RANCHI-834 001**

डॉ0 चंद्रिका ठाकुर
विभागाध्यक्ष, स्नातको... विभाग
विश्वविद्यालय हिन्दी विभाग
राँची विश्वविद्यालय, राँची

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HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1st of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:
  c) Odd Semester: **From first Monday of August to third Saturday of December**
  d) Even Semester: **From first Monday of January to third Saturday of May**
- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.
- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its

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Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
  - ➢ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
  - ➢ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
  - ➢ Bachelor's Degree after a 3-year (6 semesters) programme of study,
  - ➢ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
  - ➢ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

   c) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.
   One credit for Theory   = 15 Hours of Teaching i.e., 15 Credit Hours
   One credit for Practicum   = 30 Hours of Practical work i.e., 30 Credit Hours

      d) For credit determination, instruction is divided into three major components:
                    Hours (L) – Classroom Hours of one-hour duration.
         Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
       Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.
- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

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PROMOTION CRITERIA

First degree programme with single major:

xi. The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

xii. No student will be detained in odd Semesters (I, III, V & VII).

xiii. To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

xiv. To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

xv. To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

xvi. However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

xvii. Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

xviii. To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year.

xix. A student has to pass in minimum 3 papers out of the total 4 papers.

xx. It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result of the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)													
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)													
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree													
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4
Exit Point: Bachelor's Degree with Hons. /Hons. with Research												**160**	**224**

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Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

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COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME
2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	AEC-1	Language and Communication Skills (MIL 1 - Hindi/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Hindi)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4

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IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2
	VAC-2	Value Added Course-2	2
	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4

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RC/	Research Internship/Field Work/Dissertation OR	12/	
AMJ-1	Advanced Major paper-1 (Disciplinary/Interdisciplinary Major)	4	
AMJ-2	Advanced Major paper-2 (Disciplinary/Interdisciplinary Major)	4	
AMJ-3	Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	4	
		Total Credit	**160**

NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	iii. Discipline/ Interdisciplinary courses and iv. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64

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Minor	iii. Discipline/ Interdisciplinary courses and iv. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Double Major Courses		Credits
	Code	Papers	
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4

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	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:

AEC   Ability Enhancement Courses

SEC   Skill Enhancement Courses

IAP   Internship/Apprenticeship/ Project

MDC   Multidisciplinary Courses

MJ   Major Disciplinary/Interdisciplinary Courses

DMJ   Double Major Disciplinary/Interdisciplinary Courses

MN   Minor Disciplinary/Interdisciplinary Courses

AMJ   Advanced Major Disciplinary/Interdisciplinary Courses

RC   Research Courses

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fgUnh Lukrd i kB;-Øe dk mnns~;

fgUnh ds Lukrd i fr"Bk i kB;-Øe dk mnns~; fuEukafdr y{;ka dks i Utr djuk gS%

1. fo|kfFkZ;ka dks l ansu'khy ukxfjd cukukA
2. ,d dkS'ky oDrk dk fuekZ.k djukA
3. l ekt vkSj l e[q; ds i fr l ansu'khy nf"V dk fodkl djukA
4. jk"Vªh; prsuk dk fodkl djukA
5. ekuoh; ewY;ka ds i fr LoLFk nf"Vdks fodfl r djukA
6. l kfgR; ea jk"Vª vkSj jk"Vªokn ds i gh vFkkZ dks crkukA
7. ewYHkkr vkdksY; tSsy{ku] Jo.k vkSj vfHkO;fDr dk fodkl djukA
8. LFkkuh; l syadj oSfod l rj r d ds fof'kV l kfgR; l s i fjfpr djkukA
9. Hkk"kk l anzh dkSy dk fodkl djukA
10. mRokjkj.k] orZuh vkSj fyfi dk l gh&l gh Kku djukA
11. l ekt ds fofHkUu l e[q; ka ds i fr l fg".kqrk dh Hkkouk dk fodkl djukA
12. fofHkUu l kfgfR;d fo/kkvka dh t kudkjh nukA

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fgnah Lukrd ikB;-Øe dk vf/kxe ifj.kke

Lukrd fgnah ¼fr"Bk½ dk;Øe l sla) vf/kxe ifj.kke bl idkj g&:

1. lkfgR; laålk.k ds vk/kkj fca aqk sadh tkudkjh nsuk rkfd lkfgR; ds la za dea, d Li"V l e> fodfl r gks l dA
2. fgnah lkfgR; vkS Hkk"kk dk O;ofLFkr vkS rdZ axr Kku djuk rkfd ml ds lS>k frd i{k vkS lkfgfRd fodkl ds la za deai;Kfr tkudkjh feyl l dA
3. lkfgR; dh fofHkUu fo/kkvka dksi<+u vkS l e>usdh;kX rk dk fodkl djukA
4. lkfgR; y{ku dh fofo/k 'kSfyh vkS l eh{kk Red nf"V dk fodkl djukA
5. LFkkuh;] jkVªh; vkS oS'od l kadfrdrk ds ògn l aåly ds ckjs ea tkudkjh nsuk rkfd fo|kFkhZea lkfgfRd eWvkdu dh;kX rk fodfl r gksl dA
6. l ehP; nf"V vkS O;ofLFkr osåfjdh dk in'kZu djuk ftl s fd fgnah lkfgR; ds v/;;u ds ifr ftKklk vkS ifzu mRllå gksl dA
7. vk/kfqud l aåkÄ^earduhdh l akkuka dks blrsky djrsgq fgnah lkfgR; dh tkudkjh nukA
8. iRid Lrj ij thou eWvka vkS lkfgfRd eWvka dk fu/kkZ.k djusdh{ker vkS Kku dk fodkl djukA
9. fo|kFkhZ ea y{ku] okpu vkS J.ok.k ds lkFk&lkFk dYiu'khfDr dk fodkl djuk ftl s fd ml ds l exz O;fDrRo ea fu[kkj vk l dA
10. lkfgR; ds v/;;u ds ckj jkstxkj ds fofHkUu {ks&kadh igpku djrsgq jkstxkj dsu, e kxZ ryk'kukA
11. orZeku ;xq lpuk Økàfr dk;qx gSftl esa vfHkO;fDr dh i/kkurk gS, sseartduhdh dsfodkl usl lkfgR; l apj.k dksvR;a l zqe cuk fn;k gSbl h dsifjis; ea fgnah lkfgR; y{ku vkS vuqon dk ea i izku djuk ftl dk mi;kX dj tul apkj l sysdj O;fDrRo fodkl rd ea fo|kFkhZfu"kkr gksl dA fo|kFkhZ dh #fp;ka dks, d O;ofLFkr : i nsuk vkS mllgafofHkUu fo/kkvka esl sp;u dh Lorark rk ifr izku djuk rkfd os Lukrd dk.Øe dsivkxzgusdscn [kq gh lkfgR; dsfofHkUu {ks&kea l sviuh#fp dsvuqﻑkj p;u dj l dA
12. Hkkjr ds lkfgfRd d] lkadfrd vkS Hkk"kkbZ fofo/krk dks tkuusdsifr tkx#drk ifsk djuk Hkh fgnah lkfgR; ds v/;;u dk iﻑqq mn~≥; gA

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SEMESTER WISE COURSES IN HINDI MAJOR-1 FOR FYUGP   **2022 onwards**

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
		Courses		**Examination Structure**		
I	MJ-1	हिंदी साहित्य का इतिहास (आदिकाल एवं पूर्व मध्यकाल)	4	25	75	---
II	MJ-2	हिंदी साहित्य का इतिहास (रीतिकाल एवं आधुनिक काल)	4	25	75	---
	MJ-3	हिंदी साहित्य : छायावादोत्तर हिंदी कविता	4	25	75	---
III	MJ-4	हिंदी कथा-साहित्य : कहानी एवं उपन्यास	4	25	75	---
	MJ-5	हिंदी नाट्य साहित्य एवं अन्य विधाएँ	4	25	75	---
IV	MJ-6	हिंदी भाषा और भाषा-विज्ञान	4	25	75	---
	MJ-7	हिंदी भाषा और नागरी लिपि	4	25	75	---
	MJ-8	प्रयोजनमूलक हिंदी	4	25	75	---
V	MJ-9	भारतीय एवं पाश्चात्य काव्यशास्त्र और हिंदी आलोचना	4	25	75	---
	MJ-10	झारखंड के समकालीन साहित्यकार	4	25	75	---
	MJ-11	समकालीन स्त्री लेखन	4	25	75	---
VI	MJ-12	यात्रावृतांत साहित्य एवं अन्य विधाएँ	4	25	75	---
	MJ-13	भक्तिकालीन काव्य	4	25	75	---
	MJ-14	अनुवाद विज्ञान -	4	25	75	---
	MJ-15	हिंदी पत्रकारिता एवं जनसंचार	4	25	75	---
VII	MJ-16	साहित्यिक विमर्श	4	25	75	---
	MJ-17	प्राचीन एवं मध्यकालीन काव्य	4	25	75	---
	MJ-18	रीतिकालीन काव्य	4	25	75	---
	MJ-19	भारतीय साहित्य एवं संस्कृत साहित्य	4	25	75	---
VIII	MJ-20	अनुवाद विज्ञान-	4	25	75	---
	AMJ-1	हिंदी साहित्य का आदिकाल एवं मध्यकाल	4	25	75	---
	AMJ-2	आधुनिक काल	4	25	75	---
	AMJ-3	हिंदी भाषा और उसका विकास	4	25	75	---
	or RC-1	शोध प्रविधि	4	25	75	---

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	RC-2	परियोजना कार्य / क्षेत्रीय कार्य / शोध प्रशिक्षण कार्य	8	---	---	200
		Total Credit	**92**			

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Skill Enhancement Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	dk.k y;;hfgUnh	3	---	75	---
II	SEC-2	l ekpkj l adyu vkS y[ku	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	**9**			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Minor Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	परिचयात्मक हिंदी	4	25	75	---
III	MN-1B	हिंदी साहित्य एवं मीडिया लेखन	4	25	75	---
V	MN-1C	हिंदी साहित्य एवं अनुवाद	4	25	75	---
VII	MN-1D	हिंदी साहित्य एवं सोशल मीडिया	4	25	75	---
		Total Credit	**16**			

Table 10: Semester wise Course Code and Credit Points for Elective Courses:

Semester	Language Elective Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I/ II	AEC-1	आधुनिक भारतीय भाषा	2	---	50	---
III	AEC-3	व्यावहारिक हिंदी – I	2	---	50	---

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IV	AEC-4	व्यावहारिक हिंदी - II	2	---	50	---
		Total Credit	**6**			

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INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There will be Only One Semester Internal Examination in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

C. (SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

D. (SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Conversion of Attendance into score may be as follows:

Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

D. (ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

E. (ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to

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answer.

F. **(ESE 100 marks):**
There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

	Subject/ Code	
F.M. =10	**Time**=1Hr.	Exam Year

General Instructions:
    vi. **Group A** carries very short answer type compulsory questions.
   vii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
   viii. Answer in your own words as far as practicable.
   ix. Answer all sub parts of a question at one place.
   x. Numbers in right indicate full marks of the question.

Group A

4.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　[5x1=5]

    vi.　　　...............
    vii.　　...............
    viii.　...............
    ix.　　　...............
    x.　　　...............

Group B

5.　...............　　　　　　　　　　　　　　　　　　　　　　　[5]
6.　...............　　　　　　　　　　　　　　　　　　　　　　　[5]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **20 Marks**:

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Subject/ Code

F.M. =20   **Time**=1Hr.   Exam Year

General Instructions:
vi.   **Group A** carries very short answer type compulsory questions.
vii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
viii. Answer in your own words as far as practicable.
ix.   Answer all sub parts of a question at one place.
x.   Numbers in right indicate full marks of the question.

Group A

5.   [5x1=5]
      vi.   ....
      vii.   ....
      viii.   ....
      ix.   ....
      x.   ....

6.   ....   [5]

Group B

7.   ....   [10]
8.   ....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION

Question format for **50 Marks**:

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Subject/ Code

F.M. =50   **Time**=3Hrs.   Exam Year

General Instructions:

i.   **Group A** carries very short answer type **compulsory** questions.
ii. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
vi. Answer in your own words as far as practicable.
vii. Answer all sub parts of a question at one place.
viii. Numbers in right indicate full marks of the question.

Group A

7.   [5x1=5]

vi.   ....
vii.   ....
viii.   ....
ix.   ....
x.   ....

Group B

8.   ....   [15]
9.   ....   [15]
10. ....   [15]
11. ....   [15]
12. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **60 Marks**:

Subject/ Code

F.M. =60   **Time**=3Hrs.   Exam Year

General Instructions:

iii. **Group A** carries very short answer type **compulsory** questions.
iv. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
vi. Answer in your own words as far as practicable.
vii. Answer all sub parts of a question at one place.
viii. Numbers in right indicate full marks of the question.

Group A

9.   [5x1=5]

vi.   ....
vii.   ....
viii.   ....
ix.   ....
x.   ....

10. ....   [5]
11. ....   [5]

Group B

12. ....   [15]
13. ....   [15]
14. ....   [15]
15. ....   [15]
16. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

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Question format for **75 Marks**:

	Subject/ Code	
F.M. = 75	**Time**=3Hrs.	Exam Year

General Instructions:
iii. **Group A** carries very short answer type **compulsory** questions.
iv.   **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
vi.   Answer in your own words as far as practicable.
vii. Answer all sub parts of a question at one place.
viii. Numbers in right indicate full marks of the question.

Group A

10.   [5x1=5]

vi.   ....
vii.   ....
viii.   ....
ix.   ....
x.   ....

11. ....   [5]
12. ....   [5]

Group B

13. ....   [15]
14. ....   [15]
15. ....   [15]
16. ....   [15]
17. ....   [15]
18. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

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Subject/ Code

F.M. = 100   **Time**=3Hrs.   Exam Year

General Instructions:
iii. **Group A** carries very short answer type **compulsory** questions.
iv. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
vi.   Answer in your own words as far as practicable.
vii. Answer all sub parts of a question at one place.
viii. Numbers in right indicate full marks of the question.

Group A

2.   [10x1=10]

vi.	....	vi.	....
vii.	....	vii.	....
viii.	....	viii.	....
ix.	....	ix.	....

4. ...x...........:...........   x   ....   [5]
5. ....   [5]

Group B

10. ....   [20]
11. ....   [20]
12. ....   [20]
13. ....   [20]
14. ....   [20]
15. ....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

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SEMESTER I

II.   MAJOR COURSE –MJ 1:
हिंदी साहित्य का इतिहास (आदिकाल एवं पूर्व मध्यकाल)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) Theory: 60 Lectures

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. विद्यार्थी 11वीं शताब्दी से लेकर मध्यकाल के पूर्वार्द्ध तक के सामाजिक,सांस्कृतिक ,राजनीतिक सन्दर्भ का ज्ञान प्राप्त कर सकेंगे ।

2. हिंदी साहित्य के प्रारंभिक और विकासात्मक स्वरुप से परिचित हो सकेंगे ।

3. हिंदी साहित्य के साहित्यकारों और उनकी रचनाओं के बारे में जान सकेंगे ।

4. हिंदी के भावगत, भाषागत और शैलीगत विकास से परिचित हो सकेंगे ।

प्रस्तावित संरचना

इकाई 1 – हिंदी साहित्येतिहास लेखन की परंपरा, हिंदी साहित्येतिहास में काल विभाजन और नामकरण की समस्या ।

इकाई 2 – आदिकाल का नामकरण और कालसीमा, आदिकालीन काव्य -
प्रवृत्तियाँ, सिद्ध साहित्य ,नाथ साहित्य, रासो काव्य परम्परा, पृथ्वीराज रासो की प्रामाणिकता ।
प्रमुख रचनाकार – विद्यापति, अमीर खुसरो

3 –भक्ति आन्दोलन की पृष्ठभूमि, भक्तिकाव्य की प्रवृत्तियाँ, संतकाव्य परम्परा, सूफीकाव्य परम्परा, कृष्णकाव्य परम्परा,
रामकाव्य परम्परा । प्रमुख कवि- कबीरदास, जायसी, सूरदास, तुलसीदास, मीरा

अनुशंसित पुस्तकें –:

1.   हिंदी साहित्य का इतिहास   – .
2.   हिंदी साहित्य का इतिहास   – .   (( )
3.   हिंदी साहित्य का वैज्ञानिक इतिहास   – .
4.   हिंदी साहित्य का आदिकाल   – .
5.   हिंदी साहित्य का दूसरा इतिहास   – .

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6.   आधुनिक हिंदी साहित्य का इतिहास   – .

7.   साहित्य और इतिहास   –

8.   हिंदी साहित्य का आलोचनात्मक इतिहास   – .

9.   हिंदी साहित्य का अतीत   –

10.   पृथ्वीराज रासो की भाषा   – .

11.   तुलसीदास   – .

12.   तुलसी   –

13.   लोकवादी तुलसीदास   – .

14.   तुलसीदास   –

15.   गोस्वामी तुलसीदास –

16.   भक्ति आन्दोलन और सूरदास का काव्य   – .

17.   सूर की काव्य चेतना   –

18.   सूरदास   –

19.   कबीर एक नयी दृष्टि – .

20.   कबीरदास विविध आयाम   –   (.)

21.   कबीर का महत्व   –

22.   जायसी एक नयी दृष्टि   – .

23.   जायसी   –

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III.   SKILL ENHANCEMENT COURSE- SEC 1:
कार्यालयी हिंदी

Marks: 75 (ESE: 3Hrs) = 75	**Pass Marks: Th (ESE) = 30**

(Credits: Theory-03) **45 Hours**

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SEMESTER II

XII.   MAJOR COURSE- MJ 2:

हिंदी साहित्य का इतिहास (रीतिकाल एवं आधुनिक काल)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)60 Hours

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. विद्यार्थियों को भारतवर्ष की 17वीं से 19वीं शताब्दी के मध्य के सामाजिक, सांस्कृतिक, राजनीतिक और आर्थिक परिदृश्य आदि का ज्ञान प्राप्त होगा।

2. इस काल के साहित्यकार और उनकी रचनाओं से वे परिचित हो सकेंगे।

3. इस काल के साहित्य का भावात्मक और राजसत्तात्मक प्रभाव ज्ञान प्राप्त होगा।

4. इससे सृजन के काव्यरूप का ज्ञान प्राप्त होगा।

5. इससे साहित्य सृजन के आधार हिंदी भाषा और मौलिक स्वरूप का ज्ञान प्राप्त होगा।

6. भारतेंदु युग से छायावाद तक के काल की सामाजिक, आर्थिक, राजनीतिक एवं सांस्कृतिक स्थितियों एवं परिवेश से विद्यार्थी परिचित हो सकेंगे।

7. विद्यार्थी राष्ट्रीय नवजागरण के परिदृश्य से परिचित हो सकेंगे।

8. छायावाद काव्य संवेदना और अभिव्यक्ति सौंदर्य से परिचित हो सकेंगे।

प्रस्तावित संरचना

इकाई-1. रीतिकाल का नामकरण और कालसीमा, रीतिकालीन परिस्थितियाँ, रीतिकाल की प्रवृत्तियाँ, रीतिकालीन काव्यधाराएँ,

रीतिकाल के कवि,   , मतिराम, बिहारी, घनानंद, पद्माकर, भूषण का परिचय ।

इकाई-2. आधुनिक काल की पृष्ठभूमि, हिंदी गद्य का विकास, भारतेंदु युग, द्विवेदी युग ।

इकाई -3.आधुनिक हिंदी काव्य की प्रवृत्तियाँ –भारतेंदु युग, द्विवेदी युग, छायावाद युग ।

निर्धारित कवि और कविताएँ :

1. भारतेंदु- गंगा वर्णन ।

2. मैथिलीशरण गुप्त – मातृभूमि ।

3. जयशंकरप्रसाद– हिमाद्रि तुंग श्रृंग से, बीती विभावरी जाग री ।

4. निराला – भिक्षुक, भारती वंदना ।

5. पंत- प्रथम रश्मि, नौका विहार, ताज ।

6. महादेवी वर्मा- मैं नीर भरी दुःख की बदली, मधुर- मधुर मेरे दीपक जल ।

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अनुशंसित पुस्तकें –:

1.   काव्य कुसुम (सं.)   – .   , डॉ. जितेंद्रकुमार सिंह, डॉ. सुनीता कुमारी गुसा

2.   हिंदी साहित्य का इतिहास   – .

3.   हिंदी साहित्य का इतिहास   – . .

4.   हिंदी साहित्य का वैज्ञानिक इतिहास   – .

5.   हिंदी साहित्य का इतिहास   – .

6.   हिंदी साहित्य का दूसरा इतिहास   – .

7.   आधुनिक हिंदी साहित्य का इतिहास   – .

8.   हिंदी साहित्य का इतिहास   –

9.   रीतिकाव्य की भूमिका   – .

10.   हिंदी रीतिकाव्य   – .

11.   बिहारी का नया मूल्यांकन-डॉ.बच्चन सिंह

12.   बिहारी बोधिनी   –

13.   घनानंद का काव्य   – .

14.   स्वर्ण मंजूषा   –   , केशरी कुमार (सं)

15.   आधुनिक हिंदी काव्य प्रवृतियाँ – .

16.   कविता के नए प्रतिमान   – .

17.   आधुनिक हिंदी कविता का इतिहास   – .

18.   कविता के आर पार – .

19.   ज्योति विहाग   – .

20.   महावीर प्रसाद द्विवेदी और हिंदी नवजागरण   – .

21.   छायावाद की प्रासंगिकता   –

XIII.   MAJOR COURSE- MJ 3:
हिंदी साहित्य : छायावादोत्तर हिंदी कविता

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा :

1. उत्तर छायावाद युग की सामाजिक, सांस्कृतिक, आर्थिक, राजनीतिक परिस्थितियों एवं विसंगतियों से उपजे काव्यान्दोलनों से विद्यार्थी परिचित हो सकेंगे ।

2. प्रगतिशील चेतना का वैचारिक आधार और अभिप्राय स्पष्ट रूप से जान सकेंगे ।

3. इतिहास दृष्टि और लोकजीवन तथा प्रकृति से कविता के सरोकार को रेखांकित कर सकेंगे ।

4. प्रयोगवादी काव्य की रचनात्मक प्राथमिकताओं, भावबोध और भाषा को समझ सकेंगे ।

5. समकालीन कविता के युगबोध की वस्तुगत सामाजिक,आर्थिक परिप्रेक्ष्य सहित समझ सकेंगे ।

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6. वैश्वीकरण और भूमण्डलीकरण के परिप्रेक्ष्य और चुनौतियों को समझने का आधार मिलेगा ।

7. पर्यावरण संबंधी रचनाओं से विद्यार्थी अवगत हो सकेंगे ।

प्रस्तावित संरचना

इकाई – 1.   , प्रयोगवाद, नई कविता का उद्भव और विकास एवं प्रवृत्तियाँ ।

इकाई – 2.   : –

1. रामधारी सिंह दिनकर – वनफूलों की ओर, किसको नमन करु मैं? सिंहासन खाली करो की जनता आती है, हिमालय ।

2. नागार्जुन – प्रेत का बयान, यह दंतुरित मुस्कान, बहुत दिनों के बाद, सिन्दूर तिलकित भाल ।

3. अज्ञेय – यह दीप अकेला, एक सन्नाटा बुनता हूँ, नदी के द्वीप, सूनी-सी साँझ एक ।

4. धूमिल – लोहे का स्वाद, रोटी और संसद, प्रौढ़ शिक्षा, मोचीराम ।

5. राजेश जोशी- इत्यादि, मारे जाएंगे, बच्चे काम पर जा रहे हैं, अतिरिक्त चीजों की माया ।

अनुशंसित पुस्तकें –:

1.   काव्य कल्पतरु (सं.) – .   , डॉ. कुमुद कला मेहता, डॉ. नियति कल्प

2.   दिनकर की साहित्य साधना   – .   (.)

3.   अज्ञेय का संसार   – .

4.   कवि अज्ञेय   – .

5.   आधुनिक कविता का इतिहास   – .

6.   कविता के मुक्ति   – .

7.   आधुनिक हिंदी कविता   – .

8.   अपने-अपने अज्ञेय   –   (   )

9.   नयी कविता : स्वरूप एवं समस्याएँ   – .

10.   प्रगतिवाद – .

11.   नागार्जुन की कविता में युगबोध – .

12.   दिनकर का काव्य वैभव : एक मूल्यांकन – .

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XIV.　SKILL ENHANCEMENT COURSE- SEC 2:
समाचार संकलन और लेखन

Marks: 75 (ESE: 3Hrs) = 75　　　　　　　　　　　　　**Pass Marks: Th (ESE) = 30**

(Credits: Theory-03) **45 Hours**

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Estd 1984

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SEMESTER III

XV.   MAJOR COURSE- MJ 4:

हिंदी कथा-साहित्य : कहानी एवं उपन्यास

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. कथा-साहित्य के माध्यम से विद्यार्थी सम्पूर्ण मानव जगत की मानवीयता से परिचित होंगे ।

2. कथा-साहित्य के माध्यम से विद्यार्थी, जीवन की वास्तविकता से परिचित होंगे ।

3. कथा-साहित्य के माध्यम से विद्यार्थियों में रचनात्मक विचार और सृजन धर्म का विकास होगा ।

4. कथा-साहित्य के विभिन्न सन्दर्भों और घटनाओं से विद्यार्थियों को जीवन में गतिशील रहने की प्रेरणा मिलेगी ।

5. कथा-साहित्य से विद्यार्थियों को गंभीर भावबोध को समझाने का अवसर मिलेगा ।

प्रस्तावित संरचना

इकाई 1 –

इकाई 2 –   : –

1. कितने पाकिस्तान – कमलेश्वर

2. मानस का हंस – अमृतलाल नागर

इकाई 3 –

1. दुनिया का अनमोल रतन – प्रेमचन्द

2. परिन्दे – निर्मल वर्मा

3. उसने कहा था – चन्द्रधर शर्मा गुलेरी

4. कोसी का घटवार – शेखर जोशी

5. चीफ की दावत – भीष्म सहनी

6. तीसरी कसम – फणीश्वरनाथ रेणु

7. शरणदाता – अज्ञेय

8. दिल्ली में एक मौत – कमलेश्वर

अनुशंसित पुस्तकें –:

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1.   कथा कौमुदी (सं.)   – .   , .   , डॉ.
नियति कल्प

2.   हिंदी कहानी का इतिहास   – .

3.   हिंदी कहानी का इतिहास   – .

4.   हिंदी कहानी के सौ वर्ष   – .

5.   हिंदी गद्य विन्यास और विकास –

6.   उपन्यास का शिल्प   – .

7.   हिंदी उपन्यास की विकास यात्रा   – .

8.   उपन्यास का यथार्थ और रचनात्मक भाषा   – .

9.   आचार्य हजारी प्रसाद द्विवेदी के उपन्यासों में नारी – .

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XVI.   MAJOR COURSE- MJ 5:
हिंदी नाट्य साहित्य एवं अन्य विधाएँ

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) 60 Hours

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. साहित्य की विस्तृत नवीन गद्य विधाओं से विद्यार्थी परिचित होंगे ।

2. गद्य साहित्य के माध्यम से युगीन राजनीतिक, सामाजिक, सांस्कृतिक एवं आर्थिक परिवेशों का ज्ञान प्राप्त हो सकेगा ।

3. विद्यार्थी में संवाद–कला / वक्तृत्व–कला का विकास होगा ।

4. नाट्य मंचन के माध्यम से विद्यार्थियों में अभिनय-कला का विकास होगा ।

5. शिक्षण में नाट्य कार्यशाला की अनिवार्यता सुनिश्चित करके भाषा/ अभिव्यक्ति–कौशल और पटकथा लेखन के ज्ञान का विकास होगा ।

6. निबंध साहित्य के अध्ययन से विद्यार्थियों में तार्किक दृष्टि का विकास होगा एवं विद्यार्थी विभिन्न निबंधकारों के विचारों से परिचित होंगे ।

प्रस्तावित संरचना

इकाई – 1 निर्धारित नाटक

1. स्कन्दगुप्त – जयशंकर प्रसाद

2. भारत दुर्दशा – भारतेंदु हरिश्चंद्र

इकाई –2   निर्धारित एकांकी

1. स्ट्राइक – भुवनेश्वर

2. माँ –विष्णु प्रभाकर

3. दीपदान – डॉ. रामकुमार वर्मा

4. एक बेचैन आवाज – सिद्धनाथ कुमार

इकाई – 3 निर्धारित निबंध

1. नाखून क्यों बढ़ते हैं ?   – हजारीप्रसाद द्विवेदी

2. सच्ची वीरता – सरदार पूर्ण सिंह

3. गेहूँ और गुलाब – रामवृक्ष बेनीपुरी

4. संस्कृति और सौंदर्य – नामवर सिंह

अनुशंसित पुस्तकें :-

1.   निबंध सौरभ – (सं.)   – डॉ. हीरानंदन प्रसाद, डॉ. सुनीता कुमारी गुप्ता, डॉ. जितेन्द्र कुमार सिंह

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2.   एकांकी कुंज –(सं.)   – डॉ. चन्द्रिका ठाकुर, डॉ. नियति कल्प, डॉ. कुमुद कला मेहता

3.   हिंदी नाटक : उद्भव और विकास   –

4.   प्रसाद और उनके नाटक   – .

5.   हिंदी नाटक के सौ वर्ष   –   (.)

6.   भारत दुर्दशा : संवेदना और शिल्प   – .

7.   प्रसाद के नाटक   – .

8.   भारत दुर्दशा का नया मूल्यांकन   – .
                                                        (.)

9.   हिंदी नाटक : कल और आज   –

10.   चिंतामणि –

11.   साहित्यिक निबंध   –

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XVII. SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

A Common Syllabus for FYUGP   (Credits: Theory-03)
45 Hours

Instruction to Question Setter for
End Semester Examination (ESE):
*There will be **objective type test** consisting of **Seventy-five questions of 1 mark each**. Students are required to mark their answer on **OMR Sheet** provided by the University.*

<u>Course Objectives:</u>
The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

C. INTRODUCTION TO COMPUTER SYSTEM
1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU)   **(3 Lecture)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer
             (4 Lecture)

3. Operating system: What is an Operating System, Operating System Examples, Functions of Operating System(Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting
             (6 Hours)

4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages
       (4 Hours)

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails.
             (6 Hours)

D. MICROSOFT OFFICE 2016 AND LATEST VERSIONS
6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents   **(7 Hours)**

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation,

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slide show, Master Slides, Creating photo album, Rehearse timing and record narration
                    (5 Hours)

9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning
                    (4 Hours)

Reference Books

19.   Nishit Mathur, Fundamentals of Computer, APH publishing corporation (2010)
20.   Neeraj Singh, Computer Fundamentals (Basic Computer), T Balaji, (2021)
21.   Joan Preppernau, Microsoft Power Point 2016 step by step, Microsoft press (2015)
22.   Douglas E Corner, The Internet Book 4th Edition, prentice –Hall (2009)
23.   Steven Welkler, Office 2016 for beginners, Create Space Independent Publishing Platform (2016)
24.   Wallace Wang, Microsoft Office 2019, Wiley (January 2018)
25.   Noble Powell, Windows 11 User Guide For Beginners and Seniors, ASIN, (October 2021)

SEMESTER IV

XVIII. MAJOR COURSE- MJ 6:
हिंदी भाषा और भाषा-विज्ञान

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)60 Hours

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा :

1. विद्यार्थियों को भाषा के स्वरूप और महत्त्व का ज्ञान प्राप्त होगा ।
2. विद्यार्थी भारत को एक सूत्र में बाँधने वाली हिंदी भाषा की विविध बोलियों से परिचित हो सकेंगे ।
3. विद्यार्थियों को हिंदी भाषा की शारीरिक इकाइयों दृश्य ,ध्वनि ,शब्द ,वाक्य आदि का ज्ञान प्राप्त हो सकेगा ।
4. हिंदी के अर्थ – विकास की जानकारी प्राप्त हो सकेगी ।

प्रस्तावित संरचना

इकाई 01 भाषा की परिभाषा, भाषा की विशेषताएँ, भाषा के अंग, भाषा और बोली में अंतर, भषाओं का वर्गिकरण,

भाषा अध्ययन की दिशाएँ ।

इकाई 02 भाषा विज्ञान की शखाएँ, ध्वनि परिवर्तन, अर्थ परिवर्तन पद और वाक्य, व्याकरणिक कोटियाँ ।

अनुशंसित पुस्तकें –:

1.   भाषा विज्ञान   – .
2.   भाषा विज्ञान की भूमिका   –
3.   हिंदी भाषा का उद्भव और विकास   – .

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4.   आधुनिक भाषा विज्ञान   – .

  5.   भाषा विज्ञान की रूपरेखा   – .

6.   सामान्य भाषा विज्ञान   – .

7.   ध्वनि परिवर्तन की दिशाएँ   – .

8.   हिंदी शब्द समूह शब्द प्रयोग   – .

9.   भाषा विज्ञान एवं भाषा शास्त्र – .

10.   भाषा विज्ञान और हिंदी भाषा   – .   , डॉ.

जितेन्द्र वत्स

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XIX.   MAJOR COURSE- MJ 7:
हिंदी भाषा और नागरी लिपि

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)60 Hours

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. विद्यार्थियों को भाषा के स्वरूप और महत्त्व का ज्ञान प्राप्त होगा ।
2. विद्यार्थी भारत को एक सूत्र में बाँधने वाली हिंदी भाषा की विविध बोलियों से परिचित हो सकेंगे ।
3. विद्यार्थियों को हिंदी भाषा की शारीरिक इकाइयों दृश्य ,ध्वनि ,शब्द ,वाक्य आदि का ज्ञान प्राप्त हो सकेगा ।
4. हिंदी के अर्थ – विकास की जानकारी प्राप्त हो सकेगी ।
5. वैज्ञानिक और उपयोगी लिपि 'नागरी' का अपेक्षित ज्ञान प्राप्त होगा ।

प्रस्तावित संरचना

इकाई01 हिंदी भाषा का उद्भव और विकास, राष्ट्रभाषा हिंदी, राजभाषा हिंदी, विश्व भाषा हिंदी, राजभाषा और राष्ट्रभाषा में अंतर ।

इकाई 02 देवनागरी लिपि का उद्भव और विकास, देवनागरी लिपि की वैज्ञानिकता, देवनागरी लिपि की समस्याएं एवं समाधान ।

अनुशंसित पुस्तकें –:

1.   हिंदी भाषा का विकास   – .
2.   हिंदी भाषानुशासन – .
3.   हिंदी भाषा और देवनागरी लिपि   – .
4.   हिंदी विकास उद्भव और रूप – .
5.   हिंदी भाषा का विकास   – .
6.   हिंदी भाषा के विकसित ध्वनि वर्ण   – .
7.   भाषा और समाज   – .
8.   देवनागरी लिपि और राजभाषा हिंदी   – .
9.   हिंदी भाषा का विकास   –
10.   हिंदी भाषा और नागरी लिपि –

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XX.   MAJOR COURSE- MJ 8:
प्रयोजनमूलक हिंदी

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. प्रयोजनमूलक हिंदी की उपयोगी जानकारी प्राप्त कर छात्र रोजगार के सरकारी तथा गैर सरकारी क्षेत्रों के लिए हिंदी के प्रयोग में दीक्षित हो सकेंगे ।

2. हिंदी भाषा और उस के विविध प्रयोगों की जानकारी प्राप्त कर छात्र राजभाषा हिंदी के संवर्धन में महत्त्वपूर्ण भूमिका निभा सकेंगे ।

3. छात्रों में भाषा का मौखिक और लिखित कौशल संवर्धन हो सकेगा ।

प्रस्तावित संरचना

इकाई 01 प्रयोजनमूलक हिंदी की अवधारणा एवं संभावनाएँ, प्रयोजनमूलक हिंदी की विभिन्न दिशाएँ, प्रयोजनमूलक हिंदी की

प्रासंगिकता, प्रयोजनमूलक हिंदी की समस्याएँ एवं समाधान,   प्रयोजनमूलक हिंदी और साहित्यिक हिंदी में अंतर ।

इकाई 02 प्रशासनिक हिंदी, व्यावसायिक हिंदी, तकनीकी हिंदी, हिंदी की संवैधानिक स्थिति, जनसंचार माध्यमों की हिंदी ।

अनुशंसित पुस्तकें –:
प्रयोजनमूलक हिंदी – विनोद गोदरे

1.   प्रयोजनमूलक हिंदी –
2.   प्रयोजनमूलक हिंदी – .
3.   प्रयोजनमूलक हिंदी – .
4.   प्रयोजनमूलक हिंदी – .
5.   प्रयोजनमूलक हिंदी – .
6.   प्रयोजनमूलक कामकाजी हिंदी – .
7.   प्रयोजनमूलक हिंदी के विविध रूप   – .   /
8.   प्रयोजनमूलक हिंदी : विविध परिदृश्य   – .

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SEMESTER V

XXI.   MAJOR COURSE- MJ 9:
भारतीय एवं पाश्चात्य काव्यशास्त्र और हिंदी आलोचना

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. विद्यार्थी भारतीय काव्यशास्त्र की परम्परा से परिचित हो सकेंगे ।

2. काव्य के महत्त्वपूर्ण उपादानों से परिचित हो सकेंगे।

3. काव्यशास्त्र के विभिन्न सम्प्रदायों की जानकारी होने पर विद्यार्थियों में काव्य के पाठ को समझने की क्षमता विकिसित हो सकेगी

4. विद्यार्थी साहित्य सृजन के मूलाधार ,सृजन की केन्द्रीय चेतना और उसके विभिन्न प्रयोजनों को समझ सकेंगे ।

5. उनमें साहित्य सृजन की अभिरुचि पैदा हो सकेगी ।

6. विद्यार्थी कविता के मानकों को समझकर कविता का सही ढंग से विश्लेषण कर सकेंगे ।

7. विधार्थी पश्चिमी साहित्य चिंतन की परम्परा से परिचित हो सकेंगे ।

8. विद्यार्थियों में आलोचना दृष्टि विकसित होगी ।

9. वे भारतीय और पाश्चात्य आलोचना दृष्टियों का तुलनात्मक विवेचन कर सकेंगे ।

10. उन्हें आलोचना की नयी प्रणालियों का ज्ञान प्राप्त होगा ।

11. उनमें साहित्य को समझने की दृष्टि विकसित हो सकेगी ।

प्रस्तावित संरचना

इकाई 01 काव्य के लक्षण, काव्य हेतु, काव्य प्रयोजन, काव्य गुण, काव्य दोष, रस और उसके भेद,

अलंकार (, यमक, श्लेष, उपमा, रूपक, वक्रोक्ति, उत्प्रेक्षा, भ्रांतिमान)

इकाई –02

1. प्लेटो के काव्य सिद्धांत

2. अरस्तू (अनुकरण एवं विरेचन सिद्धांत)

3. लोंजाइनस (उदात्त सिद्धांत)

4. कॉलरिज (कल्पना सिद्धांत)

5. इलियट की अवधारणाएँ

इकाई 03– आलोचना : परिभाषा, स्वरुप और विशेषताएँ, आलोचना के प्रकार (सैद्धांतिक स्वच्छंदतावादी, मार्क्सवादी)

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अनुशंसित पुस्तकें –:

1.   भारतीय एवं पाश्चात्य काव्यशास्त्र   – .
2.   भारतीय एवं पाश्चात्य काव्यशास्त्र   – .
3.   साहित्य सहचर   –
4.   काव्य क तत्व   –
5.   काव्यशास्त्र   – .
6.   भारतीय एवं पाश्चात्य काव्यशास्त्र तथा हिंदी आलोचना   –
                              .
7.   पाश्चात्य काव्यशास्त्र   –
8.   पाश्चात्य साहित्य चिंतन   – .
9.   वस्तुनिष्ट काव्यशास्त्र – .
10.   भारतीय काव्यशास्त्र की भूमिका   – .

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XXII. MAJOR COURSE- MJ 10:
झारखंड के समकालीन साहित्यकार

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)60 Hours

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. विद्यार्थी झारखण्ड की कला संस्कृति से परिचित होंगे

2. झारखण्ड के हिंदी साहित्य के उद्भव एवं विकास से बारे में विद्यार्थी जानेगें ।

3. झारखण्ड के समकालीन लेखकों एवं साहित्यकारों के विद्यार्थी परिचित होंगे ।

4. विद्यार्थियों को ये पता चलेगा कि झारखण्ड के हिंदी साहित्य में और कौन – कौन से क्षेत्रीय भाषाएँ सम्मिलित हुए हैं ।

प्रस्तावित संरचना

इकाई 1 - जंगलतंत्रम् (उपन्यास) - डॉ. श्रवण कुमार गोस्वामी

इकाई 2 - सर्किट हाउस (उपन्यास)- डॉ. रतन प्रकाश

इकाई 3 - कहानी / नाटक/ व्यंग्य
      (क) रामलीला - राधाकृष्ण
      (ख) सृष्टि की साँझ - डॉ. सिद्धनाथ कुमार
      (ग) कर्म का लेख - डॉ. अशोक प्रियदर्शी

अनुशंसित पुस्तकें :

1. हिंदी कथा साहित्य और झारखंड   – सं. कुमार वीरेंद्र, पैसेफिक पब्लिकेशन, दिल्ली

2. हिंदी कथा साहित्य और झारखंड   - अनामिका प्रिया, क्राउन पब्लिकेशन, राँची

3. झारखंड इनसाइक्लोपीडिया   - सं. रणेंद्र एवं सुधीर पाल, वाणी प्रकाशन, दिल्ली

4. झारखंड समाज, संस्कृति और साहित्य – डॉ.विद्याभूषण, झारखण्ड झरोखा, राँची

5. इतिहास के मोड़ पर झारखंड - डॉ. विद्याभूषण, झारखण्ड झरोखा, राँची

6. अतीत के दर्पण में झारखंड   - डॉ. भुवनेश्वर अनुज, भुवन प्रकाशन, राँची

7. झारखंड परिदृश्य   - डॉ.सुनील कुमार सिंह, क्राउन पब्लिकेशन, राँची

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XXIII. MAJOR COURSE- MJ 11:
समकालीन स्त्री लेखन

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1.   समकालीन लेखिकाओं के बारे में विद्यार्थी अवगत होंगे ।

2.   समकालीन स्त्री लेखन के संदर्भ में उपन्यास इदन्नम्म को समझ सकेंगे ।

3.   समकालीन कहानी 'सिक्का बदल गया' के माध्यम से छात्र युग – परिवेश को समझ सकेंगे ।

4.   समकालीन कथा साहित्य से छात्र स्त्री – चेतना से अवगत होंगे ।

प्रस्तावित संरचना

इकाई 1 - उपन्यास –
   इदन्नमम् - मैत्रयी पुष्पा
इकाई 2 - उपन्यास –
   चितकोबरा - मृदुला गर्ग
इकाई 3 - कहानी –
सिक्का बदल गया है - कृष्णा सोबती
   अकेली - मन्नू भंडारी,
पगला गयी है भागवती - मैत्रेयी पुष्पा

अनुशंसित पुस्तकें :

1.   स्त्री पर्व - महाश्वेता देवी

2.   उपनिवेश में स्त्री- स्त्री उपेक्षिता (अनुवाद)   - प्रभा खेतान

3.   कृष्णा सोबती की प्रतिनिधि कहानियाँ

4.   मन्नू भंडारी की प्रतिनिधि कहानियाँ

5.   मैत्रेयी पुष्पा की प्रतिनिधि कहानियाँ

AK SINGH COLLEGE ,JAPLA, PALAMU

SEMESTER VI

XXIV. MAJOR COURSE- MJ 12:
यात्रावृतांत साहित्य एवं अन्य विधाएँ

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. 'यात्रा वृतांत साहित्य' से छात्र – छात्राएं भारतीय एवं वैश्विक भौगोलिक स्तिथि से परिचित होंगे ।

2. छात्र – छात्राएं प्रेमचंद के जीवन संघर्ष, एवं लेखनी से अवगत होंगे ।

3. 'यात्रा वृतांत साहित्य' से यात्रा वृतांत लेखन कौशल में वृद्धि होगी ।

4. विद्यार्थी तिब्बतीय, चीनी एवं कुछ अन्य संस्कृतियों से परिचित होंगे ।

5. छात्र – छात्राएं आत्मकथा, जीवनी एवं अन्य विधाओं को लिखने के लिए प्रेरित होंगे ।

प्रस्तावित संरचना

इकाई -1. मेरी तिब्बत यात्रा, चीन में क्या देखा, रूस में पच्चीस मास,
तिब्बत में सवा बरस, घुमक्कड़ शास्त्र, मेरी जीवन यात्रा,
राहुल यात्रावली - राहुल सांकृत्यायन ।

इकाई -2. प्रेमचंद के फटे जूते – हरिशंकरपरसाई
तुम कब जाओगे अतिथि - शरद जोशी
फायदे- ही- फायदे - डॉ. बालेन्दुशेखर तिवारी

इकाई -3. कलम का सिपाही – अमृतराय

अनुशंसित पुस्तकें :

1.   वांग्मय विमर्श   - विश्वनाथ प्रसाद मिश्र
2.   हिन्दी की नई विधाएँ   - डॉ. कैलाशचंद्र भाटिया
3.   साहित्यिक विधाएँ: पुनर्विचार - डॉ. हरिमोहन
4.   विधाओं का विन्यास   - अनंत विजय
5.   साहित्यिक विधाएँ - सैद्धांतिक पक्ष   – मधु धवन

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XXV. MAJOR COURSE- MJ 13:
भक्तिकालीन काव्य

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. विद्यार्थी भक्तिकाल के सामाजिक, सांस्कृतिक, राजनीतिक सन्दर्भ का ज्ञान प्राप्त कर सकेंगे ।
2. हिंदी साहित्य के प्रारंभिक और विकासात्मक स्वरुप से परिचित हो सकेंगे ।
3. हिंदी साहित्य के साहित्यकारों और उनकी रचनाओं के बारे में जान सकेंगे ।
4. हिंदी के भावगत, भाषागत और शैलीगत विकास से परिचित हो सकेंगे ।

प्रस्तावित संरचना

इकाई –01निर्गुण काव्य धारा के प्रमुख कवि - (कबीरदास, रैदासदास , जायसी)

इकाई –02 सगुण काव्यधारा के प्रमुख कवि – (, सूरदास, मीराबाई (

इकाई 03– तुलसीदास (रामचरितमानस-अयोध्याकांड)

सूरदास (भ्रमरगीत सार ,पद सं. - 1, 6, 8, 13 ,20, 23, 24, 25, 33, 34, 37, 42, 52, 57, 64)

अनुशंसित पुस्तकें –:

1. हिंदी साहित्य का इतिहास   – .
2. हिंदी साहित्य का इतिहास   – . .
3. गोस्वामी तुलसीदास – .
4. लोकवादी तुलसी   – .
5. रामचरित मानस   –
6. भ्रमरगीत सार   – .
7. मानस हृदय : अयोध्याकाण्ड   – .
8. भ्रमरगीत सार (टीका)   – .
9. सूर साहित्य   – .
10. सूरदास   – .

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XXVI. MAJOR COURSE- MJ 14:
अनुवाद विज्ञान

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)60 Hours

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. अनुवाद की प्रयोजनीयता और प्रक्रिया की समझ विकसित होगी ।
2. उनमें अच्छे अनुवादक बनने की इच्छा जागृत हो सकेगी ।

प्रस्तावित संरचना

इकाई –01 अनुवाद की अवधारणा, परिभाषा एवं स्वरूप, अनुवाद की प्रक्रिया, अनुवाद की प्रासंगिकता, अनुवाद की समस्याएँ एवं समाधान ।

इकाई –02 अच्छे अनुवादक के गुण, अनुवाद के प्रकार, रचनात्मक साहित्य का अनुवाद, तकनीकी अनुवाद ।

इकाई 03– अनुवाद चिंतन की परम्परा, आदर्श अनुवाद के अभिलक्षण, पारिभाषिक शब्दावली के अनुवाद की समस्याएँ ।

अनुशंसित पुस्तकें –:

1. अनुवाद विज्ञान – .
2. हिंदी अनुवाद सिद्धांत और प्रयोग – .
3. अनुवाद सिद्धांत की रूपरेखा – .
4. अनुवाद सिद्धांत और समस्या – .
5. अनुवाद प्रविधि – , डॉ. सत्यदेव मिश्र (सं)
6. अनुवाद सिद्धांत और प्रयोग – .
7. अनुवाद की विविध समस्याएँ – .
8. रोजगारभिमुख अनुवाद विज्ञान – .
9. अनुवाद कला – .
10. अनुवाद कला सिद्धांत और प्रयोग –
11. अनुवाद विज्ञान और संप्रेषण – .
12. अनुवाद की व्यावहारिक समस्याएँ – .

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XXVII.   MAJOR COURSE- MJ 15:
हिंदी पत्रकारिता एवं जनसंचार

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. विद्यार्थी कंप्यूटर पर देवनागरी लिपि में टाइप करना सीख सकेंगे ।
2. हिंदी में वेब पेज बनाना सीख सकेंगे ।
3. हिंदी में ई मेल पर सन्देश भेजना सीख सकेंगे ।
4. डेस्कटॉप पब्लिशिंग की जानकारी और अन्य फ्रंट की जानकारियाँ मिलेगी ।
5. विद्यार्थी ऑनलाइन पत्र पत्रिकाओं की जानकारी प्राप्त कर सकेंगे ।

प्रस्तावित संरचना

इकाई –01 हिंदी पत्रकारिता – परिभाषा, क्षेत्र, उद्देश्य, हिंदी पत्रकारिता का उद्भव और विकास (भारतेंदु युग से अद्यतन) ।

इकाई –02 जनसंचार – परिभाषा, स्वरूप एवं उद्देश्य, श्रव्य माध्यम, दृश्य माध्यम, कम्प्यूटर एवं इंटरनेट का सामान्य परिचय एवं
उपयोगिता ।

अनुशंसित पुस्तकें –:

1.   भारतेंदु युगीन हिंदी पत्रकारिता   – .
2.   भारतीय स्वतंत्रता और हिंदी पत्रकारिता – .
3.   हिंदी पत्रकारिता   – .
4.   बाखबर बेखबर संदर्भ : झारखण्ड की पत्रकारिता   – .
5.   संपूर्ण पत्रकारिता   – .
6.   हिंदी पत्रकारिता का बृहद् इतिहास   – , अर्जुन तिवारी
7.   आधुनिक पत्रकारिता   – .
8.   जनसंचार और हिंदी पत्रकारिता   – .
9.   हिंदी पत्रकारिता संवाद और विमर्श   –
10.   हिंदी पत्रकारिता एवं जनसंचार   – .
                ‘ ’
11.   हिंदी पत्रकारिता का इतिहास   –
12.   पत्रकारिता के नए आयाम   – . .
13.   पत्रकारिता : परिवेश और प्रवृत्तियाँ   –
14.   पत्रकारिता के विविध आयाम   – .
15.   व्यावहारिक पत्रकारिता   –

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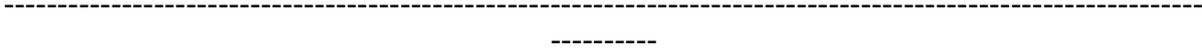
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SEMESTER VII

XXVIII.   MAJOR COURSE- MJ 16:
साहित्यिक विमर्श

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)60 Hours

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. साहित्यिक विमर्श के माध्यम से विद्यार्थी समाज के वंचित वर्गों का परिचय प्राप्त कर सकेंगे ।
2. विमर्श ही वह बिन्दु है जिसके माध्यम से विद्यार्थी किसी विषय के बारे में बारीकी से अध्ययन कर सकेंगे ।
3. साहित्यिक विमर्श के माध्यम से विद्यार्थी समाज में हाशिये पर से मुख्य धारा की ओर मुड़ने की परिकल्पना को व्यावहारिकता के साथ जोड़ सकेंगे ।

प्रस्तावित संरचना

इकाई –01हिंदी में अस्मिता केन्द्रित विमर्श का स्वरूप, अस्मिता केन्द्रित विमर्श की अनिवार्यता, हिंदी साहित्य में नारी विमर्श, हिंदी में दलित विमर्श, हिंदी में जनजातीय विमर्श, बाल विमर्श, वृद्ध विमर्श विकलांग विमर्श और किन्नर विमर्श ।

इकाई –02 अस्मिता केन्द्रित निर्धारित आत्मकथाएँ : 1. एक कहानी यह भी – मन्नू भंडारी   2. मुर्दहिया (तुलसीराम)

अनुशंसित पुस्तकें –:

1.   स्त्री मुक्ति-संघर्ष और इतिहास   –
2.   स्त्री विमर्श की उत्तर गाथा   – .
3.   आदिवासी अस्मिता का संकट   –
4.   विमर्श के प्रसंग   – .
5.   दलित साहित्य-अनुभव, संघर्ष एवं यथार्थ   – .

6.   स्त्री विमर्श का कालजयी इतिहास   –   (.)
7.   आदिवासी विमर्श और हिंदी साहित्य   – .
8.   विमर्श के विविध आयाम   – .
9.   स्त्री उपेक्षिता (The Second Sex- Simone de Beauvoir)   – प्रभा खेतान
10.   स्त्री विमर्श का यथार्थ   –

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11.　　　　　　　　　　　　　भविष्य का स्त्री विमर्श　　　　–

12.　　　　　　　　　　अस्मितामूलक विमर्श और हिंदी साहित्य　–　.　　　　　, डॉ.
अनिरुद्ध कुमार 'सुधांशु'

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XXIX. MAJOR COURSE- MJ 17:
प्राचीन एवं मध्यकालीन काव्य

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. प्राचीन एवं मध्यकालीन साहित्य से विद्यार्थी अवगत होंगे ।

2. प्राचीन एवं मध्यकालीन साहित्य की विभिन्न परिस्थितियों जैसे सामाजिक, राजनीतिक, धार्मिक, सांस्कृतिक एवं साहित्यिक जानकारी प्राप्त कर सकेंगे ।

3. प्राचीन एवं मध्यकालीन रचनाओं व काव्यगत विशेषताओं से विद्यार्थी अवगत होंगे ।

4. मध्यकाल के विभिन्न शाखाओं से विद्यार्थी परिचित होंगे ।

प्रस्तावित संरचना

इकाई 1 - पृथ्वीराज रासो (शशिवृता विवाह/ समय) चंदवरदाई अथवा

विद्यापति पदावली (संपादक रामकुंवर राय) प्रकाशक संजय बुक सेंटर, वाराणसी ।

भक्ति विषयक पद- पद संख्या 01 से 05 तक ।

श्रृंगार विषयक पद- पद संख्या- 13 से 21 तक ।

इकाई 2 - सूरदास - भ्रमरगीत सार - संपादक रामचंद्र शुक्ल 50 पद ।

पद संख्या - 1, 3, 6, 8, 10, 13, 14, 20, 25, 33, 34, 39, 41, 45, 50, 52, 62, 64, 72, 76, 85, 89, 92, 95, 97, 100, 101, 108, 109, 125, 130, 136, 140, 141, 143, 146, 155, 157, 167, 168, 171, 174, 190, 196, 199, 316, 338, 346, 360

इकाई 3 – कबीर (संपादक आचार्य हजारी प्रसाद द्विवेदी, राजकमल   प्रकाशन, नई दिल्ली)

परिशिष्ट - 02 से पद संख्या - 160 से 180 तक ।

इकाई 4 - जायसी ग्रंथावली (संपादक आचार्य रामचंद्र शुक्ल, नागरी प्रचारिणी सभा, काशी)

नागमती वियोग खंड - पद संख्या 01 से 19 तक ।

इकाई 5 - तुलसीदास - रामचरितमानस - सुंदरकांड अथवा उत्तरकांड, गीता प्रेस गोरखपुर ।

अनुशंसित पुस्तकें :

1.   कबीर -   आ. हजारी प्रसाद द्विवेदी - राजकमल प्रकाशन, दिल्ली

2.   कबीर साहित्य की परख -   आ. परशुराम चतुर्वेदी -विश्विद्यालय प्रकाशन, वाराणसी

3.   कबीर -   सं. डॉ. विजयेंद्र स्नातक - राधाकृष्ण प्रकाशन, दिल्ली

4.   कबीर: एक नई दृष्टि -   डॉ. रघुवंश - लोकभारती, इलाहाबाद

5.   कबीर ग्रंथावली(सटीक) -   डॉ. रामकिशोर शर्मा - लोकभारती, इलाहाबाद

6.   सूरदास -   डॉ.   ब्रजेश्वर वर्मा - लोकभारती, इलाहाबाद

7.   सूरदास -   आ. रामचंद्रशुक्ल -   नागरी प्रचारणीसभा, काशी

8.   सूरसाहित्य -   आ. हजारीप्रसाद द्विवेदी - राजकमल प्रकाशन, दिल्ली

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9. भक्ति आंदोलन और सूरदास का काव्य -डॉ. मैनेजरपांडे -   वाणी प्रकाशन, नई दिल्ली

10. तुलसीदास -   आ. रामचंद्र शुक्ल - नागरी प्रचारणी सभा, काशी

11. तुलसीः दर्शन मीमांसा -   डॉ. उदयभानु सिंह - विश्वविद्यालय प्रकाशन, लखनऊ

12. लोकवादी तुलसी -   डॉ. विश्वनाथ त्रिपाठी - राधाकृष्ण प्रकाशन, दिल्ली

13. तुलसीदास -   डॉ. मताप्रसाद गुस - हिन्दी परिषद, प्रयाग

14. तुलसीदास और उनका युग -   डॉ. राजपति दीक्षित - ज्ञान मंडल, वाराणसी

15. तुलसी के भक्त्यात्मक गीत -   डॉ. बच्चन देव कुमार - क्लासिकल पब्लिकेशन, दिल्ली

16. गोसाई तुलसीदास -   आ. विश्वनाथ प्रसाद -मिश्र   वाणी वितान, वाराणसी

17. गोस्वामी तुलसीदास -   आ. शिवनन्दन सहाय - बिहार राष्ट्रभाषा परिषद, पटना

18. तुलसी साहित्य में माया -   डॉ. नंदकिशोर तिवारी - हिन्दी साहित्य, सम्मेलन, सासाराम

19. जायसीः एक नई दृष्टि -   डॉ. रघुवंश - लोकभारती, इलाहाबाद

20. जायसी -   डॉ. विजयदेव नारायण साही - हिंदुस्तानी एकेडमी, इलाहाबाद

21. मलिक मुहम्मद जायसी और उनका काव्य -   डॉ. शिवसहाय पाठक - साहित्य भवन, इलाहाबाद

22. जायसी ग्रंथावली (भूमिका) -   आ. रामचंद्र शुक्ल - नागरी प्रचारणीसभा, कशी

23. सूफीमतः साधना और साहित्य -   डॉ. रामपूजन तिवारी - ज्ञानमंडल, वाराणसी

24. मानस दर्शन -   डॉ. श्रीकृष्णलाल - आंनद पुस्तकभवन, काशी

25. रामचरितमानस में अलंकार योजना - डॉ. वचनदेव कुमार - हिन्दी साहित्य संसार, दिल्ली

26. मानस सूक्तिकोश -   डॉ. वचनदेव कुमार - क्लासिकल पब्लिकेशन, दिल्ली

27. मानस हृदयः अयोध्याकांड -   डॉ. जंगबहादुर पांडे - सुबोधग्रंथ माला, राँची

28. मानस मंजरी -   मानस मराल डॉ. जयेंद्रानंद - भारती प्रकाशन, आरा

29. रामकथाः उत्पत्ति और विकास -   डॉ. फ़ादर कामिल बुल्के - हिन्दी परिषद, प्रयाग

30. विद्यापति पदावली   -   रामवृक्ष बेनीपुरी   –   पुस्तक भंडार, पटना

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31. विद्यापति पदावली   -   डॉ. नरेन्द्र झा   - अनुपम, पटना

32. विद्यापति अनुशीलन   -   डॉ .वीरेंद्र श्रीवास्तव(सं.)   – भारती भवन, पटना

33. पृथ्वीराज रासो की भाषा   –   डॉ. नामवर सिंह   –   राज कमल प्रकाशन, दिल्ली

34. भक्ति काव्ययात्रा   –   रामस्वरूप चतुर्वेदी   – लोकभारती, इलाहाबाद

35. रामचरित मानस में रस योजना   – डॉ. जंगबहादुर पांडे   - क्लासिकल पब्लिकेशन हा., दिल्ली

36. शशिवृता विवाह : सौंदर्य और समीक्षा - डॉ. जंगबहादुर पांडे   – राजकमल प्रकाशन, पटना

37. सूर काव्य में लोक साहित्य   – डॉ. माधुरी रजक   – सत्यम पब्लिकेशन हा., दिल्ली

38. उत्तर काण्ड : सौंदर्य और समीक्षा –   डॉ. जंगबहादुर पांडे   - लोकभारती, इलाहाबाद

39. सुन्दरकाण्ड : सौंदर्य और समीक्षा -   डॉ. जंगबहादुर पांडे   - लोकभारती, इलाहाबाद

40. सुंदर कांड की सुंदरता   – डॉ. रामकिंकर उपाध्याय   – रामायण ट्रस्ट, अयोध्या

41. उत्तर काण्ड : एक समीक्षा   – डॉ. अरुणकुमार 'सज्जन'   – सारस्वत प्रकाशन, मुजफ्फरपुर

42. चंदवरदाई कृत पृथ्वीराज रासो   – सं. दिलीप राम   – नोवेलटी एंड कंपनी, पटना

43. मानस हृदय : अयोध्या कांड   - डॉ. बद्रीनाथ तिवारी   – जयभारती प्रकाशन, इलाहाबाद

44. तुलसी काव्य का सांस्कृतिक अध्ययन – डॉ. जितेंद्रनाथ पांडे   – अल्का प्रकाशन, कानपुर

45. तुलसी कथा रघुनाथ की, रघुनाथ गाथा – डॉ.सभापति मिश्र   -   जय भारती प्रकाशन, इलाहाबाद

46. रामकथा मंदाकिनी   – प्रो. योगेन्द्र चंद्र दुबे - निर्मल पब्लिकेशन, दिल्ली

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XXX. MAJOR COURSE- MJ 18:
रीतिकालीन काव्य

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. रीतिकालीन काव्य एवं उसके स्वरुप ज्ञान प्राप्त कर पाएंगें ।

2. रीतिकाल के प्रमुख कवियों तथा उनके काव्य एवं काव्यगत विशेषताओं से अवगत होंगें।

3. केशवदास, बिहारीलाल, भूषण, मतिराम एवं घनानंद के काव्य का विस्तृत परिचय प्राप्त हो सकेगा ।

4. रीतिबद्ध रीतिसिद्ध एवं रीतिमुक्त काव्यधाराओं को समझ सकेंगें।

5. रीतिकालीन काव्य की भाषा का ज्ञान प्राप्त करेंगे ।

प्रस्तावित संरचना

इकाई – 1. केशवदास – रामचन्द्रिका छंद संख्या 1-14 तक, स. नलिन

विलोचन शर्मा, केसरी कुमार, मोतीलाल, बनारसीदास, दिल्ली।

इकाई – 2. बिहारीलाल – स्वर्ण मंजूषा, मंगलाचरण, श्रृंगार और प्रकृति चित्रण, सं. नलिन विलोचन शर्मा,

केसरी कुमार, मोतीलाल बनारसीदास, दिल्ली।

इकाई– 3. भूषण – छंद संख्या 1, 5, 7, 16, 17 और 20-स्वर्ण मंजूषा ।

इकाई – 4. मतिराम – स्वर्ण मंजूषा – सम्पूर्ण।

इकाई – 5. घनानंद – स्वर्ण मंजूषा – सम्पूर्ण।

अनुशंसित पुस्तकें –:

1.	d`sko vkS mudk l kfgR	MkW/fot;iky flg u`skuy ifCyf'kx gkml fnYyh
2.	d`sko dk vkpk Ro	MkW/fot;iky flg u`skuy ifCyf'kx gkml fnYyh
3.	d`sko dh dkO; dyk	MkW/fot;iky flg u`skuy ifCyf'kx gkml fnYyh
4.	d`skonkl	MkW/txnh'k xkS r l kfgR vkkneh] fnYyh
5.	d`sko dkSqh	ykyk Hkxoku nhu jkeukjk.k yky] bykgkckn
6.	d`skonkl	l@ MkW/fot;iky flg yksd Hkkjrh] bykgkckn
7.	fcgkjh l rl bZ¼ahouh&HkK'; ½ i@ ineflg 'kekZ pkni@ fotuk\S] mUkji\rk sk
8.	fcgkjh jRukdj	Jh txUukFkknkl jRukdj yksd Hkkjrh] bykgkckn
9.	fcgkjh fo'oukFkk iz'kn feJ l ta; cq l\jj]okjk kl h
10.	fcgkjh l rl bZjkec{kkl uhih	i@rd HkVk\;] iVuk
11.	fcgkjh Hkk'; ik\Ss j odhy flg vfHkKkk ipdk\ku]eu`Qjiq
12.	fcgkjh k/Zkrh	MkW/vksaikk\k jktikY , .M l tt]fnYyh
13.	fcgkjh dk u; k eSkW;kadu	MkW/cPpu flg yksd Hkkjrh] bykgkckn
14.	fcgkjh l kShk	MkW/fot;iky flg l ta; cq

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l&j] okjk.klh

15. fcgkjh ck¢/kuh Ykky Hkxoku ¼hu* l ¼ MKO cky &h¢k§kj frokjh
jkeukjk.k yky]

by kgkckn l a; cq l l&j]
okjk.klhA

16. fcgkjh vkS Äukun   MKO ijeyky xqr   ykslHkjrh]
by kgkckn

17. Äukun dk dkO   MKO jkeno 'kDy   ykslHkjrh]
by kgkckn

18. Hkkvk xafkkoyh   vkO fo'oukFkiz dn feJ
ykslHkjrh] by kgkckn

19. Hkkvk   jkeey ckSjkyksHkjrh] by kgkckn

20. egkdfo Hkkvk vkS mudk dkO)   MKO vo/kko dqekj flag
fo'ofo|ky; izdk'ku] fnYyh

21. f'kok ckouh ¼Vhd½ ¼is'k'ka§dj.k.kk fl¨gk   uoHkjr izdk'ku] iVuk

22. jhfrdkO) dh Hkfedk   MKO uxsh h zluky ifCyf'kagkml]
fnYyh

23. jhfrdkO) dh iBBdk   MKO jkeknu 'kekZ   izrd
izdk'ku] fnYyh

24. fganh dsjhrfxafkkadk dkO)'kkL=h; foospu MKOjkeukFk egrk
uskuy ifCyf'kagkml] fnYyh

25. efrjke xafkkoyh   iz0d".k fcgkjh feJ xxk izrd
ekyk] y[kuÅ

26. no vkS fcgkjh   iz0d".k fcgkjh feJ xxk izrd
ekyk] y[kuÅ

27. fganh uojRu   feJca/kq   xxk izrd ekyk]
y[kuÅ

28. fcgkjh vkS no   ykyk Hkxoku nhu   xxk izrd
ekyk] y[kuÅ

XXXI. MAJOR COURSE- MJ 19:
भारतीय साहित्य एवं संस्कृत साहित्य

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. भारतीय साहित्य के स्वरुप एवं उसकी विशेषताओं से विद्यार्थी परिचित होंगे l
2. उर्दू साहित्य के संक्षिप्त इतिहास को आसानी से समझ सकेंगे l
3. बांग्ला साहित्य के संक्षिप्त इतिहास से विद्यार्थी अवगत होंगे l
4. वैदिक और पौराणिक साहित्य को विद्यार्थी समझ सकेंगे l
5. संस्कृत नाटक के उद्भव और विकास को समझने में विद्यार्थियों को सरलता होगी l
6. संस्कृत महाकाव्य के विकास से विद्यार्थी अवगत होंगे l

प्रस्तावित संरचना

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इकाई–1.भारतीय साहित्य की अवधारणा, भारतीय साहित्य की प्रमुख विशेषताएँ, भारतीय साहित्यः राष्ट्रीय एकता का प्रतीक

इकाई – 2. उर्दू साहित्य : आरंभ और विकास, बांग्ला साहित्य : आरंभ और विकास ।

इकाई – 3.संस्कृत साहित्य का इतिहास – वैदिक और पौराणिक साहित्य, उपजीव्य महाकाव्य –रामायण और महाभारत ।

इकाई – 4. संस्कृत नाटक : उद्भव और विकास, गीतिकाव्य : उद्भव और विकास, संस्कृत महाकाव्य : उद्भव और

     विकास, आख्यान साहित्य : उद्भव और विकास ।

इकाई–5.पूर्वमेघ (कालिदास)1-15 श्लोक, सामान्य परिचय, श्रीमद्भगवद्गीता–(वेदव्यास), अष्टादश अध्याय, सामान्य परिचय।

अनुशंसित पुस्तकें :

1. laadr laafgR dk bfrgkl]   vkOcyno mik/;k 'kkjnk efnj] dk'kh
2. laadr lqfvo lehkkk fo|kkhou] okjk klh   vkOcyno mik/;k pkŚEck
3. laadr laafgR dk bfrgkl   MkOvopuno delkj ,oa
4. MkWl xcgknjq ik.Ms   nskuy ifYf'kagkml] fnYyh
5. laadr laafgR dh: ij{kk fudsu] dkuiq   ikOpuhzkjkj ik.Ms laafgR
6. laadr laafgR dk bfrgkl   vkOokpLfr xkŚyk pkŚEck fo|kkhou] okjk klh
7. ofnd laafgR dk lekyk pukRed bfrgkl   MkOjkefoyklk pkŚjhehkeh yky cukjhl mnkl iVuk
8. laadr laafgR dk lekyk pukRed bfrgkl   MkOjkefoyklk pkŚjh ehkeh yky cukjhl mnkl iVuk
9. laadr dkO 'kkL= dk bfrgkl 'kkL=h   ihO chO dk.ksvuqoknd bUhpaz ehkeh yky cukjhl mnkl iVuk
10. lfnr lr'krh   MkOfo'oEhkj ukFk ik.Ms   HkO laadfr laFkkuykgjnxk
11. ipk.k&ipj'kyu   ihO fxfjjk/kj 'kekZ prqodh fcgkj jk'VHkk'kk ifj"kn] iVuk
12. "kMh'kku&jgL; jgL;   ihO jxaukFk ikBd   fcgkj jk'VHkk'kk ifj"kn] iVuk
13. ofnd laafgR dh: ij{kk   MkOjfld fcgkjh tkskh t; fdk'ku i0[kk.Ms yoky laafgR fudsu] dkuiq
14. laadr laafgR dk bfrgkl   vkOnsh'kdj feJ] MkOjkt fd'kks fla iodk'ku dsvhz y[kuÅ
15. laadr : ikdadh dfKk;j   MkOjke ipdk'k ikennj   Hkkjrh Hkou] iVuk
16. mnzvkfgR dk vkyko pukRed bfrgkl   i@ ,gr'kke gqSku ykdHkkjrh ipdk'ku] y[kgkckn
17. mnzHkk"kk vkS laafgR   MkOfoQjkd xkg[kikjhefkm0 iznsk fgUnh laLFky y[kuÅ
18. chI oha'krkCnh esmnzvkfgR   laO MkOxkspun ukjxa laafgR vdneh] fnYyh
19. Hkkjrh laafgR dh Hkfedk   MkOjkefoyklk 'kekZ jktdey ipdk'ku] fnYyh

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20.   Hkkjrh; lkfgR; dsbfrgkl dh leL;k,¡ MkW jkefoykl 'kekZ jktdey idk'ku] fnYyh

21.   Hkkjrh; lkfgR; dk lekfdr bfrgkl   MkW uxsUnz ukuky ifCyf'kaxgml] fnYyh

22.   caxky lkfgR; dk lkfk[kr bfrgkl   MkW R;kanz fgUnh lefr] y[kuÅ

23.   iŒŒ;fÄ %,d ipqeY;kadu   opun deqNfoukO feJ vueq idk'ku] iVuk

24.   eŒÄuŒŒ%,d vuf'pau   MkW jru lfyns   ukxjh idk'ku] iVuk&4

25.   eŒÄuŒ   MkW oklqns 'kj.k vxzoky jktdey idk'ku] iVuk

26.   Jhen Hkxonxhrk %l ahouh Hkk";   Lokeh jkel dqk nkl xhrk izsl] xks[kiqj

27.   Jhen Hkxoxhrk jgL;   cky xakxk/kj fryd   ykQ fryd efanj idk

28.   mnZ vkfgR; dk bfrgkl   MkW l Hkkifr feJ   t; Hkkjrh idk'ku] bykgkckn

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SEMESTER VIII

XXXII.   MAJOR COURSE- MJ 20:
अनुवाद विज्ञान

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. 'अनुवाद' शब्द की व्युत्पत्ति कैसे हुई, समझ सकेंगे ।

2. अनुवाद की परिभाषा से छात्र परिचित हो सकेंगे।

3. छात्र अनुवाद के तात्पर्य और महत्त्व को बता सकेंगे।

4. भाषा विज्ञान में अनुवाद की भूमिका, अनुवाद के प्रकार और अनुवाद के अच्छे गुणों से परिचित हो सकेंगे।

5. विद्यार्थी अनुवाद ककी समस्या–समाधान और उसकी परिभाषिक शब्दावली से परिचित हो सकेंगे ।

प्रस्तावित संरचना

इकाई– 1. अनुवाद की अवधारणा, परिभाषा एवं स्वरूप, अनुवाद की प्रक्रिया, अनुवाद क्या है ? शिल्प, कला या विज्ञान ।

इकाई – 2. भाषा विज्ञान में अनुवाद की भूमिका, अनुवाद की उपादेयता / प्रासंगिकता।

इकाई – 3. अच्छे अनुवादक के गुण, अनुवाद के प्रकार, रचनात्मक साहित्य का अनुवाद, तकनीकी अनुवाद ।

इकाई – 4. अनुवाद की समस्याएँ एवं समाधान, पारिभाषिक शब्दावली के अनुवाद की समस्याएँ, अनुवाद और भाषांतरण।

इकाई – 5. आदर्श अनुवाद के अभिलक्षण, अनुवाद चिंतन की परंपरा ।

अनुशंसित पुस्तकें –:

1.   अनुवादविज्ञान   - डॉ.भोलानाथतिवारी -   शब्दकार, दिल्ली-92

2.   अनुवाद की व्यावहारिक समस्याएँ   - डॉ.भोलानाथ तिवारी   – शब्दकार,दिल्ली-92

3.   अनुवादशास्त्र   - सं.डॉ.बालेंदुशेखर तिवारी   - समन्वय प्रकाशन, गाजियाबाद

4.   अनुवादविज्ञान   – सं.डॉ.बालेंदुशेखर तिवारी   – प्रकाशन संस्थान, दिल्ली

5.   रोजगाराभिमुख अनुवाद विज्ञान   - डॉ.सुरेशमहेश्वरी   - मितलएण्डसंस, दिल्ली

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6.   अनुवादकला   – डॉ.विश्वनाथ अय्यर   –
   प्रभात प्रकाशन, दिल्ली

7.   हिंदी अनुवाद सिद्धांत और प्रयोग   - डॉ.वासुदेवनंदन प्रसाद   –
   भारती भवन,पटना

8.   अनुवाद के सिद्धांत और प्रयोग   – डॉ.पी.के.बालासुब्रमनयम   –
   मद्रास क्रिशिचन कॉलेज चेन्नई

9.   अनुवाद कला सिद्धांत और प्रयोग   –कैलाशचंद्र भाटिया   – लोकभारती
   प्रकाशन, इलाहाबाद

10.   अनुवाद विज्ञान और संप्रेक्षण   - डॉ.हरिमोहन   - लोकभारती
    प्रकाशन,इलाहाबाद

11.   अंग्रेजी हिंदी अनुवाद   - डॉ. दिनेश्वर प्रसाद   -
    अनुपमप्रकाशन,पटना

12.   अनुवाद सिद्धांत और प्रयोग   - डॉ. जी.गोपीनाथन   – लोकभारती
    प्रकाशन, इलाहाबाद

13.   अनुवाद प्रविधि   –   प्रो.सूर्यप्रकाश   दीक्षित,
    डॉ.सत्यदेवमिश्र – हिंदी विभाग, लखनऊ वि.वि.

14.   अनुवाद की विविध समस्याएँ   – ओमप्रकाश गाबा   - मयूर   पेपर
    बैक्स, दिल्ली

15.   काव्यानुवादः सिद्धांत और समस्याएँ – नवीनचंद सहगल   –   हिंदी
    मा.का.नि. दिल्ली

16.   अनुवाद विज्ञानःस्वरूप एवं व्याप्ति   -डॉ.मुरलीधर शहा, डॉ.पीताम्बर सरोदे
    – अतुल प्रकाशन, कानपुर

17.   सूचना साहित्यः अनुवाद की चुनौतियाँ – डॉ .ओ.वासवन   जयभारती
    प्रकाशन, इलाहाबाद

18.   अनुवाद के सामयिक परिप्रेक्ष्य   –   सं.प्रो.दिलीप   सिंह,प्रो.ऋषभदेव
    शर्मा – दक्षिण भारत हिंदी प्रचार सभा, मद्रास

19.   अनुवाद काव्यानुवाद विशेषांक अंक -154 - सं. डॉ.पूरनचंद टंडन   –
    भारतीय अनुवाद परिषद,

XXXIII.   ADVANCE MAJOR COURSE- AMJ 1:
हिंदी साहित्य का आदिकाल एवं मध्यकाल

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. हिंदी साहित्य के आदिकाल एवं मध्यकाल (भक्तिकाल, रीतिकाल) के उद्भव एवं विकास की पृष्ठभूमि से विद्यार्थी अवगत हो सकेंगे ।

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2. हिंदी साहित्य के आदिकाल एवं मध्यकाल के साहित्येतिहास की समस्या एवं विभिन्न परिस्थितियों से विद्यार्थी अवगत हो सकेंगे ।

3. मध्यकालीन रचनाओं एवं काव्यगत विशेषताओं को विद्यार्थी जान   सकेंगे ।

4. रीतिकालीन प्रमुख कवि एवं उनकी रचनाओं से विद्यार्थी परिचित हो सकेंगे ।

प्रस्तावित संरचना

इकाई १ – साहित्येतिहास का अर्थ और प्रयोजन, साहित्येतिहास के पुनर्लेखन की समस्याएँ, साहित्य का इतिहास दर्शन, हिंदी साहित्येतिहास लेखन की प्रमुख पद्धतियाँ, आदिकालीन रासो-साहित्य, जैन,सिद्ध और नाथ साहित्य ।

इकाई २ – भक्ति आन्दोलन के उअदय की पृष्ठभूमि, भक्तिकाल, हिंदी साहित्य का स्वर्णयुग, हिंदी संत कवि एवं उनकी रचनाएँ, परमुख सूफी कवि एवं उनकी रचनाएँ, कृष्णकाव्य एवं रामकाव्य परम्परा, अष्टछाप और उसके प्रमुख कवि, 'रामचरितमानस' का वैशिष्ट्य ।

इकाई ३ -रीतिकालीन प्रमुख कवि और उनकी रचनाएँ, रीतिकालीन काव्य की विविध धाराएँ, रीतिकालीन दरबारी संस्कृति और लक्षण ग्रंथों की परिपाटी, रीतिकालीन काव्य में लोकजीवन ।

अनुशंसित पुस्तकें –:

1. हिंदी साहित्य का इतिहास   - आचार्य रामचंद्र शुक्ल
2. हिंदी साहित्य का इतिहास - डॉ.नगेन्द्र (सम्पादक)
3. हिंदी साहित्य की भूमिका – डॉ. हजारीप्रसाद द्विवेदी
4. हिंदी साहित्य का आदिकाल   - डॉ. हजारीप्रसाद द्विवेदी
5. हिंदी साहित्य :उद्भव और विकास   – डॉ. हजारीप्रसाद द्विवेदी
6. साहित्य का इतिहास दर्शन   - डॉ. नलिन विलोचन शर्मा
7. हिंदी साहित्य का आलोचनात्मक इतिहास   - डॉ.रामकुमार वर्मा
8. हिंदी साहित्य का वैज्ञानिक इतिहास   - डॉ.गणपतिचन्द्र गुस
9. हिंदी साहित्य का समीक्षात्मक इतिहास   - डॉ.वासुदेव सिंह
10. रीतिकाव्य की भूमिका   - डॉ. नगेन्द्र
11. हिंदी साहित्य का रीतिकाल   - सुषमा अग्रवाल
12. सूरदास   - आ.रामचंद्र शुक्ल
13. तुलसीदास   - आ. रामचंद्र शुक्ल
14. मल्लिक मुहम्मद जायसी – आ. रामचंद्र शुक्ल
15. कबीर   - आ.हजारीप्रसाद द्विवेदी

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XXXIV.   ADVANCE MAJOR COURSE- AMJ 2:
आधुनिक काल

| Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100 | Pass Marks: Th (SIE + ESE) = 40 |

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. विद्यार्थियों को वर्तमान परिवेश से रूबरू होने का अवसर मिलेगा ।
2. आधुनिक काल में घटित साहित्यिक घटनाओं से विद्यार्थी परिचित होंगे ।
3. विद्यार्थियों को ये पता चलेगा की आधुनिक कल में किन –किन विधाओं का उदय हुआ ।
4. भारतेंदु युग, द्विवेदी युग, छायावाद, प्रगतिवाद, प्रयोगवाद, आदि के विभिन्न प्रवृतियों से विद्यार्थी परिचित होंगे ।
5. आधुनिक काल के गघ साहित्य के अतंगर्त विभिन्न विधाओं को विद्यार्थी जान सकेंगे ।
6. आधुनिक काल के विभिन्न रचनाकारों से विद्यार्थी परिचित होंगे ।

प्रस्तावित संरचना

इकाई 1 - आधुनिकता की अवधारणा और अर्थ, आधुनिक काल के उदय की पृष्ठभूमि, भारतीय नवजागरण और हिंदी ।

इकाई 2 - भारतेंदु हरिश्चंद्र और उनके मंडल का साहित्यिक योगदान, हिंदी नवजागरण और महावीर प्रसाद द्विवेदी, राष्ट्रीय काव्यधारा, भारतेंदु और द्विवेदी युगीन प्रमुख पत्र पत्रिकाएं ।

इकाई 3 - स्वच्छंदतावाद के उदय और विकास की पृष्ठभूमि, छायावाद, प्रगतिवाद और प्रयोगवाद का विकास, नई कविता और समकालीन कविता ।

इकाई 4 - विभिन्न गघ विधाओं का उद्भव और विकास नाटक, एकांकी, कहानी, उपन्यास, आलोचना, निबंध, रेखाचित्र, यात्रा वृतांत, आत्मकथा, संस्मरण, रिपोर्ताज, प्रवासी साहित्य ।

अनुशंसित पुस्तकें –:

1. आधुनिक हिंदी साहित्य का इतिहास   -   डॉ. बच्चन सिंह
2. हिंदी साहित्य का दूसरा इतिहास   -   डॉ. बच्चन सिंह
3. हिंदी साहित्य और संवेदना का विकास   - डॉ. रामस्वरूप चतुर्वेदी
4. आधुनिक हिंदी कविता   -   डॉ. विश्वनाथ प्रसाद तिवारी
5. आधुनिक हिंदी काव्य की प्रवृतियां   - डॉ. नामवर सिंह
6. कविता के नए प्रतिमान   - डॉ. नामवर सिंह
7. छायावाद   - डॉ. नामवर सिंह
8. आधुनिक हिंदी साहित्य   - लक्ष्मीसागर वार्ष्णेय
9. हिंदी का गघ साहित्य   - डॉ. रामचंद्र तिवारी
10. आधुनिक हिंदी गघ साहित्य का विकास और विक्षेषण - विजयमोहन सिंह

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XXXV.   ADVANCED MAJOR COURSE- AMJ 3:
हिंदी भाषा और उसका विकास

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. हिंदी भाषा के विकास को विद्यार्थी समझ सकेंगे ।
2. हिंदी के विभिन्न साहित्यिक भाषाओं के उद्भव और विकास को छात्र समझ पायेंगे ।
3. हिंदी भाषा – प्रयोग के विविध रूपों को समझने में आसानी होगी ।
4. साहित्यिक भाषा के रूप में खड़ी बोली हिंदी की विकास – यात्रा से परिचित होंगे ।

प्रस्तावित संरचना

इकाई- १ - हिंदी की ऐतिहासिक पृष्ठभूमि : प्राचीन भारतीय आर्य भाषाएँ, मध्यकालीन भारतीय आर्य भाषाएँ , आधुनिक भारतीय आर्य भाषाएँ ।

इकाई- २ - हिंदी का भौगोलिक विस्तार, हिंदी के विविध रूप, काव्य भाषा के रूप में अवधि और ब्रज का विकास, साहित्यिक हिंदी के रूप में खड़ी बोली का विकास, हिंदी के प्रचार-प्रसार में प्रमुख व्यक्तियों तथा संस्थाओं का योगदान ।

इकाई- ३ – हिंदी भाषा प्रयोग के विविध रूप-बोली, मानक भाषा, संपर्क भाषा, राजभाषा और राष्ट्रभाषा, संचार (सम्प्रेषण) माध्यम, रचनात्मक लेखन और हिंदी, देवनागरी का विकास और उसका मानकीकरण ।

अनुशंसित पुस्तकें –:

1.   भाषा विज्ञान की भूमिका   - आ. देवेन्द्र नाथ शर्मा
2.   भाषा विज्ञान   - डॉ. भोलानाथ तिवारी
3.   हिंदी भाषा का विकास   - डॉ. धीरेन्द्र वर्मा
4.   भाषा विज्ञान   - डॉ. कपिलदेव द्विवेदी
5.   भाषा विज्ञान की रुपरेखा   - डॉ. हरीश शर्मा
6.   हिंदी भाषा का विकास   - डॉ.गोपाल राय
7.   भाषा विज्ञान और हिंदी भाषा - डॉ. देवेन्द्र प्रसाद सिंह, डॉ.जीतेन्द्र वत्स
8.   हिंदी भाषा और देवनागरी लिपि   - डॉ. देवेन्द्र प्रसाद सिंह
9.   ध्वनि परिवर्तन की दिशाएँ   - डॉ. बलराम तिवारी
10.   सामान्य भाषा विज्ञान   - डॉ. बाबूराम सक्सेना

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COURSES OF STUDY FOR **MINOR ELECTIVE** FYUGP IN **"HINDI"**

MINOR COURSE-1A
  (SEM-I)

XXXVI.   MINOR COURSE- MN 1A:
परिचयात्मक हिंदी

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. उपन्यास के माध्यम से विद्यार्थी सम्पूर्ण मानव जगत की मानवीयता से परिचित होंगे ।

2. उपन्यास के माध्यम से विद्यार्थी, जीवन की वास्तविकता से परिचित होंगे ।

3. उपन्यास के माध्यम से विद्यार्थियों में रचनात्मक विचार और सृजन धर्म का विकास होगा ।

4. विद्यार्थियों को भाषा के स्वरूप और महत्त्व का ज्ञान प्राप्त होगा ।

5. विद्यार्थी भारत को एक सूत्र में बाँधने वाली हिंदी भाषा की विविध बोलियों से परिचित हो सकेंगे ।

6. विद्यार्थियों को हिंदी भाषा की शारीरिक इकाइयों दृश्य ,ध्वनि ,शब्द ,वाक्य आदि का ज्ञान प्राप्त हो सकेगा ।

प्रस्तावित संरचना

इकाई-01 –   –

इकाई-02- राजभाषा हिंदी, राष्ट्रभाषा हिंदी, भाषा और बोली, समाचार लेखन, सम्पादकीय लेखन ।

अनुशंसित पुस्तकें –:

1.   मन्नू भंडारी का रचनात्मक अवदान   – .
   2.   हिंदी उपन्यास का इतिहास   – .
   3.   उपन्यास की समकालीनता   –
4.   हिंदी भाषा और देवनागरी लिपि   – .
5.   राष्ट्रभाषा हिंदी: समस्याएँ और समाधान –

   6.   राष्ट्रभाषा और हिंदी – .
      7.   मीडिया माफिया   – .
   8.   जनसंचार और हिंदी पत्रकारिता   – .
      9.   हिंदी पत्रकारिता   –
10.   हिंदी पत्रकारिता : विविध आयाम   – .

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11.　　　　　　　　　　　　　हिंदी पत्रकारिता के विविध आयाम　　—　.　　　　　　　,
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MINOR COURSE-1B
(SEM-III)

XXXVII.   MINOR COURSE- MN 1B:
हिंदी साहित्य एवं मीडिया लेखन

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. उपन्यास के माध्यम से विद्यार्थी सम्पूर्ण मानव जगत की मानवीयता से परिचित होंगे ।

2. उपन्यास के माध्यम से विद्यार्थी, जीवन की वास्तविकता से परिचित होंगे ।

3. उपन्यास के माध्यम से विद्यार्थियों में रचनात्मक विचार और सृजन धर्म का विकास होगा ।

4. विद्यार्थी मीडिया के विविध रूपों के साथ-साथ उसकी उपयोगिता को जान सकेंगे ।

5. विद्यार्थी विज्ञापन के महत्त्व एवं उद्देश्य के साथ-साथ विज्ञापन लेखन की जानकारी प्राप्त कर सकेंगे ।

प्रस्तावित संरचना

इकाई –01 निर्मला – प्रेमचंद ।

इकाई –02 मीडिया के विविध रूप और उनकी उपयोगिता- प्रिंट मीडिया, इलेक्ट्रॉनिक मीडिया,

विज्ञापन की अवधारणा एवं स्वरुप,

, विज्ञापन लेखन ।

अनुशंसित पुस्तकें –:

1. प्रेमचंद और उनका युग   – .
2. प्रेमचंद के उपन्यासों का शिल्प विधान   –
3. विज्ञापन माध्यम एवं प्रचार   – .
4. हिंदी विज्ञापन संरचना और प्रभाव   – .
5. विज्ञापन बाजार और हिंदी   –
6. विज्ञापन की दुनिया –
7. हिंदी पत्रकारिता-कल और आज   – .
8. जनसंपर्क प्रचार एवं विज्ञापन – .
9. इलेक्ट्रॉनिक मीडिया – . . .
10. भारतीय मीडिया:अन्तरंग पहचान   – .
11. जनसंचार और हिंदी पत्रकारिता   – .

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MINOR COURSE-1C
(SEM-V)

XXXVIII.   MINOR COURSE- MN 1C:
हिंदी साहित्य एवं अनुवाद

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. विद्यार्थी साहित्य की विस्तृत नवीन गद्य विधाओं से परिचित होंगे ।

2. नाटक एवं एकांकी के माध्यम से विद्यार्थियों में संवाद-कला का विकास होगा ।

3. नाट्य मंचन के माध्यम से विद्यार्थियों में अभिनय-कला का विकास होगा ।

4. विद्यार्थियों में अनुवाद विज्ञान के माध्यम से अनुवाद की प्रयोजनीयता और प्रक्रिया की समझ विकसित होगी ।

5. विद्यार्थियों में अच्छे अनुवादक बनाने की इच्छा जागृत होगी ।

प्रस्तावित संरचना

इकाई 01 – ध्रुवस्वामिनी - जयशंकर प्रसाद

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तौलिये – उपेन्द्रनाथ अश्क (एकांकी)

इकाई 02 –   , महत्व एवं प्रकार, अनुवाद के गुण, अनुवाद की प्रक्रिया, अच्छे अनुवादक के गुण ।

अनुशंसित पुस्तकें –:

1.   हिंदी नाटक : उद्भव और विकास   – .
2.   प्रसाद के नाटक   – .
3.   हिंदी एकांकी : उद्भव और विकास   – .
4.   हिंदी एकांकी की शिल्प विधि का विकास   – .
5.   हिंदी समस्या नाटक : भाषागत अध्ययन   –
6.   अनुवाद विज्ञान   – .
7.   अनुवाद के विविध आयाम   –
8.   अनुवाद विज्ञान और सम्प्रेषण – .
9.   अंग्रेजी हिंदी अनुवाद – .
10.   अनुवाद प्रविधि   – .
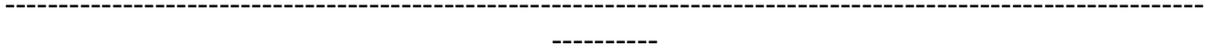
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MINOR COURSE-1D   **(SEM-VII)**

XXXIX.   MINOR COURSE- MN 1D:
हिंदी साहित्य एवं सोशल मीडिया

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) 60 Hours

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. कहानी के माध्यम से विद्यार्थी सम्पूर्ण मानव जगत की मानवीयता से परिचित होंगे ।
2. कहानी के माध्यम से विद्यार्थी, जीवन की वास्तविकता से परिचित होंगे ।
3. कहानी के माध्यम से विद्यार्थियों में रचनात्मक विचार और सृजन धर्म का विकास होगा ।
4. विद्यार्थी मीडिया के विविध रूपों के साथ-साथ उसकी उपयोगिता को जान सकेंगे ।
5. विद्यार्थी विज्ञापन के महत्त्व एवं उद्देश्य के साथ-साथ विज्ञापन लेखन की जानकारी प्राप्त कर सकेंगें ।

प्रस्तावित संरचना

इकाई 01- पाँच फूल

इकाई 02 – सोशल मीडिया, सोशल मीडिया के प्रकार- ट्वीटर, व्हाट्सअप, फेसबुक, इन्स्टाग्राम, यूट्यूब आदि ।

इकाई –03 सोशल मीडिया का प्रभाव- सामाजिक, राजनीतिक, सांस्कृतिक, शैक्षिक, हिंदी भाषा का सोशल मीडिया में उपयोग,
सोशल मीडिया की उपयोगिता एवं दुष्प्रभाव

अनुशंसित पुस्तकें –:

1. पाँच फूल   –
2. प्रेमचंद   – .
3. कहानी स्वरुप और संवेदना   – .
4. मीडिया समग्र खण्ड   – .
5. मीडिया के सामाजिक सरोकार   – .
6. सोशल मीडिया   – .
7. मीडिया: भूमंडलीकरण और समाज   – .
8. मीडिया लेखन और सम्पादन   – .
9. सोशल मीडिया   – .

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10.   डिजिटल मीडिया   – .
11.   मीडिया माफिया   – .

COURSES OF STUDY FOR **ABILITY ENHANCEMENT COURSE** IN **"HINDI"**

ABILITY ENHANCEMENT COURSE-AEC 1;
(SEM-I/ II)

XL.   MIL- HINDI COMMUNICATION:
आधुनिक भारतीय भाषा - हिंदी

Marks: 50 (ESE: 1.5 Hrs) = 50	**Pass Marks: Th (SIE) = 20**

(Credits: Theory-02) **30 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. आधुनिक भारतीय भाषा के स्वरुप एवं विकासक्रम से अवगत हो सकेंगे।

2. आधुनिक भारतीय भाषा के संदर्भ में 'बापू' कविता का अध्ययन करेंगे ।

3. पारिभाषिक शब्दावली एवं उसके स्वरुप की जानकारी /परिचय प्राप्त करेंगे ।

4. व्यावाहरिक हिंदी कार्यालयी हिंदी, वित्तीय हिंदी एवं तकनीकी हिंदी के अनुप्रयोग का ज्ञान प्राप्त करेंगे।

प्रस्तावित संरचना

इकाई :- 1. बापू - दिनकर ।

इकाई :- 2. पारिभाषिक शब्दावली, व्यावहारिक हिंदी, कार्यालयी – हिंदी, वित्तीय हिंदी , तकनीकी हिंदी ।

अनुशंसित पुस्तकें : -

1.		बापू ।	
2.	राजभाषा हिंदी	–	.
3.	प्रयोजनमूलक हिंदी	–	.
4.	पारिभाषिक शब्दावली : कुछ समस्याएं	–	.

AK SINGH COLLEGE ,JAPLA, PALAMU

ABILITY ENHANCEMENT COURSE-AEC 3
(SEM-III)

XLI. HINDI ELECTIVE - 1:
व्यावहारिक हिंदी - I

Marks: 50 (ESE: 1.5 Hrs) = 50	Pass Marks: Th (SIE) = 20

(Credits: Theory-02) **30 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. प्रशासनिक पत्र – लेखन के नियमों से विद्यार्थी परिचित होंगे ।
2. पल्लवन एवं संक्षेपण का ज्ञान छात्रों को होगा ।
3. शब्द – शुद्धि एवं वाक्य शुद्धि के सामान्य नियमों से छात्र अवगत होंगे ।
4. कारक की विशेषताओं को विद्यार्थी समझ सकेंगे ।
5. निबंध – लेखन की कला विद्यार्थी जान सकेंगे ।

प्रस्तावित संरचना

इकाई :- 1. विविध पत्र लेखन, पल्लवन, संक्षेपण, वर्ण, वाक्य शुद्धि, शब्द-शुद्धि, मुहावरे- लोकोक्तियाँ, उपसर्ग-प्रत्यय, कारक ।

इकाई :- 2. निबंध – पर्यावरण, नैतिकता,विज्ञान, साहित्य,राष्ट्रीयता पर आधारित ।

अनुशंसित पुस्तकें : -

1. आधुनिक हिंदी व्याकरण और रचना –
2. वृहत व्याकरण भास्कर – .
3. वृहत निबंध भास्कर – .
4. सुबोध हिंदी व्याकरण और रचना – .

AK SINGH COLLEGE ,JAPLA, PALAMU

ABILITY ENHANCEMENT COURSE-AEC 4   **(SEM-IV)**

XLII. HINDI ELECTIVE - 2:
व्यावहारिक हिंदी - II

Marks: 50 (ESE: 1.5 Hrs) = 50	**Pass Marks: Th (SIE) = 20**

(Credits: Theory-02) **30 Hours**

पाठ्यक्रम के इस अंश का अधिगम परिणाम निम्नवत होगा – :

1. संवाद लेखन,कार्यालयी, हिंदी विविध पत्र लेखन, श्रुतिसमभिन्नार्थक शब्द को विद्यार्थी सीखेंगे ।

2. प्रेमचंद की कहानी संग्रह 'सोज़े वतन' में संग्रहित विविध कहानियों से विद्यार्थी अवगत होंगे ।

3. विद्यार्थी व्याकरण संबंधी सामान्य जानकारी प्रास कर सकेंगे ।

प्रस्तावित संरचना

इकाई - 1. 'सोज़े वतन'- प्रेमचंद ।

इकाई - 2. संधि, समास, पर्यायवाची शब्द, विपरीतार्थक शब्द, तद्धित, कृदंत, अनेक शब्दों के लिए एक शब्द, श्रुतिसमभिन्नार्थक शब्द, संवाद लेखन, कार्यालयी हिंदी, विविध पत्र लेखन ।

अनुशंसित पुस्तकें : -

1.   प्रेमचंद घर में   - शिवरानी देवी

2.   वृहद व्याकरण भास्कर   - डॉ. वचन देव कुमार

3.   वृहत निबंध भास्कर   - डॉ. वचन देव कुमार

4.   सुबोध हिंदी व्याकरण और रचना   - डॉ. श्याम नंदन शास्त्री

5.   प्रेमचंद की नीली आँखें   – डॉ. धर्मवीर

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FYUGP

HISTORY HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented from 3rd Semester of Academic Session 2022-26

& From 1st Semester of Session 2023-27 Onwards

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UNIVERSITY DEPARTMENT OF HISTORY
RANCHI UNIVERSITY, RANCHI-834008 (JHARKHAND)

Ref. No. : HIST-/386/2023   Date : 13/06/2023

U. G. Syllabus Board of Studies

Chairperson :
1. Dr. Sujata Singh, HoD & Associate Professor,

External Experts :
2. Dr. Anil Kumar (Retd.), Former HoD and Professor of History, DSPMU, *Anil k—* 13.6.23
(External Expert)

Internal Experts :
3. Dr. Veena Pandey, Associate Professor, R. W. C., Ranchi   *13.5.2023*

4. Dr. Rajni Toppo, HoD, Assistant Professor, Doranda College, Ranchi.

5. Dr. Sanjay Kumar Sinha, Assistant Professor, HoD, St. Xavier's College, Ranchi *Sanjay.k.sinha 13/6/23*

6. Dr. Balbir Kerketta, Assistant Professor, Gossner College, Ranchi.   *Kerketta 13/06/23*

7. Dr. Rajkumar, Assistant Professor   *13/06/2023*

8. Dr. Kanjiv Lochan, Assistant Professor   *13/13/23*

Almuni Experts :
9. Dr. Arti Mehta (Retd.), Associate Professor, Ranchi University, Ranchi   *Mehta 13.06.2023*

10. Dr. Abha Xalxo (Retd.), Associate Professor, Ranchi University, Ranchi

Member Secretary :
11. Dr. Mohit Kumar Lal, Assistant Professor

15/07/2023

DIRECTOR
IQAC, RANCHI UNIVERSITY
RANCHI-834 001

Sujata Singh
13. 06. 2023
Dr. Sujata Singh
Head
Head
University Department of History
Ranchi University, Ranchi

12/08/2022
Principal
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Students are Instructed to

Refer Syllabus of Allied/ Opted Subjects from R.U. Website

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HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1st of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:
  - e) Odd Semester: **From first Monday of August to third Saturday of December**
  - f) Even Semester: **From first Monday of January to third Saturday of May**
- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester

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will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
  - ➢ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
  - ➢ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
  - ➢ Bachelor's Degree after a 3-year (6 semesters) programme of study,
  - ➢ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
  - ➢ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

e) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.

One credit for Theory   = <u>15 Hours of Teaching</u> i.e., 15 Credit Hours
One credit for Practicum   = <u>30 Hours of Practical work </u>i.e., 30 Credit Hours

f) For credit determination, instruction is divided into three major components:

Hours (L) – Classroom Hours of one-hour duration.
Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.

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- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

xxi.   The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

xxii.   No student will be detained in odd Semesters (I, III, V & VII).

xxiii.   To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

xxiv.   To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

xxv.   To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

xxvi.   However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

xxvii.   Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

xxviii. To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year.

xxix.   A student has to pass in minimum 3 papers out of the total 4 papers.

xxx.   It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result of the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)													
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)													
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree													
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4

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	Exit Point: Bachelor's Degree with Hons. /Hons. with Research	160	224

Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

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COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME
2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	AEC-1	Language and Communication Skills (MIL 1 - Hindi/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Hindi)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4

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IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2
	VAC-2	Value Added Course-2	2
	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4

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RC/	Research Internship/Field Work/Dissertation OR	12/
AMJ-1	Advanced Major paper-1 (Disciplinary/Interdisciplinary Major)	4
AMJ-2	Advanced Major paper-2 (Disciplinary/Interdisciplinary Major)	4
AMJ-3	Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	Total Credit	**160**

NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	v. Discipline/ Interdisciplinary courses and vi. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64

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Minor	v. Discipline/ Interdisciplinary courses and vi. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

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Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Double Major Courses		
	Code	Papers	Credits
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:
AEC	Ability Enhancement Courses
SEC	Skill Enhancement Courses
IAP	Internship/Apprenticeship/ Project
MDC	Multidisciplinary Courses
MJ	Major Disciplinary/Interdisciplinary Courses
DMJ	Double Major Disciplinary/Interdisciplinary Courses
MN	Minor Disciplinary/Interdisciplinary Courses
AMJ	Advanced Major Disciplinary/Interdisciplinary Courses
RC	Research Courses

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AIMS OF BACHELOR'S DEGREE PROGRAMME IN HISTORY

The broad aims of the LOCF for History are:

13. At a general level, our courses are structured with the objective of giving requisite information about different aspects of the past to students, to teach them how to parse this information, instruct them on how historians research, frame an argument and debate details that have significance to how we understand the past and the present.

14. The expected outcome is to provide students with a sense of how interconnected our present is with the past and how learning about the past provides them with the skills to understand the present.

15. To facilitate this understanding, our courses, class room instruction and assignments give students the ability to think and reach their own conclusions.

16. Our tutorial discussions, written assignments, class room presentations, field-work projects, consolidate their ability to analyse, research and process information.

History, as we all know, is a vital source to obtain knowledge about a nation's soul. Today, more than ever before, the challenges of globalization obligate historians and researchers to go beyond the local, national, and even continental frontiers of their knowledge. However, competing and keeping pace with the ever expanding horizon of history, one has to be sensitive in understanding the issues of nations' history on larger canvas, absorbing polemics and challenges. dialog between past and present out of which a bright future could be explored.

At the outset, it may well be stated that the proposed syllabus tries to meet the challenges of ever changing dynamics of historical studies. The idea is to involve young minds in understanding India's great past in terms of global trends with special focus on national building and freedom struggle. The contents of the draft involves understanding and knowledge of major global historical dimensions to a level suitable to academic standards expected of graduates of a programme of study.

The proposed syllabus has been designed in a way it could do justice to our glorious past and the vast canvas of Indian History by providing the much needed space at micro and macro levels.

Our draft stresses history as a discipline that is more about exploration and discovery than about memorizing a static narrative. It attempts to impart into the students a feeling of ownership over their own history with a broader worldview. Our student might have ability to comprehend the cause and effect relationship to plan a promising future. This curriculum is an attempt to customize the student to larger levels of regional, national, and continental and global history which can broaden the arena of young minds and also bring a mark shift in historical studies.

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PROGRAM LEARNING OUTCOMES

The broad programme learning outcomes in History are:

Graduates of this department are expected to branch out into different paths seeking spheres of knowledge and domains of professional work that they find fulfilling. After graduating with History Honours, they will be able to demonstrate comprehensive knowledge of scholarly research and professional literature relating to the discipline. This will establish a platform from which the student can pursue higher studies in History.

It is expected that besides the skills specific to the discipline, these wider life skills of argumentation and communication, attitudes and temperaments, and general values inherent in a discipline that studies human beings in their social context, in all its complexity, will ultimately enable learners to live rich, productive and meaningful lives.

The list below provides a synoptic overview of possible career paths provided by the undergraduate training in history from the Ranchi University, Ranchi:

1. Teaching
2. Research
3. Politics
4. Journalism
5. Media
6. Performing Arts
7. International Relations
8. Administration
9. Social Work
10. Law
11. Management
12. Policy Making
13. Human Resource Development

SEMESTER WISE COURSES IN HISTORY MAJOR-1 FOR FYUGP
2022 onwards

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	Idea of Bharatvarsha	4	25	75	---
II	MJ-2	Early India (From Earliest Days to 550 AD)	4	25	75	---
	MJ-3	World Civilization (Earliest Times to Early Medieval Times)	4	25	75	---
III	MJ-4	Early Medieval India (From 550 to 1200 AD)	4	25	75	---
	MJ-5	Medieval Societies of World	4	25	75	---
IV	MJ-6	History of India (1200 -1526 AD)	4	25	75	---
	MJ-7	History of Jharkhand (Up to 1857 AD)	4	25	75	---
	MJ-8	History of Europe (1789-1919 AD)	4	25	75	---
V	MJ-9	History of India (1526-1707 AD)	4	25	75	---
	MJ-10	History of Jharkhand (1857-2000 AD)	4	25	75	---
	MJ-11	History of Modern World (1919-1947 AD)	4	25	75	---
VI	MJ-12	History of India (C.1707 – 1857 AD)	4	25	75	---
	MJ-13	Indian National Movement (1857-1947 AD)	4	25	75	---
	MJ-14	History of China (1800 - 1950 AD)	4	25	75	---
	MJ-15	History of Japan (1850 - 1950 AD)	4	25	75	---
VII	MJ-16	Contemporary India (1947 - 2000 AD)	4	25	75	---
	MJ-17	History of the USSR (1917- 1964 AD)	4	25	75	---
	MJ-18	History of Communication In India	4	25	75	---
	MJ-19	History of USA (1763 – 1947 AD)	4	25	75	---
VIII	MJ-20	Issues in Contemporary World	4	25	75	---
	AMJ-1	Principles of History	4	25	75	---
	AMJ-2	Socio-Religious Movements in India	4	25	75	---
	AMJ-3	Women in History	4	25	75	---

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	or RC-1	Research Methodology	4	25	75	---
	RC-2	Project Dissertation/ Research Internship/ Field Work	8	---	---	200
		Total Credit	**92**			

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Skill Enhancement Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	Indian History, Culture & An Introduction to Archeology	3	---	75	---
II	SEC-2	Understanding Popular Culture	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	**9**			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Minor Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	History of India (From Earliest Times to CE 650)	4	25	75	---
III	MN-1B	History of India (650 - 1707 AD)	4	25	75	---
V	MN-1C	History of India (1707 - 1950 AD)	4	25	75	---
VII	MN-1D	Indian National Movement (1858 – 1947 AD)	4	25	75	---
		Total Credit	**16**			

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INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There will be Only One Semester Internal Examination in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

E. (SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

F. (SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Conversion of Attendance into score may be as follows:

Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

G. (ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

H. (ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three

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questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

I. **(ESE 100 marks):**

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

<table>
<tr><td colspan="3" align="center">**Subject/ Code**</td></tr>
<tr><td>**F.M.** =10</td><td align="center">**Time**=1Hr.</td><td align="right">Exam Year</td></tr>
<tr><td colspan="3">
General Instructions:
  xi.   **Group A** carries very short answer type compulsory questions.
  xii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
  xiii. Answer in your own words as far as practicable.
  xiv. Answer all sub parts of a question at one place.
  xv.   Numbers in right indicate full marks of the question.

<div align="center">**Group A**</div>

7.   [5x1=5]

          xi.   ....
          xii.   ....
          xiii.   ....
          xiv.   ....
          xv.   ....

<div align="center">**Group B**</div>

</td></tr>
<tr><td>8. ....</td><td></td><td align="right">[5]</td></tr>
<tr><td>9. ....</td><td></td><td align="right">[5]</td></tr>
<tr><td colspan="3">
Note: There may be subdivisions in each question asked in Theory Examination.
</td></tr>
</table>

Question format for **20 Marks**:

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Subject/ Code	
F.M. =20 **Time**=1Hr.	Exam Year

General Instructions:
xi.   **Group A** carries very short answer type compulsory questions.
xii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
xiii. Answer in your own words as far as practicable.
xiv. Answer all sub parts of a question at one place.
xv.   Numbers in right indicate full marks of the question.

Group A

9.   [5x1=5]

       xi.   ....
       xii.   ....
       xiii.   ....
       xiv.   ....
       xv.   ....

   10. ....   [5]

Group B

   11. ....   [10]
   12. ....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION
Question format for **50 Marks**:

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Subject/ Code

F.M. =50   **Time**=3Hrs.   Exam Year

General Instructions:
    iii. **Group A** carries very short answer type **compulsory** questions.
    iv. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
    ix. Answer in your own words as far as practicable.
    x. Answer all sub parts of a question at one place.
    xi. Numbers in right indicate full marks of the question.

Group A

13.   [5x1=5]

    xi.   ....
    xii.   ....
    xiii.   ....
    xiv.   ....
    xv.   ....

Group B

14. ....   [15]
15. ....   [15]
16. ....   [15]
17. ....   [15]
18. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **60 Marks**:

Subject/ Code

F.M. =60   **Time**=3Hrs.   Exam Year

General Instructions:
    v. **Group A** carries very short answer type **compulsory** questions.
    vi. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
    ix. Answer in your own words as far as practicable.
    x. Answer all sub parts of a question at one place.
    xi. Numbers in right indicate full marks of the question.

Group A

17.   [5x1=5]

    xi.   ....
    xii.   ....
    xiii.   ....
    xiv.   ....
    xv.   ....

18. ....   [5]
19. ....   [5]

Group B

20. ....   [15]
21. ....   [15]
22. ....   [15]
23. ....   [15]
24. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

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Question format for **75 Marks**:

	Subject/ Code	
F.M. = 75	**Time**=3Hrs.	Exam Year

General Instructions:
v.   **Group A** carries very short answer type **compulsory** questions.
vi.   **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
ix.   Answer in your own words as far as practicable.
x.   Answer all sub parts of a question at one place.
xi.   Numbers in right indicate full marks of the question.

Group A

19.   [5x1=5]

    xi.   ....
    xii.   ....
    xiii.   ....
    xiv.   ....
    xv.   ....

    20.   ....   [5]
21.   ....   [5]

Group B

    22.   ....   [15]
    23.   ....   [15]
    24.   ....   [15]
    25.   ....   [15]
    26.   ....   [15]
    27.   ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

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Subject/ Code		
F.M. = 100	**Time**=3Hrs.	Exam Year

General Instructions:
v.   **Group A** carries very short answer type **compulsory** questions.
vi.   **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
ix.   Answer in your own words as far as practicable.
x.   Answer all sub parts of a question at one place.
xi.   Numbers in right indicate full marks of the question.

Group A

3.   [10x1=10]

xi.	....	vi.	....
xii.	....	vii.	....
xiii.	....	viii.	....
xiv.	....	ix.	....
6. ..xv.......:..........		x	.... [5]
7.			[5]

Group B

16.	[20]
17.	[20]
18.	[20]
19.	[20]
20.	[20]
21.	[20]

Note: There may be subdivisions in each question asked in Theory Examination.

SEMESTER I

IV.   MAJOR COURSE –MJ 1:
IDEA OF BHARATVARSHA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) Theory: 60 Lectures

Course Objectives & Learning Outcomes:
        Students will acquire knowledge regarding the primitive life and cultural status of the people of Ancient India.
They can   gather knowledge about the society, culture, religion and political history of Ancient India. They will also acquire the knowledge of changing socio-cultural scenarios of India. The glory of Indian Literature: *Ved*, *Vedanga*, *Upanisha*ds, Epics, Jain and Buddhist Literature, *Smriti*, *Puranas*

Course Content:
UNIT- I: Concept of *Bharatvarsha:*
1.   Understanding of *Bharatvarsh*a
2.   Eternity of synonyms Bharat
3.   Indian concept of time and space
4.   The glory of Indian Literature: *Vedas, Vedanga, Upanishads*, Epics, Jain and Buddhist Literature, *Smriti,* and *Puranas* etc.

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UNIT- II: Indian Knowledge Tradition, Art and Culture
1. Evolution of language and Script: Brahmi, *Kharoshthti*, Pali, Prakrit, Sanskrit and Tamil.
2. Salient features of Indian Art and Culture.
3. Indian educational system
4. The Ethics of Indian Valour.

UNIT- III: Dharma, Philosophy and *Vasudhaiva Kutumbakam* :
1. Indian perception of *Dharma*
2. The concept of *Vasudhaiva Kutumbakam*: Man, Family, Society and World
3. Polity and governance
4. *Janpada* and Gram *Swarajya*

UNIT- IV: Science, Environment and Medical Science:
1. Science and Technology in Ancient India
2. Ancient system of Environment Management
3. Traditional system of medicine in ancient India -Yoga and Naturopathy
4. Indian Numeral System and Mathematics

UNIT- V: Indian Economic Traditions
1. Concept of land, Forest and Agriculture
2. Industry, inland trade Commerce
3. Maritime Trade

Suggested Readings:

1. Altekar, A.S, *Education in Ancient India,* Varanasi
2. Basham, A. L. The Wonder that Was India, Sidgwick & Jackson, London, 1971. (Also in Hindi)
3. Chattopadhyaya, D. P. *History of Science and Technology in Ancient India*, Firma KLM 1986.
4. Chattopndhyaya, B.D.; *The Concept of BharaVarsha and other* Essays, *Oxford University Press*
5. Jayshankar Mishra: *Prachin Bharatik Samajik itihas*, Patna
6. Govind Chandra Pandey, *BharatiyaSanskriti*
7. Jyoti Prashad Jain- *Bhartiya itihas ek Drishti*
8. K A N Shashtri: *A History of South India*, Oxford University Press (Also Hindi)
9. Kailash Chandra Jain: *Prachin Bharat*iya Samajik evam Arthik itihas
10. Kanjiv Lochan: *Medicines of Early India,* Delhi
11. N. N. Bhattacharya, *Ancient Indian Rituals and Their Social Contents*, Manohar, New Delhi, 2005
12. Mahajan, V.D. *Ancient India*, S. Chand & Co., New Delhi,1981
13. Mookherjee R.K: *The Fundamental Unity Of India,*
14. Narendra Mohan: *Bharatiya* Snnskriti, Delhi
15. Radha Kumud Mookeiji: *Indian Educational Systems,* Delhi
16. RajbaliPandey:*Bhartiya Puralipi*
17. Rajkumar, *Lichchavi Ganarajya,* New Delhi, Amitesh Prakashan, 2023
18. Ramdhari Singh Dinkar: *Sanskriti ke char Adhyaya*
19. Rimjhim Sharma & Ashish, 2021, *A Study in Early Indian History*, Delhi, Book Age Publication
20. Romila Thapar, *Early India from the Beginnings to 1300*, Penguin, London, 2002.
21. Sathianathaier, *History of India*, Vol – I S. Viswanathan (Pvt) Ltd, 1975. Madras
22. Sharma, R. S. *Material Culture and Social Formations in Ancient India*, Macmillan India Limited, Delhi, 1983.
23. Sharma, R.S, *Looking for the Aryans*, Orient Longman Publishers, Delhi, 1995
24. Sharma, R.S. India's Ancient Past, Oxford University Press, New Delhi, 2007 (Also in Hindi)

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25. Shiv Svarup Sahay: *Prachin bharat me vigyan evam Pradyogiki*

26. Shri Arvind: *Bharatiya Sanskriti ke Aadhar*

27. Singh Upinder, *A History of Ancient and Early Medieval India*, Pearson, 2009. (Also in Hindi)

28. Singh, Y: *Modernisation of Indian Tradition*

V.   SKILL ENHANCEMENT COURSE- SEC 1:
INDIAN HISTORY, CULTURE &
AN INTRODUCTION TO ARCHEOLOGY

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03)   **Theory: 45 Lectures**

Course Objectives:
    To equip students with a very basic understanding of Indian History in terms of environment issues, urbanization, culture, heritage, and archaeology.

Course Content
Indian History & Culture

i.   Environment; Culture, Tradition and Practices of environmental preservation and traditional use of medicinal Plants, Water and Water Bodies - Historical overview - Oral and codified sources of information, Fieldwork
ii.   Urbanization and Urbanism: -Issues of settlements & Landscapes -Social differentiations - Communication networks
iii.   Social inequality and Gender: -Status within Households: An overview -Present context - Issues of Violence -Employment, distribution of resources
iv.   Cultural Heritage: -Main components -Built Heritage -Historical Tourism
v.   Cultural Forms and Cultural Expressions: - Performing Arts -Fairs and Festivals -Fieldwork

An Introduction to Archaeology

i.   Definition and Components of Archaeology
ii.   Historiographical Trends in Indian Archaeology
iii.   Definition of Historical Sites and Explorations
iv.   Field Work & Tools of research

Suggested Readings:

1.   Indu Banga, ed. The City in Indian History: Urban Demography, Society & Polity, Delhi, Manohar,,1991
2.   Koch, E. Mughal Art & Imperial Ideology
3.   Radha Kumar, History of Doing: An Illustrated Account of Movements for Women's Rights &Feminism in India 18801990, Zubaan, 2007
4.   V.Vasudev, Fairs &Festivals, Incredible India Series, 2007
5.   V.Singh, The Human Footprint on Environment: Issues in India, New Delhi, and Macmillan, 2012
6.   B. Parikh, Composite Culture in a multicultural Society, Delhi, NBT, 2007
7.   N. Mehta, Introduction: Satellite Television, Identity & Globalization in Contemporary India in N.Mehta, ED, Television in India, New York, Routledge, 2008
8.   R.C. Thakran & Sheo Dutt, ed Bhartiya Upmahaduip ki Sanskritiyan, University of Delhi
9.   John.A. Bintliff, A Companion to Archaeology
10. D.R. Chakrabarti, A History of Indian Archaeology: From the Beginning to 1947, Delhi, Manohar, 1988
11. M. Hall & WS.W. Silliman, Historical Archaeology, USA, Blackwell, 2006
12. Mathew Johnson, Archaeological Theory: An Introduction, Blackwell Publishing, New Edition,2010
Published Works by ASI

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SEMESTER II

XLIII. MAJOR COURSE- MJ 2:
EARLY INDIA
(FROM EARLIEST DAYS TO 550 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:

Student will learn about the historiographical trends as well as about the interpretation of historical sources of ancient India. They can acquire knowledge about the Vedic Period and the rise of Jainism and Buddhism culture.

Course Content:

UNIT- I: Sources, Historiography and the Prehistoric India

1. Sources and historiographic trends of ancient Indian History up to 550 C.E.
2. Survey of prehistoric India: Paleolithic, Mesolithic and Neolithic and Chalcolithic Periods.
3. The Indus - Saraswati Civilization, Debate on the relationship of Indus, Saraswati civilization and the Vedic Civilization.

UNIT - II: Aryan Civilization

1. Original home of Aryans, myths of Aryan Invasion: Various theories
2. Vedic Culture: literature and Polity, society and Economy
3. Epic Literature and Culture: dating and historicity of the Epics.

UNIT – III: India from Sixth Century BC to Mauryan Age.

1. Sources
2. The *Mahajanpadas*, Republics and Growth of Urban Centers, Rise of Magadhan Imperialism.
3. Buddhism and Jainism
4. The Mauryan Empire, Chandragupta Maurya and Ashok Maurya, Mauryan administration, Fall of the Mauryan Empire.

UNIT – IV: Post Mauryan Age

1. Sources
2. Age of the Kushanas, Shunga, Satvahanas: Society and Culture, Art, Architecture and Coinage.
3. Sangam Age: Literature, Society and Culture.
4. Foreign Trade in the post Mauryan Age

UNIT – V: Imperial Guptas:

1. Sources
2. Imperial Guptas: Samudra Gupta and Chandragupta
3. Gupta Administration
4. Gupta Art, Architecture and development of Science & Technology

Suggested Readings:

1. A.L. Basham, The Wonder that Was India, Sidgwick & Jackson, London, 1971. (Also in Hindi)

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2. P. Sahu (ed), Land System and Rural Society in Early India, Manohar Publishers, New Delhi, 1997.
3. B.P. Saha & K.S. Behra, Ancient History of India, Vikas Publishing House, New Delhi,1994
4. Bridget & F. Raymond Allchin, The Rise of Civilization in India and Pakistan, Cambridge University Press, Cambridge, 1983.
5. Burjor Avari, India: The Ancient Past, Routledge, New York, 2016
6. D. Kosambi, An Introduction to the Study of Indian History, Popular Prakashan, Bombay, 1975.
7. D.P. Chattopadhyaya, History of Science and Technology in Ancient India, Firma KLM 1986.
8. D.N. Jha, Ancient India, Manohar Publishers, New Delhi, 2004
9. Jha and Shrimali, *Prachin Bharat Ka Itihas*, Delhi University
10. K. A. N. Sastri, A History of South India, Oxford University Press, London,1955
11. Rajkumar, Lichchavi Ganarajya, New Delhi, Amitesh Prakashan, 2023
12. R. S. Sharma, Material Culture and Social Formations in Ancient India, Macmillan India Limited, Delhi, 1983.
13. R.C. Majumdar, H.C. Roy Chaudhri & K. Datta, *An Advanced History of India*, MacMillan India Ltd, New Delhi,2004
14. R.S. Sharma, *India's Ancient Past*, Oxford University Press, New Delhi, 2007 (Also in Hindi)
15. R.S. Sharma, *Looking for the Aryans*, Orient Longman Publishers, Delhi, 1995
16. Romila Thapar, Early India from the Beginnings to 1300, Penguin, London, 2002.
17. Upinder Singh, *A History of Ancient and Early Medieval India*, Pearson, 2009. (Also in Hindi)
18. V.D. Mahajan, *Ancient India*, S. Chand & Co., New Delhi, 1981

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XLIV. MAJOR COURSE- MJ 3:
WORLD CIVILIZATION (Earliest Times to Early Medieval Times)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
        Students will acquire knowledge about the evolution of human society, and transformation of ancient civilization like that of ancient Mesopotamia, Greece, China, Rome and Medieval Europe.
They can Acquire knowledge about the origin, features, nature and class composition of various societies. They would acquire a comparative observation of the ancient world.

Course Content:
UNIT- I: History of Early World Civilizations
1.   Mesopotamian Civilization – (Sumerian, Babylonian and Assyrian) Society, religion, Low and Administration.
2.   Egyptian Civilization (Old Dynasty) – Political Development, Art, Architecture, Religion of Akhanaton
3.   Chinese Civilization – (Shang and Chung) and Confucius Polity, Society, Science and Technology.
4.   Persian Civilization: Political, Social and Economic condition.

UNIT – II: Classical Greece
1.   Homer Age: Evolution of Classical Greece
2.   Athens, Sparta
3.   Greece: Persian war and Peloponnesian War.
4.   The Pericles Age: Growth of state and Society, Development of Science, Art and Philosophy.

UNIT – III: Roman Empire
1.   Origin of Rome
2.   Rise of the Roman Republic and Roman law.
3.   Expansion and downfall of Roman empire.
4.   Imperial Age of Rome, Society and Culture.

Suggested Readings:
1.   Jhjkexkgy]fo"o dhikphu lHrk¡
2.   ,l-,y-ukxk¡s] fo"o dhikphu lHrk¸] Jhl jLorhluu]ubZfnYyh
3.   /kuifr ikM$]ikphu eSslkwkfe; k] ekshyky cukjlhmkl\
4.   MkW/h ih,u-fl Ugk,oaMkW/kuifr ikM$]ikphu felŀekshyky cukjlhmkl
5.   vksiadk'kikŀkn]eSslkwkfe; k] dhlHrk] ekshyky cukjlhmkl
6.   Ray, U N: *Vishwa Sabhyata ka itihas*, Lok Bharti prakashan.
7.   S. M. Pathak, *Vishwa Ke Pracheen Sabhyataon Ka Itihas*, Bihar Hindi Granth Academy, 2017

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XLV. SKILL ENHANCEMENT COURSE- SEC 2:
UNDERSTANDING POPULAR CULTURE

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03)   **Theory: 45 Lectures**

Course Objectives:

The paper examines some popular cultures expressed in different mediums like visual, oral and cultural. In the process of their evolution, these cultures eclectically draw from traditions, articulate anxieties, and even give rise to new traditions. The paper endeavours to equip students with understanding such phenomena historically, with special reference to India. It is imperative that the students use electronic devices to view, record, and document the subject matter.

Course Objectives:

I Introduction: Defining popular culture and understanding it historically

II Visual expressions: Folk art, calendar art, photography

III. Performance:

Theatre; music; folk tales/ songs/ *swang* and *Nautanki: Identifying themes, functionality, anxieties*

IV. The audio-visual: cinema and television:

Indian cinema: Mapping the influence of the national struggle for independence (1930s and 40s); Cinema and nationalism (1950s), disillusionment and the anti-establishment mood (1970s and 80s); Documentary films: popular culture in television

V. Fairs, Festivals and Rituals:

Disentangling mythological stories, patronage, regional variations

VI. Popular culture in a globalized world:

The impact of the Internet and audio-visual media in India

Essential Readings:
1. Dissanayake, W. and K. M. Gokul Singh, Indian Popular Cinema, Trentham Book, London, 2004
2. John Storey, Cultural Theory and Popular Culture, London, 2001
3. Oberoi, Patricia, Freedom and Destiny: Gender, Family and Popular Culture in India, Delhi, 2009
4. Christopher Princy, Camera Indica: The Social Life of Indian Photographs, Chicago, 1998

Suggested Readings:
1. Pankaj Rag, *Dhuno ke Yatri*, Rajkamal, New Delhi, 2006 (Hindi)
2. Ramanujan, A.K. *Folktales from India, A Selection of Oral Tales from Twenty-two Languages* (Only Introduction).
3. Ramaswamy, V. *'Women and the 'Domestic' in Tamil Folk Songs' in Kumkum Sangari and Uma Chakravarti, eds., From Myths to Markets*: Essays on Gender, Shimla, 1999
4. Singh, Lata (ed.), *Theatre in Colonial India: Playhouse of Power*, New Delhi, 2009

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SEMESTER III

XLVI. MAJOR COURSE- MJ 4:
EARLY MEDIEVAL INDIA (From 550 to 1200 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
        Students will learn and analyze the transitional phase between early historic centuries to the early medieval age.
They will be able to delineate changes in the realm of polity and culture, the Puranic religion; the growth of vernacular languages and newer form of art and architecture.

Course Content:
UNIT – I: Emergence of New Power and Age of Decentralization
1. Decline of the Gupta Power
2. Invasion of Hunas and its impact
3. State, Society and Culture in the period of Harsha.
4. Origin of Rajputs: Various theories.

UNIT -II: Decentralization and Emergence of Regional Power.
1. North Western India; Dynasties of Kashmir, the Arab Invasion.
2. Central India: Pratihars, Chahmans, Parmaras- Political and cultural achievements.
3. South Western India: Chalukyas: Political and cultural achievements.
4. North Eastern India: Pallavas Senas of Bengal, political and Cultural achievements.

UNIT – III: Regional Powers of South and Deccan:
1. Rashtrakutas: Foreign Policy, Religion, Art and Architecture.
2. Chola Empire: Administration, Art and Architecture.
3. Pallava Empire: Art and Architecture.
4. Pandya Empire: Art and Architecture.

UNIT – IV: Decline of Rajputs:
1. Tripartite Struggle.
2. Invasion of Mahamud Ghazni
3. Invasion of Muhammad Ghori.

UNIT – V: Culture of Pre-Medieval India.
1. Society and Religion in Pre-Medieval India.
2. Fine Arts in Pre-Medieval India: Architecture, Sculpture, Painting.
3. Emergence and spread of Bhakti Movement in Pre-Medieval India.
4. Emergence and spread of Regional Languages.

Suggested Readings:
1. A B Pandey, *Early Medieval India*, Surjeet Publications, Delhi
2. A.K. Chaturvedi, *Prachin Evam Pararambhik Madhyakalin Bharat*, SBPD Publications,2021

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3. A.K. Mittal, *Prachin Evam Pararambhik Madhyakalin Bharat*, Sahitya Bhawan Publications, 2021
4. B.D. Chattopadhyaya, *The Making of Early Medieval India*, Oxford University Press,2012
5. Irfan Habib, Medieval India: *The Study of a Civilization*, National Book Trust, 2008
6. R.S. Sharma and K.M. Shrimali, eds, *Comprehensive History of India*, Vol. IV (A & B), Manohar Publishers and distributors, 2008
7. R.S. Sharma, *Indian Feudalism (circa 300 - 1200)*, University of Calcutta, Calcutta, 1987
8. Sashtri, K A Nilkanta: *A History of South India, From Pre historic times to the fall of Vijaynagar* (Also in Hindi), Bihar Hindi Granth Academy Patna.
9. Upinder Singh, *A History of Ancient and Early Medieval India*, Pearson, 2009. (Also in Hindi)
10. Gaurav, Prashant, *Purva Madhya kalin Bhart (550-1200)*, Delhi: Rajkamal Prakashan

XLVII.   MAJOR COURSE- MJ 5:
MEDIEVAL SOCIETIES OF WORLD

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
Transition of the ancient societies to the modern societies was inter-spaced by an age named Medieval. This age was marked with certain traits and discoveries that were instrumental in making the world modern in its applied sense. The student would comprehend major features, traits and achievements of this significant age that shaped the Modern Societies.

Course Content:
UNIT – I: Rise of Christianity and Islam
1. Rise, establishment and growth of Christianity
2. Birth and expansion of Islam and its impact.
3. The Arab civilization and its contribution.

UNIT – II: Early Medieval Europe
1. Rise and Growth of European Feudalism.
2. Crusades and their impact on Europe.
3. Decline of Feudalism.

UNIT – III: Transition from Ancient society to Medieval society in Europe:
1. Social Condition
2. Science and Technology
3. Economy: Agrarian structure

UNIT – IV: Transition from Medieval to Modern Age in Europe:
1. Renaissance
2. Reformation
3. Commercialisation of Agriculture and Mercantilism impact

UNIT – V: - Urbanization and Discoveries:
1. Medieval Universities
2. Medieval Towns
3. Geographical Discoveries

Suggested Readings:
1. B. Virottam, *Madhyakalin Europe Ka Itihas*, Patna, 1987(In Hindi)
2. Bipin Bihari Sinha, *Arab ka Itihas* (In Hindi)
3. Dhanpati Pandey, *Madhyakalin Europe*, Motilal Banarasi Das, Patna, 1998 (In Hindi)
4. E. Duby, *Rural Economy and Country Life in the Medieval West*, London, 1968
5. George Burton Adams, *Civilization During the Middle Age*, Charles Scribners Sons, 1898
6. Jaid F. Gies, *Life in a Medieval City*, New York, 1973

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7. K. P. Sahu, *Islam Udbhav Aur Vikas*, (In Hindi)
8. Marc Bloch, *Feudal Society* (2 vols.) Routledge, Chicago, 1961
9. Thompson and Jhonson, *An Introduction of Medieval Europe*(300-1500AD),W.W Norton Incorporated, 1965
10. Von Kramer, *Contribution to Islamic Civilization*
11. Will Durant-*The Age of Faith*, Simon & Schuster, 1980

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XLVIII.   SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

A Common Syllabus for FYUGP   (Credits: Theory-03)
45 Hours

Instruction to Question Setter for
End Semester Examination (ESE):
*There will be **objective type test** consisting of **Seventy-five questions of 1 mark each**. Students are required to mark their answer on **OMR Sheet** provided by the University.*

Course Objectives:
        The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

E.   INTRODUCTION TO COMPUTER SYSTEM

1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU)   **(3 Lecture)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer
                (4 Lecture)

3. Operating system: What is an Operating System, Operating System Examples, Functions of Operating System(Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting
                (6 Hours)
4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages
        (4 Hours)

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails.
                (6 Hours)

F.   MICROSOFT OFFICE 2016 AND LATEST VERSIONS

6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents   **(7 Hours)**

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation,

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slide show, Master Slides, Creating photo album, Rehearse timing and record narration
(5 Hours)

9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning
(4 Hours)

Suggested Readings
26.   Nishit Mathur, *Fundamentals of Computer*, APH publishing corporation (2010)
27.   Neeraj Singh, *Computer Fundamentals* (Basic Computer), T Balaji, (2021)
28.   Joan Preppernau, *Microsoft Power Point 2016 step by step*, Microsoft press (2015)
29.   Douglas E Corner, *The Internet Book* 4th Edition, prentice –Hall (2009)
30.   Steven Welkler, *Office 2016 for beginners*, Create Space Independent Publishing Platform (2016)
31.   Wallace Wang, *Microsoft Office 2019*, Wiley (January 2018)
32.   Noble Powell, *Windows 11 User Guide For Beginners and Seniors*, ASIN, (October 2021)

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SEMESTER IV

XLIX. MAJOR COURSE- MJ 6:
HISTORY OF INDIA (1200 -1526 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
     The student would understand the administrative, social and economic dynamics of late Medieval India. Students would equip herself with knowledge about the multi-religious cultural streams and certain great personalities who influenced the country significantly during this period.

Course Content:
Unit – I: The Delhi Sultanate:
    Sources: 1. Persian *tarikh* tradition; 2. Vernacular Histories; 3. Epigraphy

Unit II: Sultanate Political Structures:
1. Foundation, expansion and consolidation of the Sultanate of Delhi - The Khalji's Expansionist policy of Khilji and the Tughlugs: Mongol threat and Timur's invasion: The Lodis: Conquest of Bahlul and Sikandar; Ibrahim Lodi the Battle of Panipat.
2. Theories of kingship; Ruling elites; Sufis, Ulama and the political authority.
3. Emergence of provincial dynasties: Bahmanis, Vijayanagar, Jaunpur and Bengal
4. Consolidation of Regional Identities: Regional art, Architecture and Literature.

Unit III: Economy during the Sulanate period:
1. Iqta and the revenue-free grants, Allauddin Khilji's Market Policy.
2. Agricultural production; technology
3. Changes in Rural society; Revenue Systems
4. Monetization coinage; Market Regulation; Growth of Urban Centers; trade and commerce; Indian Ocean trade

Unit IV: Religion, Society and Culture:
1. Changes in Rural Society
2. Growth of Regional Languages: Hindi and Urdu
3. Indo Islamic architecture during Imperial Mughals,

Suggested Readings:
1. Farhan Farooqui, *History of Delhi Sultanate*, Hawk Press, 2022
2. I.H. Siddiqui, *Some aspects of Afghan despotism in India*, Three men Publications,1969
3. Ishwari Prasad, *History of Medieval India: From 647 to 1526 AD*, Surjeet Publications, 2019
4. J.L. Mehta, *Advanced Study in the History of Medieval India* (3 Vols.), Sterling Publishers Pvt. Ltd., 1983, New Delhi. (Also in Hindi)
5. L.P. Sharma, *History of Medieval India*, Konark Publishers Pvt. Ltd, 1997, New Millan India Ltd., 2004, New Delhi.
6. Mohammad Habib and K.A. Nizami, eds, *Comprehensive History of India*, Vol. V, The Delhi Sultanate, People's Publishing house, 1992
7. Peter Jackson, The Delhi Sultanate, Cambridge University Press,1999
8. R.C. Majumdar, H.C. Roychaudri & K. Datta, *An Advanced History of India*, Mac

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9. Tapan Raychaudhuri and Irfan Habib, eds, *Cambridge Economic History of India*, Vol. I., Cambridge University Press, 1982
10. Imtiyaz Ahamad, *Madhyakalin Bharat ka Sarvekshan*, Patna: Bihar Hindi Granth Academy
11. Satish Chandra, *Madhyakalin Bharat*, Delhi: Orient Blackswan
12. Harishchandra Verma, *Madhyakalin Bharat, Vol 1*, Delhi University Hindi Madhaym Books
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L.   MAJOR COURSE- MJ 7:
HISTORY OF JHARKHAND (Up to 1857 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
Students would learn the pre-modern history of Jharkhand and acquire knowledge of various populational streams that entered/ evolved in (to) this mountainous region. Students would also learn the significance of largely non-agrarian regions in Indian history in terms of supplying forest produces and minerals.

Course Content:
UNIT- 1: Physiography of Jharkhand:
1. Physiography of Jharkhand
2. Land, 3. Climate 4. Minerals and 5. Forests

UNIT- 2: People:
1. The Mundas, the Oraons, and the Santals
2. Tribal and non-tribal settlements in Jharkhand
3. Their social, religious and cultural systems
4. Village administration of the tribals in Chotanagpur.

UNIT 3: Early Dynasties of Jharkhand
1. Nagvanshi Raj
2. Chero Raj
3. Singh Raj

UNIT 4: British Period:
1. Entry of the British into Jharkhand and its relation with the rulers of Palamau, Singhbhum and Chotanagpur.
2. Revenue administration under the British Raj
3. Judicial administration under the British Raj.

UNIT 5: Tribal Resistance:
1. The Larka (Kol) Revolt:
2. The Bhumij Revolt
3. Santal Hul

Suggested Readings:
1. B. Virottam, Jharkhand: *Itihas Aur Sanskriti*, Hindi Grantha Academy, Patna 2008, (In Hindi)
2. B. Virottam, *The Nagvanshis and the Cheros*, Munshiram Manohar Lal, New Delhi, 1972
3. Diwakar Minz, *Munda Evam Oraon ka Dharmik Itihas*, Orient Pub., Delhi. 1996(In Hindi)
4. Hari Mohan, *The Chero: The Study of Acculturation*, T.R.I., Ranchi, 1973
5. I.K. Choudhary, *From Region to Nation, The Tribal Revolts in Jharkhand* (1855-1858), Disha International Publishing House, Greater Noida, 2019
6. J. C. Jha, *The Kol Insurrection of Chota Nagpur*, Thacker Spink& Co. Calcutta, 1964

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7.   K. K Datta. *The Santhal Insurrention of 1855-57*, Calcutta Univ., 1988
8.   K. S. Singh, *Birsa Munda and His Movement, 1874-1901*. OUP, Calcutta, 1983
9.   Lochan, Kanjiv, *Jharkhand ka Adimanav Atit,* Delhi: Chaukhambha Prakashan, 2022
10. M. Govind Banerjee, *An Historial Outline of Pre-British Chotanagpur Ranchi*, 1993
11. R. R. Diwakar, (Gen.ed.), *Bihar Through the Ages*, Oriental Longman, Calcutta, 1959
12. S. C. Roy, *The Munda and their Country*, Kuntaline Press, Kolkata,1912
13. S. C. Roy, *The Oraon of Chotanagpur*, Brahmo Mission Press, Kolkata,1915
14. P. Das Sharma, "*The Passing Scene in Chotanggpur*, Maitreyeepub, Ranchi, 1980.
15. P.N. Ojha (ed.), *Chotanagpur, Past & Present*, Sudarshan Press, Ranchi, 1968.
16. Sangukia Das Gupta Adivasic and the Roy, Orient Blackswans,
17. D N Majumdar, *Race and Culture of India*, University Pub. Delhi.
18. Ashok Kumar Sen, 2011: *Representing Tribe, the Ho of Singhbhum under Colonial Rule*, Delhi: Concept Publication.

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LI.   MAJOR COURSE- MJ 8:
HISTORY OF EUROPE (1789-1919 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
The students will be able to analyze the historical developments in Europe between 1780 to 1919.
As it focuses on the democratic and socialist foundations of modern Europe.
They will be able to situate historical developments of socialist upsurge and the economic forces of the wars, and other ideological shifts

Course Content:
UNIT- I Rise of New Nationalism in Europe
1. Revolutionary Transition in France: 1789 to 1804
2. Counter Revolution in France: Age of Napoleon and spread of French Revolution
3. Downfall of Napoleon and Age of Reactionism, Congress of Vienna

UNIT- II Rise of New Nations
1. Repression of Liberalism in Central Europe, Spain, Portugal and Russia
2. Unification of Germany under Prussia
3. Unification of Italy
4. Berlin Congress, 1878: Origin and implications.

UNIT- III Capitalist Industrialization and Socio Economic Transformation
1. Capitalist development in industry and Agriculture
2. Emergence of New Social Classes: Bourgeoisie, Proletariat and Peasantry
3. International Competition: Neo-Imperialism.

UNIT -IV International Relations: New Era and the Concept of Balance of Power
1. Creation of Alliance
2. The Crumbling of Ottoman Empire: The 1st and 2nd Balkan Wars
    3. The creation of Entente; Britain from Isolation to militancy.

Suggested Readings:
1. C.D.M. Ketelby, *A History 2002 of modern times from 1789*, George G. Harrap & Co. Ltd., London 1964.
2. DN Verma, *Vishva Itihas ka Sarvekshan*
3. VD Mahajan, *Adhunik Europe ka Itihas*
4. Dinanath Verma, *Adhunik Europe ka Itihas*
5. Rajiv Nayan Prasad, *Adhunik Europe ka Itihas*
6. Lal Bahadur Verma, *Europe ka Itihas*
7. LP Sharma, *Europe ka Itihas*
8. Dhanapati Pandey, *Europe ka Itihas*

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SEMESTER V

LII.   MAJOR COURSE- MJ 9:
HISTORY OF INDIA (1526-1707 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
        Students would acquire an understanding of a significant phase in Indian history when the Mughals consolidated their power and subsequently surrendered it to the colonial imperialism. Students will be able to identify major trends of cultural and literary movements that occurred during this age but whose influence persisted up to modern time.

Course Content:
UNIT -I. Sources and Historiography:
1. Persian sources
2. Vernacular sources
3. Travelogues

UNIT - II. Establishment of Mughal rule:
1. Babar and foundation of the Mughal Empire
2. Humayun: His failures
3. Sher Shah: Administration

UNIT - III. Consolidation of Mughal rule: Akbar to Shahjahan:
1. Akbar-Rajput policy, Din-i-ilahi
2. Jahangir – Achievements
3. Shahjahan – Deccan Policy

UNIT – IV. Downfall of Mughal Empire:
1. Aurangzeb – Deccan Policy, Religious Policy
2. Emergence of Maratha Powar- Shivaji and his Administration
3. Downfall of the Mughal Empire

UNIT – V. Society and Economy and Culture:
1. Social structure, Nobility and Peasant
2. Agriculture- Land Revenue System
3. Trade routes and patterns of internal commerce; overseas trade;
4. Art and architecture

Suggested Readings:
1. Harbans Mukhia, *The Mughals of India.*
2. J.F. Richards, *Mughal Administration in Golconda.*
3. J.F. Richards, *The Mughal Empire.*
4. Muzaffar Alam and Sanjay Subrahmanyam, eds, *The Mughal State*, 1526 – 1750.
5. Muzaffar Alam, *The Crisis of Empire in Mughal North India.*
6. Satish Chandra, *Essays on Medieval Indian History.*
7. A.L. Srivastava – *Madhyakalin Bharat*
8. Harishchandra Verma – *Madhyakalin Bharat ka Itihas (Bhag -1)*

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9.   Imtayaj Ahamad – *Madhyakalin Bharat ka Sarvekshan*
10. S.R. Sharma – *Mugal Kalin Bharat ka Itihas*
11. J.L. Mehta – *Madhyakalin Bharat ka Brihad Itihas*

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LIII.   MAJOR COURSE- MJ 10:
HISTORY OF JHARKHAND (1857-2000 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
        The contents of this paper could make the students realise how Jharkhand suffered badly at the hands of colonial power.
They would learn the social, military and political limitations of the native powers that could not successfully resist the onslaught of the British imperialism. The students will also learn about the regional movements for separate state of Jharkhand.

Course Content:
UNIT -1 The Revivalist Movements in Jharkhand
1.   Safahor Movement
2.   Birsa Movement
3.   Tana Bhagat Movement

UNIT-2 Jharkhand and Indian National Movement
1.   Struggle of 1857 in Jharkhand
2.   Gandhian mass movements: Non Cooperation and Civil Disobedience
3.   Revolutionary movement
4.   Quit India Movement in Jharkhand.

UNIT-3 The role of Christian Missionaries in Jharkhand
1.   Education
2.   Health

UNIT-4 Jharkhand Movement and the formation of Jharkhand state
1.   Jharkhand movement during the British Period
2.   Jharkhand movement during the Post Independent period
3.   Creation of Jharkhand

Suggested Readings:
1.   Amit Prakash, *Jharkhand: Politics of Development and Identity*, Orient Longman, 2001
2.   B. Virottam, *Jharkhand: Itihas Evam Sanskariti*, Bihar Hindi Granth Akadami, 2013
3.   Balbir Dutt, *Kahani Jharkhand Andolan Ki*, Crown Publication, 2005
4.   K. K Datta, *History of Freedom Movement in Bihar* (3 vols), Govt, of Bihar, Patna, 1957 (In Hindi)
5.   K. K Datta. *The Santhal Insurrention of 1855-57*, Calcutta Univ., 1988
6.   K. S. Singh, *Birsa Munda and His Movement*, 1874-1901. OUP, Calcutta, 1983
7.   S. Mishra, *History of Freedom Movement in Chotanagpur*, 1885-1947, KPSRI, Patna, 1990
8.   Sachachidanand, Birsa, *An Adivasi Fighter for Freedom*, Muni Ram Manohar Lal, Delhi.
9.   vkHkk[ky[k$ fczŸk"kdkyhu >kj[k.Mdsd Y,frgkfld v/;;u] tfo;j ifCydskUl] iqfy;kjkSMjkphA
10.   lfpnkukuk .k] >kj[k.Mvkuhksyu] mxe , oanŸku] blaj bkM.k ifCydskUl] ubZfnYyhA
11.   ch-h-dSkjh] >kj[k.Mvkuhksyu dhoktrfodrk] >kj[k.MI eely; lfefr] jkphA
12.   deqkj psk fl³g] fcjl keqŸk vkSmudk vkuhksyu] ok.kh izdk'ku] ubZfnYyhA
13.   Hemant, *Jharkhand*, Prakashan Sansthan, 2204
14.   L. N. Rana, *Jharkhand: Aspects of Freedom Struggle and Constituion Making*, K. K. Publication, 2010
15.   Dr. S. Mahto, *Hundred years of the Christian Missions in Chotanagpur since 1845*, Bharatiya Vidya Shodh Sansthan, Patna.
16.   Sarla Kachhap, *Contributin of Christian Missions to the cause of Education in Chotanagpur*, 1845-1945.
17.   Ram Kumar Tiwari, *Jharkhand ki Rooprekha*, 2013

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18. Sajal Basu, *Jharkhand Movenent*, Indian Institute of Advanced Studies, 1994
19. Shailendra Mahto, *Jharkhand ki Samargatha*, Nidhi Books, 2011
20. Sudhir Pal Ranendra, *Jharkhand Encyclopedia*, Vani Prakashan, 2008
21. Sunil Kumar Singh, *Inside Jharkhand*, Ranchi: Crown Publication

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LIV.   MAJOR COURSE- MJ 11:
HISTORY OF MODERN WORLD (1919-1947 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course aims to provide an understanding of an era of shifting history from the Euro centric one to World history. Discusses the turbulent times when totalitarianism rose as an alternative to democratic and liberal ideal about the growing desire for peace through formation of organizations such as United Nations.

Course Content:
UNIT-I- 1919: A New World Order
1. Formation of the League of Nations: Its various organs, Achievements and failures
2. Formation of ICJ and ILO
3. New Imperialism, Mandate System
4. Democracies between the two world wars

UNIT -II - Rise of Totalitarianism
1. Failure of Weimar Republic and Rise of Nazism in Germany
2. Factors leading to the Growth of Fascism in Italy and concept of the Corporate State
3. Rise of Militarism in Japan

UNIT- III - Anti Imperialist Movements between the Two World Wars
1. Arab uprisings
2. Anti-imperialist movement in Turkey.
3. Anti-Imperialist Movement in Indo -China
4. Anti-Imperialist Movement in Egypt

UNIT -IV- Crisis in the Capitalism
1. Rise and Role of Trusts in USA
2. The Progressive Movement and Trust Busting in USA
3. Crisis in Capitalism: The Great Depression of 1929
4. FD Roosevelt and Policy of New Deal

Suggested Readings:
1. Ajay Shukla, *History of the Moodern World*, S.chand and Company Ltd., Ghaziabad,2023
2. Arjun dev and Indira Arjun Dev, *Samkalin Vishwa ka Itihas*, 1890-2008, Orient BlackswanPvt. Ltd.,
3. B.V. Rao, *History of the modern world* (1500-2013), Sterling Publishers Pvt. Ltd.,
4. MOeFhky ky "ek7 vkKµd fő"O (Modern World, 1917-45) dkYs cq fMk kt ; iµ
5. David Thomson, *Europe Since Napoleon*, Penguin books, New Delhi
6. E.H. Carr, *International Relations between two world wars,*1919-1939, Macmillan
7. Hukam Chand jain and Krishna chandra Mathur, *A history of the modern world* (1500-2000 A.D), Jain prakashan mandir (Also in Hindi)
8. Jain and Mathur, *Adhunik Vishwa ka Itihas* (1500-2000) Jain prakashan mandir
9. K.L. Khurana and R.C. Sharma, *Bisvi Shatabdi ka vishwa*, Laxmi narayan, Agra,2005
10. Kaluramsharma and Prakasg Vyas, *Adhunik Vishwa ka itihas* (1500-2000), Panchshil publications
11. Norman Lowe, *Mastering Modern World history*, Polgrave Macmillan
12. Peter Frankopan, *The Silk Roads- A new history of the world*, Bloomsbury, London, 2016
13. Ranjan Chakrabarti, *A history of modern world: an outline*, primus books, Delhi, 2012
14. Sneh Mahajan, *Beeswin ShatabadikaVishwa ka Itihas: Ek Jhalak* Bhag-1,2, Hindi Madhyam Karylayan Nideshalaya, Delhi University, 2014.

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SEMESTER VI

LV.   MAJOR COURSE- MJ 12:
HISTORY OF INDIA (1707 – 1857 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Outcomes:
The contents of this paper could make the students realise how India suffered badly at the hands of colonial power. They would learn the social, military and political limitations of the native powers that could not successfully resist the onslaught of British imperialism.

Course Content:
Unit – I - India in the mid 18th Century
1. Society, 2. Economy and 3. Polity

Unit – II - Expansion and Consolidation of colonial Power:
1. Bengal, and Awadh
2. Mysore and Maratha Confederacy
3. Punjab and Sindh

Unit – III - Colonial State and Ideology:
1. Colonial Administrative infrastructures: Army, Police, Law.
2. Evangelical theory, 3. Utilitarian theory:

Unit – IV - Rural Economy and Society
1. Land revenue systems and the forest policy.
2. Commercialization of agriculture and indebtedness.
3. Emergence of new social classes: Landlords, Middle Class, Bonded Labour
4. Famines.

Unit – V - Trade and Industry
1. De industrialization
2. Trade and monitory system
3. Drain of Wealth
4. Growth of modem industries

Suggested Readings:
1. Gyanendra Pandey, *The Construction of Communalism in colonial north India*.
2. Ram Lakhan Shukla (ed.), Adhunik Bharat ka Itihas.
3. Sekhar Bandhopadhyaya: *From Plassey to Partition and After*, Orient Blackswan
    4. Bipan Chandra, *Adhunik Bharat ka itihas*, Orient Black Swan, Pvt. Ltd, 2010
    5. G.S. Chhabra and Dwiivedi, *Adhunik Bharat ka Itihas,ek Adhyayan*, Publication Pvt.
    6. B.L. Grover, *Adhunik Bharat ka itihas, ek Mulyankan*. S. Chand and Company.
    7. P.E. Robert, *British kalin Bharat ka itihas*, S. Chand and Company.
    8. P.N. Chopra, V.N. PURI, M.N. Puri, M.N. Das, *Bharat ka Samajik Sanskritik aur Arthik Itihas,* Part 1,2,3, Mackmillan India Ltd.
    9. P.L. Gautam, *Adhunik Bharat ka Itihas avam Virasat* (1757-1964), Antarctic Publication Pvt. Ltd.
        Savyasachi Bhattacharya, *Adhunik Bharat ka Arthik Itihas*, Rajkamal Prakashan.

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10. LP. Sharma, *Adhunik Bharat*, Laxmi Narayan Agarwal, Agra.
11. Arvind Bhaskar, *Adhunik Bharat*, Part 1, 2. Kalam Publication.
12. Jawaharlal Nehru, *Hindustan ki kahani* (Also in English).

LVI.   MAJOR COURSE- MJ 13:
INDIAN NATIONAL MOVEMENT (1857-1947 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60**
Lectures

Course Objectives & Learning Outcomes:
The contents of the syllabus are designed to make the students of under graduate level aware about the core issues relating to the growth of National Movement in India right from the 19th century.2. The course presents a brief introduction of National Movement.

Course Content:
UNIT- I: First War of Independence and rise of Mass Nationalism
1. Debates on 1857 and its impact on British Policies.
2. Theories pertaining to Nationalism and Nation state.
3. Factors leading to growth of Nationalism in India and Social Background of Indian Nationalism.

UNIT-II: From Swadeshi to Home Rule
1. Idea of Swadeshi, Swadeshi Movement and Congress Split at Surat, British response to the Swadeshi Movement.
2. Idea and formation of Muslim league: Demands and Early Programs.
3. First World War: Lucknow Pact, Home Rule Movement.
4. Entry of Gandhi:Regional Movements, Rowlatt - Satyagrah, Khilafat Issue.

UNIT-III: Mass Movements of Congress and Alternative Ideologies.
1. Non Cooperation, Regional variations and Swarajists.
2. Revolutionary Movement, Trial of Bhagat Singh, Rise of Leftist Ideology.
3. Simon Commission, Nehru Report and Civil Disobedience Movement.
4. Tripuri crisis: Issues and Ideas of Subhash Chandra Bose, Quit India movement.

UNIT-IV: Rise of Peasant, Workers, Tribal's and Linguistic Organizations.
1. Peasant Issues since 1919, formation of Regional Peasant Associations and all lndia Kisan Sabha, Role of Madan Mohan Malviya and Sahjanand Saraswati.
2. Rise of Industrial Worker Class, its issues and Formation of Trade Unions.
3. Colonial Policies and Tribal Issues (1857-1947)
4. Rise Challenges: Growth of Linguistic Identities

UNIT-V: Road to Partition and Independence.
1. Challenges of Communalism (1942-1947).
2. Role of INA, INA Trial's and RIN Mutiny.
3. Constitutional Formulas: Wavell Plan, Cripps and Cabinet Mission.
4. Mountbatten Plan, Circumstances leading to Partition

Suggested Readings:
1. Bipin Chandra and Others: *Freedom Struggle*
2. Desai A.R.: *India's Path of Development.*
3. Desai A.R.: *Social background of Indian Nationalism*
4. Dutta, K.K: *Social History of Modem India*
5. MN. Gupta: *History of the revolutionary Movement in India*
6. S.R Mehrotra: *The Emergence of Indian National congress*
7. Sumit Sarkar: *Modem India* 1885 to 1947.Macmillian, 1983
8. Tara Chand: *History of Freedom Movement in India*, Vol. 3

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9. RC Agarwal: *Rastriya Andolan Evam Samvaidhanik Vikas*
10. Sundar Lal: *Bharat me Angrezi Raj*, NBT, Delhi

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LVII. MAJOR COURSE- MJ 14:
HISTORY OF CHINA (1800 TO 1950 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
1. India and China were the two alert societies that came under the influence and exploitation on part of the western colonialism. The modern age China history could equip the students in terms of the knowledge of the nuances of colonial exploitation, methods to resist it and the subsequent social transformations.
2. This course offers an opportunity to come to grips with the history of China in modern world.

Course Content:
UNIT-I: Interaction with the Western Powers
1. First Opium War
2. Opening of Various Treaty Ports
3. Second Opium War
4. Expansion of Western powers; Open Door Policy

UNIT-II: Resistance against Imperialism.
1. Taiping Rebellion.
2. The Boxer Rebellion.
3. 100 days of Reforms.
4. New Political Alignment.

UNIT-III: The Emergence of New China
1. Sun Yat Sen
2. The State Revolution of 1911
3. The Kuomintang
4. The Era of Yuan Shih-Kai, May 4 Revolution,1919

UNIT-IV: Toward Communism (1925-1949)
1. Chiang kai-shek.
2. Maotse Tung
3. Civilwar
4. Establishment of Communist Rule.

Suggested Readings:
1. Benjamin I. Schwartz, *Mao and the Rise of Chinese Communism*.
2. Budha Prakash-*Asia ka Itihas*
3. Dinanath Verma-*Asia ka Adhunik Itihas.*
4. Franz Michael, *The Taiping Rebellion.*
5. Franz Schuramann and Orville Schell (eds.), *China Readings*, 2 Volumes (Imperial China, and Republican China).
6. Girish K'r. Singh-*Asia ka ltihas.*
7. Harold Z. Schiffrin, *Sun Yat-Sen and the Origin of the Chinese Revolution.*
8. Heraldm Vinake- *Poorav Asia ka Adhunik ltihas.*
9. Hetsingh Baghela- *Asia ka itihas.*
10. Hu Sheng, *Imperialism and Chinese Politics.*
11. Jean Chesneaux, et al, *China from Opium War to 1911 Revolution.*
12. Jean Chesneaux, *Peasant Revolts in China*, 1840 – 1949.
13. John K. Fairbank, et al., *East Asia: Modern Transformation*
14. K.L. Khurana-*Chinaand Japan KaItihas. (1840 &1949)* y{ehukjk .kJ vkxjk
15. KTS Sarao- *China Ka Itihas*

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16. Lucien Bianco, *Origins of the Chinese Revolution*, 1915 – 1949.
17. SatyaketuVidyalankar, *Adhunik Asia ka Itihas*.
18. H.M Vinacke: *SudurPurva ka Itihas*.
19. ParthSarathi Gupta: *SudurPurvaka Itihas*.
20. Dhanpati Pandey: *Adhunik Asia Ka Itihas*.
21. DN Verma : *Purvi Avm Pashchmi Asia Ka Itinas*.

LVIII. MAJOR COURSE- MJ 15:

HISTORY OF JAPAN (1850 TO 1950)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
1. Modern history of Japan offers one of the models to social progress and modernization.
2. Understanding the nuances and multiple dynamics through 19th-20th century,
3. Japan may equip the students with insights helpful in nation-building.

Course Content:

UNIT- I: Emergence of Modern Japan
1. Meiji Restoration
2. Constitutional Development
3. Impact of Western world
4. Socio-economic development

UNIT- II: Japanese Imperialism Phase I
1. Sino Japanese War, 1894-97
2. Russo Japanese War, 1904
3. Annexation of Korea
4. Japan and the First World War

UNIT- III: Japan between the two World Wars
1. The Washington Conference
2. New Political Formations
3. Manchurian Crisis
4. Rise of Militarism

UNIT- IV: Japanese Imperialism Phase II
1. Sino Japanese War, 1937
2. Japan with Axis Powers
3. Pearl Harbour Episode
4. Culmination of Japanese Imperialism Rise of Militarism

Suggested Readings:
1. Jansen (ed.), *The Cambridge History of Japan*, Vol. V and VI.
2. Chitoshi Yanaga, *Japan since Perry*.
3. E.H. Norman, *Japan's Emergence as a Modern State*.
4. G. Beasley, *The Modern History of Japan*.
5. Buddha Prakash, *Asia kaItihas*
6. Girish Kumar Singh, *Asia KaItihas*.
7. John K. fairbank, East Asia: *Modern Transformation* (also in Hindi).
8. Ram Narayan Mishra, *Japan KaSankshipt Itihas*.
9. HelraldmVinake, *Poorav Asia Ka AdhunikItihas*.
10. KL Khurana, *China and Japan ka Itihas*.

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11. Satyaketu Vidyalankar, *Adhunik Asia KaItihas*.
12. IGNOU, *China aur japan kaItihas* (1840- 1949)
13. KT.S. Sarao, *Japan KaItihas,* Delhi Vishwavidyalaya.

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SEMESTER VII

LIX.　MAJOR COURSE- MJ 16:
CONTEMPORARY INDIA (1947 TO 2000 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
　　　Students will be able to comprehend wide ranging topics of compelling contemporary interest in the context of India from the 1950s to the 2000s.

Course Content:
UNIT- I: The Impact of Colonialism and National Movement:
1. Impact of Colonialism on Political, Social, Economic System and Cultural Values.
2. National Movements: Its significance, Value and Legacy
3. Partition and Independence of India: Role of Congress other political groups
4. Integration of Princely States; special discussion on Hyderabad, Junagarh and Jammu and Kashmir

UNIT- II: Indian Constitution and Consolidation as a Nation:
1. Definition of Bharat (India) as 'Shaswat Rashtra' and Framing of Indian Constitution - Constituent Assembly - Draft Committee Report - declaration of Indian Constitution, Role of Dr. B.R. Ambedkar, Indian constitution - Basic Features and Institutions.
2. The Linguistic Reorganization of the States, Regionalism and Regional inequality
3. India's Relations with Neighboring countries; Pakistan, China, Nepal, Sri Lanka, Afghanistan and Myanmar.
4. Evolution and development of Parliamentary Democracy

UNIT- III: Socio-Economic development since independence:
1. Indian Economic development - industrialization, liberalization and globalization.
2. Land Reforms: Zamindari Abolition and Tenancy Reforms, Ceiling and the Bhoodan Movement, Agriculture Growth and the Green Revolution and Agrarian Struggles Since Independence
3. Significance of political and social movements, Women Empowerment and the question of Peasant rights
4. Issue of Identity Politics: Communalism; Regional and Caste Consciousness; Dalit Politics, Untouchability, Anti-caste Politics and Strategies

UNIT- V: India and the World:
1. India's Foreign Policy in the Nehru (1947-1964) and post Nehru (1964-2000) period, challenges and responses.
2. Issue of Non-Alignment movement after the end of the Cold War.
3. Emergence of Terrorism, Issues and Challenges
4. India's Role in the Contemporary World.

Suggested Readings:
1. R. Nanda, *Indian Foregin Policy: The Nehru Years*, 1976
2. Bipan Chandra, *Azadi Ke Bad Ka Bharat* (In Hindi & English)

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3. Hiranmay Kerlelker, *Independent India*: The First Fifty Years, 1998
4. Nupur Roy, *Impact of Globalization on India*, Sri Bharti Press, Calcutta-2016
5. Rajani Kothari, *Politics in India*,1986
6. Ramchandra Guha, *Bharat Gandhi Ke Bad*, Penguin (Hindi & English)
7. Ramchandra Guha, *Bharat Nehru Ke Bad* (Hindi & English)
8. Sunil Khilnani, *The Idea of India,* 1997
9. P. Dutt, *Badalti Duniya Mein Bharat Ki Videsh Niti*
        10. Manoj Sinha, *Samakalin Bharat ka Parichay*, Orient blackwan Private Limited.
11. Sajjan Pawan, *Samakalin Bharat* (1947-2000)

LX.   MAJOR COURSE- MJ 17:
HISTORY OF THE USSR (1917- 1964 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This paper has been designed to provide an understanding about
1. the Communist Revolution in Russia.
2. Establishment of Marxist government.
3. Functioning of one party rule and political social, economic and cultural growth of Russia.
4. How the USSR became super power under Stalin.

Course Content:
Unit – I - The Russian Revolution of February and October 1917:
1. Causes of revolution
2. Nature
3. Effect of Revolution
4. Nationalities Question.

Unit – II -Russia Between 1918 – 1924:
1. Civil War,
2. Establishment of USSR,
3. New Economic Policy of 1921,
4. Life and achievements of Lenin.

Unit – III - Russia Between 1924 – 1941:
1. Role of Stalin,
2. Power straggle in Communist Party,
3. Five-year plan and its Success,
4. Foreign policy of Stalin.

Unit – IV - Socio economic development 1921- 1945:
1. Working class and gender relations,
2. Trade Union Movement,
3. Collectivization of Soviet Agriculture,
4. Growth of Industrialization.

Unit – V - Russia Between 1941- 64:
1. Role of Russia in Second World War,
2. Cold War,
3. Reconstruction of Russia After 2nd World War,
4. Internal and External Policies of Khrushchev.

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Suggested Readings:

1.   Alec Nove: *An Economic History of the USSR* (1993)
2.   H. Carr: *A History of Soviet Russia (4 Volumes)*, The Macmillan Company,1952
3.   Geoffrey Hosking, *A history of the Soviet Union*, William Collins Publication.
4.   Jain and Mathur, *Adhunik Vishwa ka Itihas*, Jain Publication
5.   Koleshwar Ray, *Roos ka Itihas (Hindi),* Kitab Mahal.
6.   Om Prakash Prasad, *Roos ka Itihas*, Rajkamal Prakashan.
7.   Parth Sarathi Gupta, *Europe ka Itihas (Hindi)*, Vishwavidhalay Prakasan Delhi.
8.   Praveen Jha, *Roos Russia aur Rasputin(Hindi)* Vani Prakasan.
9.   Rahul Sankrityayan: *Soviat Bhumi (Hindi*) Kashi Nagari Pracharini Sabha.
10. Rambriksh Benipuri, *Roos ki Kranti*, Lok chetna prakashan.
11. Satyaketu Vidyalankar, *Europe ka Adhunik Itihas*, Sarswati Sadan Publication.

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LXI. MAJOR COURSE- MJ 18:
HISTORY OF COMMUNICATION IN INDIA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will make the students aware of past of communication in India. This curriculum provides in depth study of various dimensions of communication in Indian Past.

Course Content:
UNIT I: Communication: Concept and History
1. Communication: Definition, concept, elements and scope.
2. Types of communication: Formal and Informal, Verbal and Non Verbal, Oral and Graphic (written/scripted) and Heritage.
3. Different process, functions, theories and philosophy of communication.
4. History of communication: A brief Survey, primitives, petroglyphs, pictogram, ideograms, writing, printing.

UNIT II: Means of Communication
1. Art as means of communication: Painting, Sculpture, symbols, signals
2. Folk and community communication- folk songs, folklore, folk craft, Legends.
3. Performing Art as effective communication: Dance, Drama, Theatre, Puppetry, and Storytelling.
4. Changing dimensions of communication in modern times. Basic Knowledge of new means of communication: Telephone/ phonograph/ radio/ television/ fax/ mobile/ computer/ internet/ digital.

UNIT III Writing and Language as Communication
1. Writing: Evolution and growth of writing, alphabet, script (knowledge of Indus Script and other ancient Scripts of India), Inscription as a source of communication
2. Evolution of Printing in India.
3. History of Newspaper in India
4. An Introduction of the History of Advertisement, Postal communication and Design

UNIT IV History of the Ideas of Communication in India
1. History of the Communication in India: Narad, Krishana, Buddha, Shankar, Vivekananda and Gandhi.
2. Literature as communicators in India: Myth and legends, Natyashastra, Meghdoot, Panchtantra, Gurugranth Sahib, Ramcharita Manas.
3. Live examples of Visual arts in India: Bhittichitra, Rock Art and Potteries.
4. Visual art Literature: Chitrasutra in Vishnudhamottra Purana, Rasik Priya, Bihari Satsai.

UNIT V Museum and Archive Communication
1. Museum and archives as a source of historical and cultural communication.
2. Museum: Artifacts, Galleries, Exhibition and outreach programme.
3. Monument as a living Museum
4. Case study of any Art Museum.

Suggested Readings:
1. Ajit Mukherji: *Folk Art of India 1986*, Clarion Books
2. B.N Ahuja: *History of India Press*, Subject publication, 1988, New Delhi
3. David Diringer: *The Book before printing, Ancient, medieval and Oriental*, Couries Dover Pub. 1982

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4. Durga das Mukhopadhyay: *Folk Arts and Social Communication*, Publication Division,
5. H. Zimmer: *Myth and Symbolism in Indian Art and civilization*, Princeton Press, New Zersey
6. J Severin Werner and James W Tankard Jr: *Communication Theories Origin Method*, Uses, Longman Pub. 1988
7. Kapila Vatsyayan: *Traditional Indian Theatre, Multiple Streams*, 2005, NBT New Delhi
8. Mason Bim: *Street Theater and other outdoor Performance*, knowledge, 1992
9. Ministry of information & Broadcasting, Govt. of India
10. Rajbali Pandey: *Indian Rocks painting: Their Chronology, Technique and Preservation*, 1968
11. S.K. pandey: *Indian Rock Art*, Aryan Book ltd, New Delhi, 1993
12. Singhal & E. M Rogers: *Indian Communication Revolution: From Bullock Cart to Cybers Marts*, Sage Publication New Delhi
13. Somnath Chakravartey: *Interpreting Rock Art in India, A holistic and Cognitive Approach*: XXIII Valcamonica Symposium, 2009
14. Sukumar Das: *The Book Industry in India: Context, Challenges and Stratergy*, The Federation of publishers and Book Dwellers Association in India, 2004
15. V.S Wakankar: *Painted Rock shelters of India*, Revista de Science Prehistoric 17, (1-4)
16. William Raymond: *Communication, Culture and Media*, Oxford university Press, New York, 1976

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LXII. MAJOR COURSE- MJ 19:
HISTORY OF USA (1763 – 1947 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) Theory: 60 Lectures

Course Objectives & Learning Outcomes:
Students will enhance their knowledge of the history of America. It will help them understand, synthesize and analyze the major themes and debates in the historiography of America and its emergence as a World Power.

Course Content:

UNIT- I: The Background:
1. The land and indigenous people: settlement and colonization by Europeans
2. Early colonial society and politics
3. Indentured labor: White and Black

UNIT- II: Making of the Republic:
1. Revolution: Sources of conflict, Revolutionary groups
2. Ideology: The War of Independence and its historical interpretations
3. Processes and Features of Constitution making: Debates, Historical interpretations.

UNIT- III: Civil War:
1. Abolitionism and Sectionalism.
2. Issues and Interpretations
3. Rise of Republicanism
4. Emancipation and Lincoln

UNIT- IV: U.S. Imperialism:
1. Spanish-American War
2. Expansion in the Far East and Latin America
3. World War I and Fourteen Points
4. Isolationism
5. Americans in World War II: Bombing of Hiroshima and Nagasaki

Suggested Readings:
1. Dwijendra Tripathi and S.C. Tiwari, *Themes and Prespectives in American History*.
2. Raghvendra Panthri, *Sanyukt Rajya America ka Itihas*.
3. KanklinAscher, *Sanyukt Rajya America ka Sanchipt Iihas*.
4. Devki NandanVibhav, *America ka swadhinta ka Itihaas*.
5. Banarsiprasad Saxena, *America ka Iitihas.*
6. Henry Bebhcord parcus, Trans. Vishva Prakash Gupta, *America ka Itihas*.
7. Khurana& Chauhan, *America ka Ithas.*
8. A. K. Chaturvedi, *America Ka Itihas.*

SEMESTER VIII

LXIII. MAJOR COURSE- MJ 20:
ISSUES IN CONTEMPORARY WORLD

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This paper enables students to identify the contemporary challenges like social transformation, liberalization, privatization and globalization.

Course Content:
UNIT I Colonialism and Nationalism, A Synoptic view:
1. Social Transformation after the Second World War;
2. United Nations and UNESCO
3. N.A.M
4. Cold War

UNIT II Perspectives on Development and Underdevelopment:
1. End of the Cold War and the emergence of the Unipolar world
2. World Trade Organization
3. Patent and Copyright Act
4. Impact of Globalization

UNIT Ill Social Movements in the North and the South:
1. Ecological
2. Feminists
3. Human Rights Issue

UNIT IV Modernity and Cultural Transformation:
1. Emerging trends in Culture
2. Role of Media
3. Emergence of market economy and Consumerism

Suggested Readings:
1. E.J. Hobsbawm, *The Age of Extremes*, 1914 – 1991, New York: Vintage, 1996Carter V.
2. Norman Lowe, *Mastering Modern World History*, London: Palgrave Macmillan, 1997
3. Arjun Dev, *Samakalin Vishwa ka Itihas*, (1890-2008).
4. Indira Arjun Dev, *Bisanvin Shatabdika Vishwa Itihas: Ek Jhalak*, Bhag-2.

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LXIV. ADVANCED MAJOR COURSE- AMJ 1:
PRINCIPLES OF HISTORY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
The paper attempts to develop the skills of students to make them aware of intricacies of history writing. Through this paper student would learn the basic nuances of the discipline of history and how it relates to other subjects. Moreover, the students would learn various historiographic traditions of India.

Course Content:

Unit I : What is History:
1. Meaning and Definition
2. Subject matter and scope
3. Role of Individual
4. Role of Society in Historical Development

Unit II : History and its relation with other disciplines
1. Sociology and Anthropology
2. Political Science
3. Economics
4. Geography

Unit III: Periodization
1. Periodization in History
2. Ethics in History writing
3. Historicism
4. Intellectual property rights

Unit IV: Philosophy of History
1. Objectivity and Subjectivity
2. Determinism and Relativism
3. Causation
4. Generalization

Unit V : Historical Traditions
1. Ancient: Itihas – Purana Tradition
2. Budhist and Jain Historiography, Banbhatta and Kalhan
3. Medieval: Tradition of Indo-Persian writing in Indian History
4. Modern: Orientalist and Nationalist writings in Indian History

Suggested Readings:
1. Arther Marwick, *Ithias ka Swarupa* (Anuvadaka Lal Bahadur Verma) Granth Shilpi, Delhi, (In Hindi)
2. Atul Kumar Sinha, *Itihas; Mulya Aur Arth*, Anamika Publishers & Distributers, New Delhi (In Hindi)
3. B. Sheik Ali, *History: Its Theory and Method*, Macmillan, New Delhi, Reprint, 2001
4. E. H. Carr, *Ithias Kya hai*, Macmillan, 1993 (In Hindi)
5. E. H. Carr, *What is History*, Penguin Book, 1967
6. Govind Chandra Pandey, *Ithias Swarupa Ewam Sidhanta*, Rajasthan Hindi Granth Academy, Jaipur (In Hindi)
7. J.S. Grewal, *Studies in Local & Regional History*, Guru Nanak Dev University, Amritsar, 1974
8. K. L. Khurana, *Concepts and Methods of Historiography*, Laxmi Narain Agrawal, Agra
9. Kriti K. Shah, Meher Joti (Eds.), *Historiography Past & Present*, Rawat Publication, New Delhi

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10. Paramanand Singh, *Itihas Darshan*, Motilal Banarsidas, Varanasi, 1996
11. Prabhat Kumar Shukla (ed.), *Ithias Lekhan ki Vibhinn Drishtiyan*, Granth Shilpi, 2012
12. R. K. Majumdar & A. N. Srivastava, *Historiography*, SHB Publisher & distributer, Delhi 1999
13. Tej Ram Sharma, *Research Methodology in History*, Concept Publishing
14. Jharkhand Chaubey, *Itihas Darshan*
15. E Sreedharan, *Itihas Lekhan*.
16. H.D Singh, Chitra Rao, *Itiihas Ka Darshan aur Itihas Lekhan*.

LXV. ADVANCED MAJOR COURSE- AMJ 2:

SOCIO-RELIGIOUS MOVEMENTS IN INDIA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:

Students would acquire brief knowledge of the various Socio-Religious movements in Indian history. They would learn how certain Socio-religious practices continued to influence the Indian Society from the Vedic to the modern age. They would also learn about the parallel religious streams like Jainism and Buddhism that influenced Indian history as the mainstream socio-religious trends and accommodated them.

Course Content:

Unit I : Social life of India from earliest days to Gupta period.
1. Harappan Society
2. Vedic Society
3. Buddhism and Jainism
4. Mauryan Society
5. Gupta Society

Unit II: Medieval India and Indian Socio-Religious life in Sultunate Period.
1. Social Structure of Sultanate Period
2. Bhakti Movement
3. Sufism
4. Nath Cult

Unit III: Medieval India and Indian Socio-Religious life in Mughal India.
1. Social structure of Mughal Period
2. Bhakti Movement
3. Din-i-Ilahi
4. Sikhism

Unit IV: Socio-Religious Movements in Modern India
1. Brahmo Samaj
2. Arya Samaj
3. Theosophical society
4. Muslim Reform Movement

Suggested Readings:
1. A.R.Desai, *Social Background of Indian Nationalism* (Hindi and English)
2. Bisheshwar Prasad, *Bondage and freedom*, Volume I and II.
3. Ravindra Kumar, *Adhunik Bharat Ka Samajik Itihas,* Granth Shilpi.
4. Dhanpati Pandey, *Adhunik Bharat ka Samajik Itihas*.
5. M. N. Srinivas, *Social change in Modern India* (Also in Hindi).
6. P.N. Ojha, *Aspects of Medieval Indian Society and Culture*
7. A.L. Srivastava, *Madhyakalin Bharadka Samaj Evam Sanskriti*.
8. Jharkhand Chaubey, *Madhyakalin Sanskriti*.

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9.   P.N. Chopra, *Society and Culture during the Mughal Age*.
10. HC. Verma, *Madhyakalin Bharat KaItihas*, part 1 and 2.
11. Tara Chand, *Influence of Islam on India*.
12. Mohammad Yasin, *A Social history of Islamic India*.
13. Yusuf Hussain Khan, *Glimpses of Medieval Indian culture*.
14. Om Prakash, *Pracheen Bharat ka Samajik aur Arthik Itihas* (2 parts).
15. Jai Shankar Mishra, *Pracheen Bharat ka Itihas*.
16. Kailash Chandra Jain, *Pracheen Bhantlya Samajik Evam Arthik Itihas*, Madhya Pradesh Hindi Granth Academy.
17. S.S. Sahay, *Pracheen. Bharat Ka Arthik Evam Samajik Itihas*.
18. R.S. Sharma, *Pracheen Bharat ka Arthik Evam Samajik Itihas*.
19. P.N. Ojha, *Glimpses of Social life in Mughal India*, Bhartiya Vidya Shodh Sansthan, Patna.
20. P.N. Ojha, *Mughal kalin Samajik Jeevan ki Jhanki*, Bhanthiya Vidya Shoth, Sansthan, Patna.

LXVI. ADVANCED MAJOR COURSE- AMJ 3:
WOMEN IN HISTORY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
The study on various dimensions of Women's history has become a regular feature in historiography. Keeping this trend in view, this paper aims to equip students about the basic learning of the positions of women in various phases of Indian history. The students would also learn about the theoretical issues and trends that influence the historiography of women.

Course Content:
Unit I: Approaches
1.   Liberal   2. Marxist   3. Radical   4. Patriarchy

Unit II: Rise of Feminist Movements
1.   England,   2. France   3. USA   4. Russia and China

Unit III: Position of Women in Ancient India
1.   Legal,   2. Educational   3. Social   4. Politcal

Unit IV: Position of Women in Medieval India
1.   Legal,   2. Educational   3. Social   4. Politcal

Unit V : Position of Women in Modern India
1.   Role of Women in the National Movement
2.   Social Policy of British Govt. And emancipation of women during colonial period
3.   Constitutional status of Women in Independent India
4.   Contribution of Women – Cinema, Art and Literature

Suggested Readings:
1. K. Ashraf, *Hindustan ke Niwasio ka Jeevan aur Unki Paristhitiyan*, Hindi Madhyam Nideshalaya, Delhi University (In Hindi)
2. A.S. Altekar, *The Position of Women in Hindu Civilization*, 2nd edition, Motilal Banarasi Dass
3. Amarnath, *Nari ka Mukti Sangharsh*, Remaghaw Publication Pvt. Ltd. 2007 (In Hindi)
4. Chakravarti, Uma, *Gendering Caste: Through a Feminist Lens*, 2003, Delhi
5. Gupta, Kamala, *Bharatiya Nari, Prarambh se 2000 tak*, Delhi, 2011
6. Jana M. Everett, *Women and Social Changes in India*, Heritage Publishers, N. Delhi,1981
7. Kamala Gupta, *Women in Hindu Social System*, Inter India Publication, N. Delhi, 2003
8. Kausar, Zeenath, *Women in Mughal India*, Patna, 1999

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9. Neera Desai and Usha Thakkar, *Women in Indian Society*, NBT, Delhi, 2001

10. Pratima Jain and Sangeeta Sharma: *Bhartiya Stri*, Rawat Publication, Jaipur & New Delhi, 1998 (In Hindi)

11. Ramji Lal Sharma, *Bhartiya Vidushi*, Indian Press, Prayag, 1976 (in Hindi)

12. Renuka Nath, *Notable Mughal and Hindu Women in 16th to 17th Centuries A. D.*, Inter India publication, N. Delhi, 1967

13. Roy, Kumkum, *Women in Early Indian Societies*, Delhi, 1999

14. Sadhana Arya, Nivedita Menan, Gini Loknita (ed.), *Narivadi Rajniti: Sangharsh avam Mudde*, Delhi University, 2001

15. Sharan, DK, *Bhartiya Nari*

16. Shiv Prasad & Dalpat Rai Pandit, *Bharat ke Stri Ratna*, Part 2, Sasta Sahitya Mandal, Ajmer

17. Zeenat Kausar, *Women in Mughal India*, Janki Parkashan, Patna, 1999

COURSES OF STUDY FOR FYUGP IN **"HISTORY" MINOR**

MINOR COURSE-1A
   (SEM-I)

LXVII.   MINOR COURSE- MN 1A:
HISTORY OF INDIA (From Earliest Times to CE 650**)**

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
        This paper is meant to introduce students to the history of our country during Foundational stage. It has been designed to equip the students with an outline understanding of the major trends of ancient Indian history up to Nalanda University.

Course Content:
1. **Harappan Civilization**.
2. **The Early Vedic Period**: Polity, Society, Economy and Religion
3. **Jainism and Buddhism**: Causes, Doctrines, Spread, Decline and Contributions.
4. **Emergence and Growth of Mauryan Empire**: Administration, Ashoka's Dhamma
5. **The Sangam Age**: Sangam Literature and Society
6. **The Rise and Growth of Guptas**: Administration, Society, Economy, Literature, Science and technology, Debate on Golden Age
7. **Harsha and His times**: Harsha's Kingdom, Administration, Buddhism and Nalanda
8. **South India**: Polity, Society, Economy and Culture.

Suggested Readings:
1.   A.L. Basham – *Adbhut Bharat* (Also in English)
2.   DN Jha avam K Srimali– *Prachin Bharat*
3.   K.L. Nilkantha Shashtri– *Dhakshin Bharat ka Itihas*
4.   K. Lochan – *Jharkhand ka adimanavaAtit: Ek Bhumika* (Also in English)
5.   K.C. Srivastava – *Prachin Bharat*
6.   R.S. Sharma – *Bharat ka PrachinItihas*
7.   Ranbir Chakravarti - *BharatiyaItihas ka Adikal* (Also in English)
8.   R.C. Majumdar – *Ancient India* (Also in Hindi)
9.   Rimjhim Sharma and Ashish Kumar – *A Study in Early India*
10. SatryaketuVidhalankar – *Prachin Bharat ka Dharmik, Samajik aur ArthikJivan*
11. Upindra Singh – *Prachinavam Purva Madhyakalin Bharat* (Also in English)
12. Vidyadhar Mahajan – *Prachin Bharat* (Also in English)
13. Vimal Chandra Pandey – *Prachin Bharat ka Rajnitik evam Sanskritik Itihas*

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MINOR COURSE-1B
(SEM-III)

LXVIII.   MINOR COURSE- MN 1B:
HISTORY OF INDIA (650 - 1707 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
        This paper is meant to introduce students to the history of our country during the pre-modern days. The students would be able to comprehend the major historical trends through medieval period and would have an idea of the country before the arrival of colonialism.

Course Content:
1. Evolution of Political Structure of Rashtrakutas, Pala and Pratiharas.
2. Arabs in Sindh: Polity, Religion and Society.
3. Struggle for power in Northern India and Establishment of Sultanat.
4. Foundation, Expansion and consolidation of Delhi Sultanate: Nobility and Iqta system.
5. Military, administrative and economic reforms under the Khiljis and the Tughlaqs.
6. Bhakti and Sufi Movement.
7. Provincial Kingdom: Vijaynagara and Bahamanis.
8. Second Afghan State.
9. Emergence and Consolidation of Mughal State, C. 16th Century to mid-17th Century.
10. Akbar to Aurangzeb: administrative structure Mansab and Jagirs, state and Religion.
11. Emergence of Maratha Power.

Suggested Readings:
1. A.L. Srivastava – *Madhyakalin Bharat*
2. Dinanath Verma – *Madhyakalin Bharat*
3. Harishchandra Verma – *Madhyakalin Bharat ka Itihas (Bhag -1)*
4. Imtayaj Ali – *Madhyakalin Bharat ka Sarvekshan*
5. J.L. Mehta – *Madhyakalin Bharat ka BrihadItihas*
6. L.P. Sharma – *Madhyakalin Bharat*
7. Majumdar, Raychaudhary and Dutta – *An Advanced History of India*
8. Satish Chandra – *Madhyakalin Bharat*
9. Saurabh Choubey – *Madhyakalin Bharat*
10. V.D. Mahajan – *Madhyakalin Bhara*

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MINOR COURSE-1C
(SEM-V)

LXIX. MINOR COURSE- MN 1C:
HISTORY OF INDIA (1707 - 1950 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
        This paper is meant to introduce students to the history of our country during the Colonial period. The students would be able to comprehend the major historical trends of the decline of Mughals and would have an idea of the resistance against the Colonialism as well as National Movement in terms of social development.

Course Content:
1. Emergence of regional states (Mysore, Awadh and Bengal) and establishment of the Colonial power.
2. Expansion and consolidation of the Colonial Power (through Plassey, Buxar and the Maratha Wars) up to 1857.
3. Colonial Economy: Agriculture, Trade and Industry.
4. Socio-Religious Movement in the 19th Century: Brahmo Samaj, Arya Samaj, Ramkrishna Mission, Theosophical Society and Aligarh Movement
5. Communalism: Genesis and Growth
6. Arrival of Freedom: Constituent Assembly, establishment of Republic.

Suggested Readings:
1. Arvind Bhaskar -*Adhunik Bharat*
2. B.L. Grover – *Adhunik Bharat ka Itihas* (Also in English)
3. Bipin Chandra - *Adhunik Bharat*
4. Bipin Chandra - *Bharat ka SavatntraSangharsha*
5. Dhanpati Pandey - *Adhunik Bharat*
6. Dinanath Verma - *Adhunik Bharat*
7. Hitendra Patel - *Adhunik Bharat ka AitihasikYatharth*
8. L.P. Sharma - *Adhunik Bharat*
9. Prashant Dutt - *Adhunik Bharat*
10. Ram Lakhan Shukla - *Adhunik Bharat*
11. Satish Chandra – *Uttar Mughal Kal*
12. Shekhar Bandhopadhyaya – *Palasi se Vibhajantak* (Also in English)
13. Sumit Sarkar - *Adhunik Bharat* (Also in English)
14. Vidyadhar Mahajan – *Madhyakalin Bharat* (Also in English)

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MINOR COURSE-1D   **(SEM-VII)**

LXX. MINOR COURSE- MN 1D:
INDIAN NATIONAL MOVEMENT (1858 – 1947 AD)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:

This paper has been structured of help students comprehend the phases of transition from medieval times to modern times.

In addition, it explores the major socio-cultural nuances related to our freedom struggle and national movement that culminated into the establishment of Indian Republic in 1950.

Course Content:

Unit I: Rise of Political Consciousness:
1. Political organisation during 19th century
2. The Rise of Indian Nationalism (1858-1885)
3. Establishment of Indian National Congress.

Unit II: Growth of Indian National Movement:
1. Swadeshi Movement
2. Revolutionary Movement and Gadar Party
3. Home Rule Movement

Unit III: Gandhian Era and Mass Movement:
1. Non Co-operation Movement
2. Civil Disobedience Movement
3. Quit India Movement

Unit IV: Towards Independence:
1. Cripps Mission and Cabinet Mission.
2. Indian National Army and Naval Mutiny of 1946.
3. Freedom and Partition – Circumstances leading to Freedom
4. Causes of the Partition of India

Suggested Readings:
1. A. R. Desai: *Social Background of Indian Nationalism*
2. Ayodhya Singh: *Bharat ka Mukti Sangram*.
3. B. L. Grover: *Aadhunik Bharat ka Itihas*.
4. Bandhopadhyaya, S, *Passey se Vibhajantak*
5. Bipan Chandra: *Freedom Struggle*
6. Bipan Chandra: *Bharat ka Svatantra Sangram*
7. P. Menon: *The Story of Integration of the Indian State*
8. Ram Lakhan Shukla: *Aadhunik Bharat Ka Etihas*
9. Sumit Sarkar: *Modern India*
10. Tara Chand: *History of Freedom Movement in India*, Vol. - 1-4

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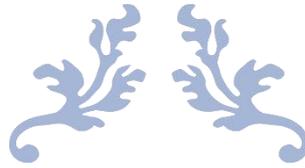
FYUGP

ECONOMICS HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented from 3rd Semester of Academic Session 2022-26

& From 1st Semester of Session 2023-27 Onwards

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UNIV DEPTT. OF ECONOMICS
RANCHI UNIVERSITY
RANCHI – 834 008

Phone: **2233885**

Ref. No. _____   Date_____

Members of Board of Studies for Preparing Syllabus of the Four-Year Undergraduate Programme (FYUGP)

1. Chariman: Dr. Madhumita Das Gupta
       Associate Professor, Head of the Department,
       University Department of Economics, Ranachi University, Ranchi

2. Internal Members:

I. Dr. Ranjana Srivastava
       Associate Professor, University Department of Economics,
       Ranchi University, Ranchi

II. Dr. Jyoti Prakash
       Assistant Professor, University Department of Economics,
       Ranchi University, Ranchi

III. Dr. Vineeta Rani Ekka
       Assistant Professor, University Department of Economics,
       Ranchi University, Ranchi

IV. Dr. Nitesh Raj
       Assistant Professor, University Department of Economics,
       Ranchi University, Ranchi

V. Dr.Neelu Kumari
       Assistant Professor, University Department of Economics,
       Ranchi University, Ranchi

VI. Dr. Nitu Kumari
       Assistant Professor, Department of Economics, Ram
       Lakhan Singh Yadav College, Ranchi University, Ranchi

3. External Member:

I. Dr. RekhaJha
       Associate Professor, Head of Post-Graduate Department of
       Economics, DSPMU, Ranchi.

4. Special Invitee:

I. Dr. Neeraj
       Assistant Professor, Department of Chemistry& OSD
Examination, Ranchi University, Ranchi.

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Table of Content

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Students are Instructed to

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Refer Syllabus of Allied/ Opted Subjects from R.U. Website

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HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1st of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:
  - g)Odd Semester: **From first Monday of August to third Saturday of December**
  - h)Even Semester: **From first Monday of January to third Saturday of May**
- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester

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will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
  - ➢ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
  - ➢ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
  - ➢ Bachelor's Degree after a 3-year (6 semesters) programme of study,
  - ➢ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
  - ➢ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

g) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.

One credit for Theory   = 15 Hours of Teaching i.e., 15 Credit Hours
One credit for Practicum   = 30 Hours of Practical work i.e., 30 Credit Hours

h) For credit determination, instruction is divided into three major components:

Hours (L) – Classroom Hours of one-hour duration.
Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.

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- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

xxxi.　The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

xxxii.　No student will be detained in odd Semesters (I, III, V & VII).

xxxiii.　To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

xxxiv.　To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

xxxv.　To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

xxxvi.　However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

xxxvii.　Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

xxxviii.　To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year.

xxxix.　A student has to pass in minimum 3 papers out of the total 4 papers.

xl.　It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result of the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)													
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)													
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree													
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4

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	Exit Point: Bachelor's Degree with Hons. /Hons. with Research	160	224

Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

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COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME
2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	AEC-1	Language and Communication Skills (MIL 1 - Hindi/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Hindi)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4

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IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2
	VAC-2	Value Added Course-2	2
	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4

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RC/	Research Internship/Field Work/Dissertation OR	12/	
AMJ-1	Advanced Major paper-1 (Disciplinary/Interdisciplinary Major)	4	
AMJ-2	Advanced Major paper-2 (Disciplinary/Interdisciplinary Major)	4	
AMJ-3	Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	4	
		Total Credit	**160**

NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	vii. Discipline/ Interdisciplinary courses and viii. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64

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Minor	vii. Discipline/ Interdisciplinary courses and viii. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

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Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Double Major Courses		Credits
	Code	Papers	
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:

AEC	Ability Enhancement Courses
SEC	Skill Enhancement Courses
IAP	Internship/Apprenticeship/ Project
MDC	Multidisciplinary Courses
MJ	Major Disciplinary/Interdisciplinary Courses
DMJ	Double Major Disciplinary/Interdisciplinary Courses
MN	Minor Disciplinary/Interdisciplinary Courses
AMJ	Advanced Major Disciplinary/Interdisciplinary Courses
RC	Research Courses

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AIMS OF BACHELOR'S DEGREE PROGRAMME IN ECONOMICS

The broad aims of the LOCF for Economics are to:

i.   Train students in basic economic theory;

ii.   Equip students with the mathematical and statistical techniques necessary for a

iii.   proper understanding of the discipline;

iv.   Discuss real world economic issues and problems facing the country and the world;

v.   Enable students to understand proper policy responses to economic problems;

vi.   Train students to collect primary data and learn sampling techniques;

vii.   Train students to use statistical and econometric methods to arrive at conclusions about the validity of economic theories;

viii.   Train students to learn the art of economic modelling.

To provide knowledge and skill to the students' thus enabling them to undertake further studies in Economics in related areas or multidisciplinary areas that can be helpful for self- employment/ entrepreneurship

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PROGRAM LEARNING OUTCOMES

The broad programme learning outcomes in Economics are:

1. Get an understanding of basic economic theory;
2. Learn the mathematical and statistical techniques necessary for a proper
3. understanding of the discipline;
4. Get an introduction to real world economic issues and problems facing the
5. country and the world;
6. Gain an understanding of proper policy responses to economic problems;
7. Get trained to collect primary data and learn sampling techniques;
8. Learn to use scientific empirical methods to arrive at conclusions about the
9. validity of economic theories;
10. Get trained in the art of economic modelling.

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SEMESTER WISE COURSES IN ECONOMICS MAJOR-1 FOR FYUGP   2022
onwards

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	Introductory Microeconomics	4	25	75	---
II	MJ-2	Introductory Macroeconomics	4	25	75	---
	MJ-3	Structure of The Indian Economy	4	25	75	---
III	MJ-4	Public Finance	4	25	75	---
	MJ-5	International Trade	4	25	75	---
IV	MJ-6	Economics of Development	4	25	75	---
	MJ-7	Jharkhand Economy	4	25	75	---
	MJ-8	Environmental Economics	4	25	75	---
V	MJ-9	Statistics - Theory and Applications	4	25	75	---
	MJ-10	Theory of Markets and Distribution	4	25	75	---
	MJ-11	Programmes and Policies of Indian Economy	4	25	75	---
VI	MJ-12	Basic Mathematical Economics	4	25	75	---
	MJ-13	Financial Institutions and Banking	4	25	75	---
	MJ-14	Demography	4	25	75	---
	MJ-15	Rural Development	4	25	75	---
VII	MJ-16	History of Economic Thought	4	25	75	---
	MJ-17	Basic Econometrics	4	25	75	---
	MJ-18	Economics of Social Sector	4	25	75	---
	MJ-19	Models of Growth and Development	4	25	75	---
VIII	MJ-20	Monetary Economics	4	25	75	---
	AMJ-1	A. Mathematical Economics B. Agricultural Economics	4	25	75	---
	AMJ-2	A. Econometrics B. Gender And Development	4	25	75	---
	AMJ-3	A. Problems of Indian Agriculture B. Labour and Industrial Economics	4	25	75	---

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	or RC-1	Research Methodology	4	25	75	---
	RC-2	Project Dissertation/ Research Internship/ Field Work	8	---	---	200
		Total Credit	**92**			

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Skill Enhancement Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	Soft Skills- I	3	---	75	---
II	SEC-2	Soft Skills- II	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	**9**			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Minor Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	Introductory Economics	4	25	75	---
III	MN-1B	Indian Economy	4	25	75	---
V	MN-1C	Elementary Micro Economics	4	25	75	---
VII	MN-1D	Money, Banking, Public Finance and International Trade	4	25	75	---
		Total Credit	**16**			

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INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There will be Only One Semester Internal Examination in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

G. (SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

H. (SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Conversion of Attendance into score may be as follows:

Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

J. (ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

K. (ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three

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questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

L. (ESE 100 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

<table>
<tr><td colspan="3" align="center">**Subject/ Code**</td></tr>
<tr><td>**F.M.** =10</td><td align="center">**Time**=1Hr.</td><td align="right">Exam Year</td></tr>
<tr><td colspan="3">
General Instructions:
xvi. **Group A** carries very short answer type compulsory questions.
xvii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
xviii. Answer in your own words as far as practicable.
xix. Answer all sub parts of a question at one place.
xx.   Numbers in right indicate full marks of the question.

Group A
</td></tr>
<tr><td>10.</td><td></td><td align="right">[5x1=5]</td></tr>
<tr><td></td><td>
xvi.   ....
xvii.   ....
xviii.   ....
xix.   ....
xx.   ....
</td><td></td></tr>
<tr><td colspan="3" align="center">**Group B**</td></tr>
<tr><td>11. ....</td><td></td><td align="right">[5]</td></tr>
<tr><td>12. ....</td><td></td><td align="right">[5]</td></tr>
<tr><td colspan="3">**Note:** There may be subdivisions in each question asked in Theory Examination.</td></tr>
</table>

Question format for **20 Marks**:

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F.M. =20	**Subject/ Code** **Time**=1Hr.	Exam Year

General Instructions:
xvi. **Group A** carries very short answer type compulsory questions.
xvii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
xviii.Answer in your own words as far as practicable.
xix. Answer all sub parts of a question at one place.
xx.   Numbers in right indicate full marks of the question.

Group A

13.   [5x1=5]

       xvi.   ....
       xvii.   ....
       xviii.   ....
       xix.   ....
       xx.   ....

14. ....   [5]

Group B

15. ....   [10]
16. ....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION

Question format for **50 Marks**:

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Subject/ Code

<u>F.M. =50</u>   **Time**=3Hrs.   <u>Exam Year</u>

General Instructions:

v.   **Group A** carries very short answer type **compulsory** questions.
vi.   **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
xii.   Answer in your own words as far as practicable.
xiii.   Answer all sub parts of a question at one place.
xiv.   Numbers in right indicate full marks of the question.

<u>Group A</u>

19.   [5x1=5]

    xvi.   ....
    xvii.   ....
    xviii.   ....
    xix.   ....
    xx.   ....

<u>Group B</u>

20.   ....   [15]
21.   ....   [15]
22.   ....   [15]
23.   ....   [15]
24.   ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

<u>Question format for **60 Marks**</u>:

Subject/ Code

<u>F.M. =60</u>   **Time**=3Hrs.   <u>Exam Year</u>

General Instructions:

vii.   **Group A** carries very short answer type **compulsory** questions.
viii.   **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
xii.   Answer in your own words as far as practicable.
xiii.   Answer all sub parts of a question at one place.
xiv.   Numbers in right indicate full marks of the question.

<u>Group A</u>

25.   [5x1=5]

    xvi.   ....
    xvii.   ....
    xviii.   ....
    xix.   ....
    xx.   ....

26.   ....   [5]
27.   ....   [5]

<u>Group B</u>

28.   ....   [15]
29.   ....   [15]
30.   ....   [15]
31.   ....   [15]
32.   ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

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Question format for **75 Marks**:

Subject/ Code

F.M. = 75   **Time**=3Hrs.   <u>Exam Year</u>

General Instructions:
vii. **Group A** carries very short answer type **compulsory** questions.
viii. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xii. Answer in your own words as far as practicable.
xiii. Answer all sub parts of a question at one place.
xiv. Numbers in right indicate full marks of the question.

<u>Group A</u>

28.   [5x1=5]

  xvi.   ....
  xvii.   ....
  xviii.   ....
  xix.   ....
  xx.   ....

  29. ....   [5]
30. ....   [5]

<u>Group B</u>

  31. ....   [15]
  32. ....   [15]
  33. ....   [15]
  34. ....   [15]
  35. ....   [15]
  36. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

Subject/ Code		
F.M. = 100	**Time**=3Hrs.	Exam Year

General Instructions:

vii. **Group A** carries very short answer type **compulsory** questions.

viii. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.

xii. Answer in your own words as far as practicable.

xiii. Answer all sub parts of a question at one place.

xiv. Numbers in right indicate full marks of the question.

Group A

4.   [10x1=10]

xvi.	....	vi.	....
xvii.	....	vii.	....
xviii.	....	viii.	....
xix.	....	ix.	....

8. ...xx.......:............   x   ....   [5]

9. ....   [5]

Group B

22.	[20]
23.	[20]
24.	[20]
25.	[20]
26.	[20]
27.	[20]

Note: There may be subdivisions in each question asked in Theory Examination.

SEMESTER I

VI.   MAJOR COURSE –MJ 1:
INTRODUCTORY MICROECONOMICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) Theory: 60 Lectures

Course Objectives:

This course aims to train students in the basic economic theory. It will also enable them to discuss real world economic issues & problems related to Consumer's Behaviour, Production, Cost and Revenue Curves in different markets.

Course Learning Outcomes:

The student will be able to understand the Basic Economic Theory. It will also enable them to learn to use empirical methods to derive conclusions about the validity of Economic Theories.

Course Content:
Unit 1: Introduction
1.1 Definition of Economics - Adam Smith; Alfred Marshall; Lionel Robbins; Samuelson.
1.2 Micro and Macro Economics: Difference; Scope. 1.3 Normative and Positive Economics.

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Unit 2: Consumer's Behaviour

2.1 Utility; Marshallian Utility Analysis - Law of Diminishing Marginal Utility; Law of Equi - Marginal Utility.

2.2 Indifference Curve Analysis - Definition; Properties of Indifference curves; Budget line; Consumer's Equilibrium; Price Effect; Income Effect; Substitution Effect; Application of Indifference curve Analysis.

2.3 Demand - Meaning; Factors affecting Demand; Law of Demand; Elasticity of Demand – Meaning; Types; Measurement.

2.4 Consumer's Surplus – Concept; Measurement with the help of Marshallian Utility Analysis and Indifference Curve Analysis.

Unit 3: Theory of Production

3.1 Factors of production. 3.2 Law of Variable Proportions (Short run Law of Production).

3.3 Law of Returns to Scale (Long-run Law of Production).

3.4 Isoquant- Definition; Properties, Cobb Douglas Production Function.

3.5 Producer's Equilibrium – Concept & Determination with the help of Isoquant and Iso-Cost.

Unit 4: Revenue and Cost Curves (Traditional Theory)

4.1 Concept of Revenue; Relationship between TR, MR and AR.

4.2 Revenue Curves under Perfect and Imperfect Markets.

4.3 Different Concepts of Costs (AVC, AFC, ATC, MC, TC), Opportunity Cost.

4.4 Short Run and Long Run Costs.

Suggested Readings:

1. Varian, Hal R., Intermediate Microeconomics, 8TH Edition, Affiliated East-West Press.
2. Stonier, Alfred W. & Hague, Douglas C., A Textbook of Economic Theory, 5TH Edition, Pearson.
3. Koutsoyiannis, A., Modern Microeconomics, 2nd Edition, Palgrave Macmillan.
4. Pindyck, Robert & Rubinfeld, Daniel. Microeconomics ,8th Edition, Pearson.
    5. Ahuja, H.L., Advanced Micro Economics, S. Chand Publications. (Both in English & Hindi).
6. Singh, Neelu., उच्चतर आर्थिक सिद्धांतः व्यष्टि विश्लेषण, Disha International Publishing House, Noida.

VII.   SKILL ENHANCEMENT COURSE- SEC 1:
SOFT SKILLS- I

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03)   **Theory: 45 Lectures**

Course Objective:
The course aims to enhance the soft skills of the students which would bring about an all-round personality development of the student. It aims to develop the communication skills, resume making abilities in students. It also aims to develop the confidence of facing interviews and Group Discussions, which would improve their performance in competitive exams.

Course Learning Outcome:
At the end of the course, the students will be more confident in Job Interviews and will have the skills for preparing his Resume according to Job requirements. They will have grasp of effective communication.

Course Content:
Unit 1: Basics of communication

1.1 Definition of communication; Process of Communication; Barriers of Communication; Non-Verbal Communication.

1.2 Effective Communication - Johari Window; The Art of Listening; Kinesthetic Production of Speech; Organization of Speech; Modes of delivery; Conversation Techniques; Dialogue; Good manners and Etiquettes.

Unit 2: Resume Writing

2.1 Resume Writing - What is Resume?

2.2 Types of Resumes – Chronological; Functional; Mixed Resume;

2.3 Steps in preparation of Resume.

Unit 3: Interview Skills

3.1 Interview Skills - Common Interview Questions;

3.2 Attitude; Body Language;

3.3 The Mock Interviews; Phone Interviews; Behavioural Interviews.

Suggested Readings:

1.   Egan, Gerard. (1994). The Skilled Helper (5thEd). Pacific Grove, Brooks/Cole.

2.   Khera, Shiv (2003). You Can Win. Macmillan Books, Revised Edition.

3.   Murphy, Raymond. (1998). Essential English Grammar. 2nd ed., Cambridge Univ. Press.

4.   Prasad, L. M. (2000). Organizational Behaviour, S. Chand Publications.

5.   Sankaran, K., & Kumar, M. (2010) Group Discussion and Public Speaking. M.I. Pub, Agra, Adams Media.

6.   Schuller, Robert. (2010). Positive Attitudes. Jaico Books.

7. Trishna's (2006). Howtodowellin GDs & Interviews, Trishna Knowledge Systems.

8. Yate, Martin. (2005). Hiring the Best: A Manager's Guide to Effective Interviewing and Recruiting.

SEMESTER II

LXXI. MAJOR COURSE- MJ 2:
INTRODUCTORY MACROECONOMICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objectives:
    The course aims to introduce the students to the basic concepts of Macro Economics which deals with the economy as a whole. Its special focus is on macro-economic concepts, money, banking and macro-economic policies

Course Learning Outcomes:
    After completing this course, the students will be able to explain the basic concepts of GDP, National Income, Money, Inflation, Functions of Central bank, Commercial Bank, Regional Rural Bank and Monetary, Fiscal & Trade Policy of the economy.

Course Content:
Unit 1: Introduction to Macroeconomics
1.1 Macroeconomics - Meaning and Scope.
1.2 Concept and Measurement of GDP; GNP; NDP; NNP at Market Price and Factor Cost.
1.3 Methods of Measuring National Income - Product Method; Expenditure; Income Method. 1.4 Circular Flow of Income in a Two Sector; Three Sector; Four Sector Model.
1.5 Real and Nominal GDP.

Unit 2: Money and Inflation
2.1 Functions of Money.
2.2 Quantity Theory of Money - Cash Transaction; Cash Balance Approach.
2.3 Inflation – Definition; Types of Inflation - Demand Pull; Cost Push Inflation.
2.4 Measures to Control Inflation - Fiscal Policy; Monetary Policy.

Unit 3: Banking
3.1 Types of Banks.
3.2 Central Bank – Meaning; Functions.
3.3 Commercial Bank - Meaning; Functions.
3.4 Regional Rural Banks - Definition; Scope; Functions.
3.5 Development Banks – Definition; Scope; Functions.

Unit 4: Macro Economic Policy
4.1 Monetary Policy – Objective; Instruments.
4.2 Fiscal Policy – Objective; Instruments.
4.3 Trade Policy - Export Promotion; Import Substitution.

Suggested Readings
1. Dornbusch, Fischer, Startz, Macro Economics, Mc Graw Hill, 11th edition, 2010.
2. N. Gregory Mankiw, Macro Economics, Worth Publishers, 11th edition, 2021.
3. Seth, M.L., Macro Economics, Laxmi Narayan Publications (Both in English &Hindi).
4. Ahuja, H.L., Advanced Macro Economics, S. Chand Publications. (Both in English & Hindi).
5. Jhingan, M. L., Monetary Economics, Vrinda Publications Pvt. Ltd. Delhi .(Both in English & Hindi)

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7th edition, 2012.

LXXII.   MAJOR COURSE- MJ 3:
STRUCTURE OF THE INDIAN ECONOMY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objectives:
On completion of the course, students will be able to develop an idea of strategies, programmes and policies for the development of Indian economy. They will understand the needs, importance and impact of programmes and policies for the economic development. They will understand the agricultural, industrial and service sectors contributions to the economy. Lastly, it deals with various schemes and policies of the economy.

Course Learning Outcomes:
At the end of the course student will be able to pinpoint and understand the past and present economic conditions of the country in various sectors. They will also be able to forecast the future course of development through their knowledge of policies and programmes set by the Government and other development agencies.

Course Content:
Unit 1: Structure of the Indian Economy
1.1 Major Economic Features of the Indian Economy.
1.2 Sectors and Sub-Sectors of the Indian Economy: Their Income and Employment Generation; Contribution to GDP. 1.3 Basic Economic Indicators - GDP; Growth Rate; National Debt; Balance of Trade.
1.4 Trend of India's Growth Since Economic Reforms.

Unit 2: Population and Human Development
2.1 Demographic Trends - In Size; Population Growth Rate; Age; Sex; Rural-Urban and Occupational Distribution in India.
2.2 Human Development - Meaning; Indicators; HDI – Concept; India's Global Ranking.
2.3 Human Capital and its Components - Education (Importance, Gross Enrolment Ratio, Literacy Rate); Health (Importance, Status and Trends of MMR, IMR, Life Expectancy); Skill Enhancement; Workforce Participation.
2.4 Problems of Indian Population – Malnutrition; Poverty; Unemployment – Meaning; Status; Government measures to Eradicate.

Unit 3: Indian Agriculture
3.1 Role of agriculture in the Indian Economy. 3.2 Problems of Indian Agriculture.
3.3 Land Reforms; Cropping Pattern; Crop intensity.
3.4 Regional Disparities in Indian Agriculture - In Gross Cultivated area; Production; Productivity of Food Grains.

Unit 4: Indian Industry
4.1 Role of Industry in the Indian Economy. 4.2 Large Scale Industries: Importance; Pattern of Industrialization.
4.3 MSME: Composition; Importance; Major Problems faced by MSME.
4.4 New Industrial Policy 1991 – Goals; Objectives; Main Features.

Unit 5: India's Foreign Trade
5.1 Composition of Foreign Trade. 5.2 Direction of Foreign Trade.
5.3 India's Balance of Payments Since 1991.
5.4 Foreign Trade Policy – Importance; Objectives; Features of 2015 Policy.

Suggested Readings:
1. Puri V.K and Mishra S.K, Indian Economy, (English and Hindi) (January 2022), Himalaya Pub. House.
2. Dutt, Gaurav and Sundaram, Indian Economy, (English and Hindi) (Latest edition), S Chand & Co Ltd.

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3. Kapila, Uma, Indian Economy: Performance and Policies, (22nd edition 2021), Academic Foundation Publications.
4. Jalan Bimal, India's Economic Policy (2000), Penguin India Publication.
5. Sinha V.C, Indian Economy Performance and Policies (2019), SBPD Publications
6. Verma Sanjeev, The Indian Economy (2020), Unique Publishers.
7. Mishra J.P, Bharat ki Arthik Nitiyan (2019), Sahitya Bhavan Publications.
8. Singh, Ramesh, Bharitiya Arthavyavastha (14th edition), McGraw Hills.

LXXIII.   SKILL ENHANCEMENT COURSE- SEC 2:
SOFT SKILLS- II

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03)   **Theory: 45 Lectures**

Course Objective:
The course aims to enhance the soft skills of the students by way of developing the verbal, non-verbal and mathematical abilities in students which would improve their performance in competitive exams.

Course Learning Outcome:
At the end of the course, the students will be more confident in solving the questions related to data interpretation. They will have grasp of verbal, non-verbal and mathematical reasoning for competitive exams.

Course Content:
Unit 1: Mental Ability

1.1 Series Completion; Analogy; Classification; Coding-Decoding

1.2 Blood Relations; Logical Venn Diagrams;

1.2 Mathematical Operations.

1.2 Arithmetical Reasoning.

1.3 Assertion and Reason.

1.4 Inserting the Missing Character.

Unit 2: Logical Deduction

2.1 Logic

2.2 Statement – Arguments; Assumptions; Courses of Action; Conclusions.

2.3 Deriving Conclusions from Passages.

2.4 Theme Detection.

2.5 Cause and Effect Reasoning.

Unit 3: Data Interpretation

3.1 Sources; Acquisition; Classification of Data.

3.2 Quantitative and Qualitative Data.

3.3 Graphical Representation - Bar-chart; Histograms; Pie-chart; Table-chart; Line-chart

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3.4 Mapping of Data.

3.5 Data Interpretation.

Suggested Readings:

1. Aggarwal, R.S. (2010) Quantitative Aptitude, S. Chand & Sons.

2. Aggarwal, R.S. (2010). A Modern Approach to Verbal and Non-Verbal Reasoning. S. Chand

3. Covey, Stephen.2004. Habits of Highly effective people, Free Press.

4. Murphy, Raymond. (1998). Essential English Grammar. 2nd ed., Cambridge Univ. Press.

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SEMESTER III

LXXIV.   MAJOR COURSE- MJ 4:
PUBLIC FINANCE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objectives:
Public Finance is a study of government activities from the point of view of efficiency and equity. The course aims to introduce students to the importance of government intervention by exposing the students to a host of topics including public goods, market failures and externalities. It aims to equip students with understanding the role of fiscal policy in achieving the desired macro-economic goals. The centre-state financial relations in a federal system have also been included.

Course Learning Outcomes:
At the end of the module the students should be able to demonstrate their understanding of the theory of three tools of public economics, namely, public expenditure, taxation and public debt. Extensive use of diagrams will enhance their comprehension of the concepts. Study of functioning of fiscal policy and Centre-State financial relations will enhance their knowledge on public economics

Course Content:
Unit 1: Nature and Scope of Public Finance
1.1 Meaning and Scope of Public Finance.
1.2 Distinction between Private and Public Finance; Public Goods and Private Goods; Merit Goods.
1.3 Principle of Maximum Social Advantage.
1.4 Market Failure; Role of the Government.
1.5 Fiscal Policy; Objectives and Instruments.

Unit 2: Public Expenditure
2.1 Meaning; Classification; Principles of Public Expenditure.
2.2 Cannons of Public Expenditure; Effects of Public Expenditure.
2.3 Causes of Growth of Public Expenditure; Wiseman Peacock Hypothesis.
2.4 Trends in Public Expenditure in India.

Unit 3: Taxation
3.1 Taxation – Meaning; Cannons of Taxation; Classification of Taxes; Characteristics of a Good Tax System.
3.2 Division of Tax Burden - The Benefit Approach; Ability-to-Pay Approach.
3.3 Impact and Incidence of Taxes.
3.4 Taxable Capacity.
3.5 Effects of Taxation on Production and Distribution.
3.6 Tax reforms; VAT; GST.

Unit 4: Public Debt and Financial Administration
4.1 Public Debt – Meaning; Types; Sources; Need.
4.2 Effects of Public Debt; Burden of Public Debt.
4.3 Methods of Debt Redemption.

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4.4 The Public Budget - Kinds of Budget; Economic and Functional Classification of Budget.

Unit 5: Financial Decentralization in India
5.1 Centre-State Financial Relationship.
5.2 Role of Finance Commission.
5.3 Features of Current Finance Commission.

Suggested Readings:
1. Musgrave R. A. & Musgrave P. B.– Public Finance in Theory and Practice, McGraw Hill.
2. Singh, S. K., Public Finance in Theory and Practice, S. Chand Publications.
3. Singh, S. K., Lok Vitt (Hindi), S. Chand Publications.
4. Bhatia, H. L., Public Finance, Vikas Publishing House.
5. Bhatia, H.L., Lok Vitt, (Hindi), Vikas Publishing House.
6. Sundaram, K. P. M. and Andley, K. K., Public Finance, S. Chand Publications.
7. Tyagi, B. P.– Public Finance, Jai Prakash Nath & Co.

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LXXV.   MAJOR COURSE- MJ 5:
INTERNATIONAL TRADE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objectives:
This course is designed to expose the students to the theory and practice of international trade and of trade-related policies. It focuses on analysing the gains from trade, the changing patterns of trade, the income distributional consequences of liberalising foreign trade, the relationship between trade, investment, and economic growth, and the reasons for and consequences of trade policies.

Course Learning Outcomes:
On successful completion of this course students will be able to understand different theories of international trade and their economic implications, international trade policies, foreign exchange and Balance of Payment. They will be familiar with the major recent developments in the world trading system, and be able to critically analyse key international issues.

Course Content:
Unit 1: Scope and Theories of International Trade
1.1 International Economics – Definition; Nature; Importance.
1.2 Absolute Cost Advantage.
1.3 Ricardian Comparative Cost Advantage.
1.4 Heckscher-Ohlin Theory of International Trade; Factor Price Equalisation Theorem.
1.5 Stolper-Samuelson Theorem; Rybczynski Theorem.

Unit 2: Free Trade vs. Protection
2.1 Meaning of Free Trade and Protection; Case For and Against Free Trade and Protection.
2.2 Methods of Trade Restriction – Tariff; Types of Tariffs; Optimum Tariff; Impact of Tariff in Partial Equilibrium Analysis.
2.3 Quotas -Types; Their impact in Partial Equilibrium Analysis.
2.4 Forms of Economic Co-operation – Free Trade area; Customs Union; Common Market.

Unit 3: Foreign Exchange and Balance of Payments
3.1 Exchange Rate Determination - Gold Standard Theory (Mint Parity Theory); Purchasing Power Parity Theory.
3.2 Devaluation and Appreciation of Currency and impact on International Trade.
3.3 Balance of Trade and Balance of Payments - Concept and Components.
3.4 Equilibrium and Dis-equilibrium in Balance of Payments; Consequences of Disequilibrium in Balance of Payments.
3.5 Measures to Correct Deficit in the Balance of Payments.

Unit 4: International Financial Institutions and India
4.1 Functions of IMF; World Bank; WTO with Reference to India.
4.2 Need and Importance of Foreign Capital in Developing Economies; FDI and FII.
4.3 Multinational Corporations: Meaning; Advantages and Disadvantages.

Suggested Readings:
1. Bhagwati, J. International Trade, Cambridge University Press.
2. Verma, M.L. International Trade, Vikas Publication.
3. Singh, S. K. International Monetary System-Trends & Issues, Indus Publishing Company.
4. Mannur, H.G. International Economics, Vikas publication.

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5.   Krugman, Paul R
International Economics-Theory and Practice, Pearson Publication.
6.   Salvatore, International
Economics, Wiley India.
7.   Sachdeva, International
Economics, Vikas Bharati Publication.
8.   Vaishya & Sachdeva
Singh-Antarashtriya Arthshastra, Oxford & IBH Com.
9.   Sodersten, B.O. and Geoffrey Reed, International Economics, Palgrave Macmillan Publisher.

**LXXVI.   SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES**

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

A Common Syllabus for FYUGP   (Credits: Theory-03)
45 Hours

*Instruction to Question Setter for
End Semester Examination (ESE):*
*There will be **objective type test** consisting of **Seventy-five questions of 1 mark each**. Students are required to mark their
answer on **OMR Sheet** provided by the University.*

Course Objectives:
        *The objective of the course is to generate qualified manpower in the area of Information
Technology (IT) and Graphic designing which will enable such person to work seamlessly at any
Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.*

G. INTRODUCTION TO COMPUTER SYSTEM
1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer,
Components of Computer System, Central Processing Unit (CPU)   **(3
Lecture)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory,
processing Concept of Computer
              (4 Lecture)

3. Operating system: What is an Operating System, Operating System Examples, Functions of
Operating System(Basic), Introduction to Windows 11, Working on Windows 11 environment,
Installation of Application Software, My Computer, Control Panel, searching techniques in windows
environment, Basic of setting
                        (6 Hours)
4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship
between Hardware and Software, System Software, Application Software, some high level languages
        (4 Hours)

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet,
Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing
software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of
electronic mail, getting an email account, Sending and receiving emails.
                        (6 Hours)

H. MICROSOFT OFFICE 2016 AND LATEST VERSIONS
6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents,

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Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents   **(7 Hours)**

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation, slide show, Master Slides, Creating photo album, Rehearse timing and record narration
               (5 Hours)

9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning
               (4 Hours)

Reference Books
33.   Nishit Mathur, Fundamentals of Computer, APH publishing corporation (2010)
34.   Neeraj Singh, Computer Fundamentals (Basic Computer), T Balaji, (2021)
35.   Joan Preppernau, Microsoft Power Point 2016 step by step, Microsoft press (2015)
36.   Douglas E Corner, The Internet Book 4th Edition, prentice –Hall (2009)
37.   Steven Welkler, Office 2016 for beginners, Create Space Independent Publishing Platform (2016)
38.   Wallace Wang, Microsoft Office 2019, Wiley (January 2018)
39.   Noble Powell, Windows 11 User Guide For Beginners and Seniors, ASIN, (October 2021)

SEMESTER IV

LXXVII.   MAJOR COURSE- MJ 6:
ECONOMICS OF DEVELOPMENT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objectives:
        The course begins with a discussion of alternative conceptions of development and their justification, with special focus on human development. It then covers in-depth, the two relevant problems namely, poverty and inequality. Finally, it deals with environmental issues for sustainable development.

Course Learning Outcomes:
        This course introduces students to the basics of development economics, with in-depth discussions of the concepts of development, growth, poverty, inequality, as well as the underlying political institutions. The course will enable the students to be exposed with the issues related to environmental degradation due to unabated development.

Course Content:
Unit 1: Development and Relevant Concepts
1.1 Meaning and Measure of Economic Growth. 1.2 Meaning of Economic Development.
1.3 Distinction between Economic Growth and Economic Development.

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1.4 Determinants of Economic Development and Growth - Capital Resource; Physical Resource; Human Resource; Indicators of Economic Development; Characteristics of a Developing Economy; Underdeveloped Economy.

Unit 2: Human Development
2.1 Meaning of Human Development.
2.2 Computation of Human Development Index, Gender Development Index, Gender Inequality Index.
2.3 Sen 's Capabilities Approach; Market and State as Agencies of Development.

Unit 3: Poverty, Inequality and Development
3.1 Meaning of Poverty; Poverty Lines using various National and International Criteria.
3.2 Absolute poverty and Relative poverty.
3.3 Measurement of poverty - Head-Count Index; Poverty Gap Indices.
3.4 Meaning and types of Inequalities in an Economy- Income; Gender; Regional; Measurement of Income Inequality- Lorenz Curve Method, Ginni Coefficient.
3.5 Economic growth and Income Inequality – Kuznet's Inverted U Hypothesis; Impact of Inequality on Development.

Unit 4: Environment Sustainability for Development
4.1 Meaning and importance of Sustainable Development. 4.2 Development and Environmental Degradation.
4.3 Defining Sustainability for Renewable Resources.
4.4 A brief History of Environmental Change; Common-Pool Resources.
4.5 Environmental Externalities and State Regulation of the Environment.

Suggested Readings:
1. Ray, D. (1998). Development economics. Princeton University Press.
2. Todaro, Michael P. and Stephen C. Smith, Economic Development, 8e. Delhi: Pearson Education, 2003.
3. Misra, S. K. and Puri, Growth and Development, Mumbai: Himalaya Publishers, 2005.
4. Human Development Report. Relevant years.
5. Thirlwall, A.P. Growth and Development 8e. New York: Palgrave McMillan, 2005.
6. Meier, Gerald M. & James E. Rauch, Leading issues in Economic Development, 8e. N Delhi: Oxford Univ Press.
7. Sen, A. (2000). Development as freedom. Oxford University Press.
8. Banerjee, A., Benabou, R., Mookerjee, D. (eds.) (2006). Understanding poverty. Oxford University Press.
9. Kolstad, C. (2012). Intermediate environmental economics. Oxford University Press.

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LXXVIII.   MAJOR COURSE- MJ 7:
JHARKHAND ECONOMY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
        The course intends to expose the students to the evolution, structure and sectoral growth of Jharkhand. The major demographic features of the state with special focus on poverty and unemployment, migration, urbanisation, education and health have been included. Minerals, forests and environmental issues have been included in the course.

Course Learning Outcome:
        At the end of the course, the students be able to understand different aspects of demography and the problems associated with it like poverty, unemployment, malnutrition, migration, to name a few.
Students will comprehend the mineral, forest and environmental issues in the state. Lastly, they will learn about the important policies for development.

Course Content:
Unit 1: Jharkhand Economy and its Growth
1.1 Evolution of Jharkhand Economy; Basic Economic Features of Jharkhand's Economy; Sectoral Composition of Jharkhand and Contributions to GSDP.
1.2 Growth in GSDP and Per Capita NSDP since 2000; Causes of Backwardness of Jharkhand Economy.
1.3 Composition, Production and Productivity in Agriculture in Jharkhand; Agricultural Growth in Jharkhand.
1.4 Major Industries of Jharkhand; Industrial Growth in Jharkhand; Main Problems of Industrial Development in Jharkhand.

Unit 2: Demographic Features of Jharkhand
2.1 Population Growth; Density; Regional Distribution of Population.
2.2 Present Status and Change with Reference to Census 2001 and 2011 in - Literacy Rate; Sex Ratio; Sex Composition of Work Force; Occupational Distribution and Rural-Urban Composition.
2.3 Tribal Population in Jharkhand - Main Tribes; Proportion in Total Population; Demographic Features of Tribal Population in the State.
2.4 Status and Economic Causes of Problems of Human trafficking and Witch Craft.
2.5 Rural-Urban Migration and Intra State Migration in Jharkhand; Causes of Migration in Jharkhand – Push and Pull Factors.

Unit 3: Poverty, Unemployment and Urbanisation in Jharkhand
3.1 Status of poverty in Jharkhand; Major Poverty Alleviation Programs in Jharkhand and their Outcomes (MGNREGA, PMGSY, NRLM).
3.2 Unemployment in Jharkhand - Status and Trend in Rural and Urban areas.
3.3 Urbanization in Jharkhand - Status and Trend; Causes of Rising Urbanisation; Consequences of Rising Urbanization in the State.

Unit 4: Minerals; Land; Forest and Environmental Issues in Jharkhand
4.1 Mineral Resources of Jharkhand; Land Reforms; Agrarian Relations in Jharkhand.
4.2 Forests in Jharkhand; Non-Timber Forest Products of Jharkhand (NTFPs); Issues and Challenges in NTFPs in Jharkhand.
4.3 Impacts of Development - Induced Displacement; Policy Initiatives Undertaken by Government.
4.4 Causes of Environmental Degradation in Jharkhand.

Suggested Readings:
1.   Ranjan, Manish Jharkhand Samanya Gyan.

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2. Sahu, Dileep. Jharkhand Economy. Disha International Publishing House.
3. Kunal Vikram Micro Planning of Jharkhand. Kunal Vikram Publication.
4. Kumar, Raj and Ram, S. Jharkhand - Land and People, Arjun publication.
5. Bhat, S. C. Jharkhand – A State Study Guide, Neeraj Kumar Jha, Jeevonsons Publications District Gazetteer of Jharkhand, Gyan Publishing House.
6. Kumar, Sharat, Jha, Pravin Kumar. Development of Bihar and Jharkhand, Shipra Publications.

LXXIX.   MAJOR COURSE- MJ 8:
ENVIRONMENTAL ECONOMICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
        The course is designed to enable the students to have a clear understanding of the meaning and scope of environmental economics and issues of Common Property Resources, Green GDP and Carbon Footprint.
It deals with various aspects of environmental externalities, Environmental degradation and Renewable and Non-Renewable resources. It also explores the link between Environment and Development. Finally, the major environmental policies have been covered.

Course Learning Outcome:
        At the end of the course, the students will be able to comprehend the issues related to economics of environment, issues of environmental degradation, renewable and non-renewable resources as well as the important debate on link between environment and development.

Course Content:
Unit 1: Introduction
1.1 Meaning and Scope of Environmental Economics.
1.2 Meaning and characteristics of Environmental goods.
1.3 Concept of Common Property Resources; Green GDP; Carbon Footprint.
1.4 Environment and Economic Development – Two-way Linkage; Kuznet's Curve.

Unit 2: Environmental Externalities
2.1 Environmental Externalities: Concept and Types.
2.2 Pareto Optimality and Market Failure in the Presence of Externalities.
2.3 Pigouvian Taxes and Subsidies.

Unit 3: Economics of Natural Resources
3.1 Renewable and Non-Renewable Resources.
3.2 Optimal Use of Non-Renewable Resources - The Theory of Extraction.
3.3 Optimal Use; Theory of Optimal Use.
3.4 Environmental Degradation – Land; Forest; Water and Air: Causes; Effects of Environmental Degradation.

Unit 4: Environmental Policies
4.1 National Environment Policies.
4.2 National Water Policy.
4.3 National Forest Policy
4.4 Climate Change and International Agreements.

Suggested Readings: -
1. Bhattacharya, R.N. (2006): Environmental Economics, An Indian Perspective, Oxford University Press, New York.
2. Shyam, D and Rosencranz, A. (2008). Environmental Law and Policy in India - Cases, Material and Statutes. Oxford University Press, New York.
3. Ganesamurthy, V.S. (2009). Environmental Economics in India. New Century Pub. N. Delhi, India.
4. Sankar, Ulaganthan. (2006). Environmental Economics. Oxford University Press, New York.
5. Eugine, T. (2008). Environmental Economics. Vrinda Publications (P) Ltd.
6. Tietenberg, Tom. (2004). Environmental and Natural Resource Economics. Pearson Education.
7. Raj, N. (2023). Economics of Environment. Bluerose Publishers. ISBN-978935819-0168

SEMESTER V

LXXX.   MAJOR COURSE- MJ 9:
STATISTICS - THEORY AND APPLICATIONS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
The Course aims to introduce the students to the basic concepts of statistics and its application in real world.

Course Learning Outcome:
        After completing this course, the students will be able to explain basic concepts of data and its measurement, univariate and bivariate analysis, time series analysis, index number that are widely used to solve the economic and business problems.

Unit 1: Introduction to Statistics
1.1 Definition and Scope of Statistics.
1.2 Types of Data – Primary and Secondary Data.
1.3 Methods of Collection of Data - Census and Sampling methods.
1.4 Classification and Presentation of Data- Tabular; Diagrammatic and Graphic.

Unit 2: Univariate
2.1 Measures of Central Tendency: Arithmetic Mean; Positional Averages- Median, Quartiles, Deciles and Percentiles; Mode; Geometric Mean and Harmonic Mean.
2.2 Measures of Dispersion: Absolute measure of Dispersion: Range, Inter Quartile Range, Quartile Deviation, Mean Deviation, Standard Deviation, Variance.
2.3 Relative measures of Dispersion: Coefficient of variation; Lorenz Curve; Ginni Coefficient.

Unit 3: Bivariate Analysis
3.1 Correlation- Definition: Types: Karl Pearson and Spearman's Rank Correlation.
3.2 Co-efficient of Determination.
3.3 Regression –Meaning, Lines of Regression- Least Square Method.
3.4 Interpretation of Regression Coefficient and Relation with Correlation Coefficient.

Unit 4: Time Series and Index Number
4.1 Time Series Analysis- Concept, Components, Trend Line and Trend Value by Least Square Method**.**
4.2 Index Numbers – Concept; Types: Price Relative; Quantity Relative; Weighted Index Number; Problems in the construction of Index Number; Limitations of Index Number.
4.3 Methods of Construction of Index Numbers – Laspeyre's, Pasche's, Fisher's, Marshall's, Edgeworth's and Consumer Price Index; Tests for Adequacy of Index Number – Laspeyre's, Pasche's and Fisher's.

Suggested Readings:
1.   Sah, N.M., Statistics for Economics, Arya Publication.
2.   Schaum Outline of Theory and Problem of Statistics, Murray R. Spiegel, Larry J. Stephens, Tata McGraw-Hill.
3.   Agrawal, V.L. Basic Statistics, New Age International Publishers.
4.   Gupta, V.N., Quantitative Technique (Hindi Edition), SPBD Publication.
5.   Sinha, V.C. and Gupta Alok, Business Statistics, SPBD Publication.
6.   Gupta, S.C., Fundamental of Statistics Himalaya Publishing House.

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7.   Singh A, C., Sankhayaki, S Chand Publications.

LXXXI.   MAJOR COURSE- MJ 10:
THEORY OF MARKETS AND DISTRIBUTION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
This course aims to train students in the basic economic theory. It will also enable them to discuss real world economic issues & problems related to Consumer's Behaviour, Production, Market, Distribution & Welfare.

Course Learning Outcome:
The student will be able to understand the Basic Economic Theory. It will also enable them to learn to use empirical methods to derive conclusions about the validity of Economic Theories.

Course Content:
Unit 1: Market Structure
1.1 Types of Markets - Perfect and Imperfect Market.
1.2 Revenue Curves in different forms of Markets.
1.3 Conditions for Equilibrium of firms in different market.

Unit 2: Different Forms of Market and Equilibrium
2.1 Perfect Competition- Characteristics; Equilibrium of Firms in short run and long run; Equilibrium of Industry in short run and long run.
2.2 Monopoly- Characteristics; Equilibrium of Firm in short run and long run; Degrees of Price Discrimination.
2.3 Oligopoly – Meaning and Characteristics; Classical models of non-collusive oligopoly; Kinked Demand Curve Model; Collusive models of oligopoly – Cartels and Price Leadership Models.

Unit 3: Factor Pricing
3.1 Meaning of Factor Pricing.
3.2 Difference between Product Pricing and Factor Pricing.
3.3 Marginal Productivity Theory and Modern Theory of Factor Pricing.
3.4 Adding Up Problem.

Unit 4: Theories of Distribution
4.1 Rent- Classical Theory; Modern Theory.
4.2 Interest- Classical Theory; IS-LM Theory; Keynesian Theory.
4.3 Wages- Classical Theory; Marginal Productivity Theory of Distribution.
4.4 Profit- Innovation Theory; Risk Bearing Theory.

Suggested Readings:
1. Varian, Hal R., Intermediate Microeconomics,8TH Edition, Affiliated East-West Press.
2. Stonier, Alfred W. & Hague, Douglas C., A Textbook of Economic Theory,5TH Edition, Pearson.
3. Koutsoyiannis, A., Modern Microeconomics, 2ND Edition, Palgrave Macmillan.
4. Pindyck, Robert & Rubinfeld, Daniel. Microeconomics ,8th Edition, Pearson.
5. Singh, Neelu., उच्चतर आर्थिक सिद्धांत: व्यष्टि विश्लेषण, Disha International Publishing House, Noida.

LXXXII.   MAJOR COURSE- MJ 11:
PROGRAMMES AND POLICIES OF INDIAN ECONOMY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objectives:
On completion of the course, students will be able to develop an idea of strategies, programmes and policies for the development of Indian economy. They will understand the needs, importance and impact of programmes and policies for the economic development. The course also enables the students to understand the agricultural, industrial and service sectors contributions to the economy. Lastly, it deals with various schemes and policies of the economy.

Course Learning Outcomes:
At the end of the course student will be able to pinpoint and understand the past and present economic conditions of the country in various sectors. They will also be able to forecast the future course of development through their knowledge of policies and programmes set by the Government and other development agencies.

Course Content:
Unit 1: Planning and Development
1.1 Major Issues for Development in India.
1.2 Major Strategies for Development in India.
1.3 Economic Planning in India – Historical background up to NITI Aayog.
1.4 New Economic Policy (1991) – Objectives; Features; Impact on Different Sectors.

Unit 2: Policies and Schemes for Primary Sector Development
2.1 Role of primary sector in the Indian economy.
2.2 Primary Sector – Issues and Challenges.
2.3 Schemes - e-NAM, National Mission for Sustainable Agriculture (NMSA).
2.4 New Agriculture Policy,2020. – Goals, Objectives and features.

Unit 3: Policies and Schemes for Secondary sector Development
3.1 Role of Secondary Sector in the Indian Economy.
3.2 Secondary Sector – Issues and Challenges
3.3 MSME: Composition, Importance, Major Problems faced by MSME.
3.4 National Single Window System (NSWS), Industrial Corridor Development Programme.

Unit 4: Policies and Schemes for the development of Tertiary sector
4.1 Role of Service Sector in Indian economy.
4.2 Tertiary sector - Issues and Challenges.
4.3 Foreign Trade Policy – Importance; Objectives and Features.
4.4 National Road Transport Policy; Swadesh Darshan Scheme; Gati Shakti Scheme.

Suggested Readings:
1. Puri V.K and Mishra S.K, Indian Economy, (English and Hindi) (January 2022), Himalaya Pub. House.
2. Dutt, Gaurav and Sundaram, Indian Economy, (English and Hindi) (Latest edition), S Chand & Co Ltd.
3. Kapila, Uma, Indian Economy: Performance and Policies, (22nd edition 2021), Academic Foundation Publications.
4. Jalan Bimal, India's Economic Policy (2000), Penguin India Publication.
5. Sinha V.C, Indian Economy Performance and Policies (2019), SBPD Publications
6. Verma Sanjeev, The Indian Economy (2020), Unique Publishers.
7. Mishra J.P, Bharat ki Arthik Nitiyan (2019), Sahitya Bhavan Publications.
8. Singh, Ramesh, Bharitiya Arthavyavastha (14th edition), McGraw Hills.

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SEMESTER VI

LXXXIII.   MAJOR COURSE- MJ 12:
BASIC MATHEMATICAL ECONOMICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
The course aims to transmit the body of basic mathematics and its application to the study of economic theory at the Undergraduate level. It starts from the basic concepts of set theory, functions and equations. Thereafter it deals with the techniques of differentiation and their applications in economics. The concept of matrix, determinants and their basic applications in solution of equation, linear programming and game theory.

Course Learning Outcome:
The course provides the mathematical foundations necessary for further study of a variety of disciplines including most of the theoretical papers of post-graduate economics, statistics, econometrics and data analysis that is essential for higher studies in economics as well as getting employment in corporate world/ banking/civil services by enhancing their skills in the field of data analysis.

Course Content:
Unit 1: Basic Concepts
1.1 Set Theory: Types; Set Operation; Use of Venn Diagram.
1.2 Functions: Concept; Types of Function and Graphical Presentation; Homogeneous and Homothetic Function. 1.3 Equations: System of equations; Economic Application of Equations.
1.4 Coordinate Geometry and Economic Applications: Straight line (Keynesian Saving Function and Consumption Function; Parabola (Average Cost Curve and Total Product Curve); Hyperbola (Unit Elastic Demand Curve and Average Fixed Cost Curve).

Unit 2: Limits and Differentiation
2.1 Limits: Concept; Rules.
2.2 Differentiation of functions of One Independent Variable - Concept; 1st order and 2nd order derivatives.
2.3 Partial Differentiation of Function with Two Independent Variables - 1st order and 2nd order.
2.4 Conditions for Unconstrained Maximisation or Minimisation of a Function in One Independent Variable.

Unit 3: Application of Differentiation in Economics
3.1 Total and Marginal utilities; Total Cost and Marginal Cost; Total Revenue and Marginal Revenue, Relationship between Average Revenue and Marginal Revenue, Average Cost and Marginal Cost.
3.2 Elasticity: Price Elasticity of Demand; Income Elasticity of Demand; Cross Elasticity of Demand; Elasticity of Supply; Relationship of Elasticity with Average Revenue and Marginal Revenue.
3.3 Economic Application of Unconstrained Maximisation and Minimization in One Independent Variable: Maximisation of Total Revenue; Profit; Minimisation of Average Cost and Marginal Cost.
3.5 Equilibrium of a Firm under Perfect Competition and Monopoly; Effect of Tax and Subsidy on Equilibrium.

Unit 4: Integration
4.1 Integration: concepts; Definite Integrals; Indefinite Integrals.

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4.2 Economic Applications - Obtaining Total Functions from Marginal Cost; Marginal Revenue; MPS; MPC.

4.3 Economic Applications of Definite Integrals - Consumer Surplus and Producer Surplus under Perfect Competition.

Unit 5: Matrix and Determinants and Their Applications
5.1 Matrix: Meaning and Types of Matrices; Matrix Operations.
5.2 Determinants and its Operations
5.3 Inverse of a Matrix; Rank of a Matrix.
5.4 Solution of Linear Non-Homogeneous Equations using Cramer's rule and Matrix rule.

Suggested readings:
1. Allen, R.G.D., Mathematical Analysis for Economists; All India publishers and distributors.
2. Chiang, A.C., Fundamental Methods of Mathematical Economics; McGraw Hill Publication.
3. Taro Yamane, Mathematics for Economists; Printing Hall of India.
4. Mehta, B.C. and Madnani, G.M.K. (English and Hindi); Mathematics for Economists; Sultan Chand and sons.

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LXXXIV.   MAJOR COURSE- MJ 13:
FINANCIAL INSTITUTIONS AND BANKING

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
     This course is designed to introduce the students to the basic concepts and principles of Banking, Non-Banking Financial Institutions, Banking Process and Banking Reforms in India.

Course Outcome:
     The students will be able to understand the financial behaviour of the individual, institution and economy. They will also have an idea about the Banking, Non-Banking Financial Institutions, Banking Process and Banking Reforms in India.

Course Content:
Unit 1: Banking Institutions
1.1 Types of Financial Institutions - Banking & Non-Banking; Their Primary Functions.
1.2 Reserve Bank of India - History of Formation; Organization of RBI.
1.3 Commercial Banks- Meaning; Nationalization of Commercial Banks; Objectives of Commercial Banks.
1.4 Regional Rural Banks (RRBs) - Meaning; Functions.
1.5 Co-operative Banks - Meaning; Functions.
1.6 Development Banks - Meaning; Functions.

Unit 2: Non-Banking Financial Intuitions
2.1 Non-Banking Financial Intuitions (NBFI) - Meaning; Types.
2.2 Insurance - Meaning; Objectives.
2.3 Insurance Companies - Functions; Types – LIC; GIC; ULIP Companies; Health, Life and Assets Insurance.
2.4 Micro Finance - Meaning; Functions; Micro Finance Institutions in India.
2.5 Mutual Funds - Meaning; Functions; Debt and Equity Component of Mutual Fund.

Unit 3: Banking Process in India
3.1 Reserve Bank of India - Working; Instruments of Credit Control - Quantitative and Qualitative Measures; Types of Bills.
3.2 Commercial Bank - Credit Creation.
3.3 Digital Banking - Internet Banking; Mobile Banking; Unified Payments Interface (UPI) System.

Unit 4: Banking Reforms in India
    4.1 Digital Rupee; Jan Dhan-Aadhaar-mobile (JAM) Penetration Driving India's Digitization.
                4.2 Financial Literacy; Financial Inclusion.
4.3 Banking and Insurance Regulatory Bodies - Reserve Bank of India (RBI) - Formation and Functions; Insurance Regulatory and Development Authority of India (IRDAI) - Formation and Functions; Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) (Central Registry) Rules, 2011.

Suggested Readings:
1. Vaish, M.C., Money, Banking, Trade & Public Finance, New Age International Pvt Ltd.
2. Sundaram, K.P.M., Money, Banking and International Trade, S Chand Publications.
3. Varian, Hal R., Intermediate Microeconomics, 8th Edition, Affiliated East-West Press.
4. Mithani, D.M., Money Banking, International Trade & Public Finance, 20th Ed, Himalayan Pub.
5. Boden, A., Banking On It, 2020, Penguin Business.
6. Uppal, R. K., Banking Sector Reforms in India, New Century Publications (English).
7. Aggarwal, A., Business Process of Banking: Regulations Operations Digital Banking IT Infrastructure, Notion Press, (Vol I, 2021) (English).

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LXXXV.   MAJOR COURSE- MJ 14:
DEMOGRAPHY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
        The course aims to orient the students with the positive aspects of population and how it can help in the Economic Development of the nation. It exposes the students to the important theories of demography. The concepts of fertility, mortality and Nuptiality have a direct bearing on growth of population, hence have been taken up. Various population indices have been included. The course also focuses on demographics of India and the Population Policy in India.

Course Learning Outcome:
        At the end of the course, the students will be oriented towards appreciating the link between demography and development of an economy. He will understand the subject with the help various theoretical aspects of demography. He will have a grasp of quantitative and qualitative aspects of population study and various demographic concepts and indices.

Course Content:
Unit 1: Population and Development
1.1 Meaning of Demography; Scope of Demography.
1.2 Meaning of Population Growth; Components of Population growth; Measurement of Population Growth.
1.3 Theories of Population - Malthus theory; Optimum theory; Theory of Demographic Transition.

Unit 2: Analysis of Population Data
2.1. Fertility: Meaning; Importance of study of fertility; Meaning; Formula of Important Birth Rate Concepts - Crude Birth Rate; Age Specific Birth Rate; Total Fertility Rate; Gross Reproduction Rate; Net Reproduction Rate; Factors affecting fertility rate; Trend of fertility ratio India.
2.2. Mortality – Meaning; Concepts; Measurements of Important Death Rates- Crude Death Rate, Age Specific Death Rate; Infant Mortality Rate; Neo-Natal Mortally Rate; Maternal Mortality Rate; Factors Responsible for Decline in Mortality in Recent Past.
2.3. Nuptiality - Meaning; Concepts and formula of Total Marriage Rate; Total Marriage Rate; Total Divorce Rate; Gross Nuptiality Rate; Meaning; Types of Marital Status; Trends in Age at Marriage in India.
2.4 Migration: Meaning; Types; Factors promoting migration; Effects of Out-Migration; Effects of In-Migration.
2.5 Urbanisation: Meaning; Characteristics of Urban and Rural areas; Status and Trend of Urbanisation in India; Reasons for increasing urbanisation in India.

Unit 3: Population Indices
3.1 Meaning of Life table; Basic Concepts of Life Table, Forms of Life Table; Preparation of Life Table.
3.2 Population Pyramid- Concept; Significance; Construction of Population Pyramid; Shapes of Population Pyramid; Their Implications. 3.3 Population Projection; Stable Population and Stationary Population.
3.4 Concepts of Population Cohort; Meaning and Components of Vital Statistics; 'defacto' and 'dejure' Census of an area.

Unit 4: Sources of Demographic Data in India
4.1 Sources of Demographic data - Census; Registration and Sample Survey - Their Relative Merits and Demerits.

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4.2 Population Census: Methodology of Collecting Census Data; Characteristics of Census; Nature of Information Collected in 1991, 2001 and 2011.

4.3 Registration Method in India; Data Collected by Registration Method.

4.4 NSSO and its Rounds; MOSPI and Demographic Data.

4.5 National Population Policy 2000.

Suggested Readings:

1. Desai, J. N. Jhingan M. L. and Bhatt B. K. (2003), Demography, Vrinda Publications.
2. Mishra J, (2016), Demography, Sahitya Bhawan Publications.
3. Preston, S, Heuveline, P, and Guillot, Michel (2000), Demography: Measuring and Modelling Population Processes, John Wiley and Sons Publications.
4. Sinha, V. C. and Sinha, P, (2018) (English and Hindi), Demography, SBPD Publication.
5. Weinstein, Jay and Pillai, Vijayan K. (2000), Demography: The Science of Population, Rowman and Littlefield Publications (2015).
6. Mishra, J. P., Jananki (Hindi), (Revised edition 2021) Sahitya Bhawan Publications.

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LXXXVI.   MAJOR COURSE- MJ 15:
RURAL DEVELOPMENT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objectives:

The course intends to expose the students to have an idea of the structure of the rural economy with special focus on India. The special section on rural governance and Panchayati Raj Institutions is important to understand rural economy. The course includes important issues related to agriculture as rural economies are primarily agricultural. Finally, the demographic issues of rural India are explained in the course.

Course Learning Outcomes:

The students who undergo this programme are able to understand the socio- economic issues prevailing in rural areas and intervene meaningfully in areas of concerns. It opens avenues for employment in the Dept. of Rural Development and Panchayati Raj.

Course Content:
Unit 1: Structure of Rural Economy

1.1 Definition of Urban and Rural Areas. 1.2 Economic Characteristics of a Rural Economy with Special Reference to India. 1.3 Social Structure of Rural Areas. 1.4 Natural Resources in Rural Areas and Their Role in Life of Rural People.

Unit 2: Rural Governance

2.1 Meaning of Rural Governance. 2.2 Panchayati Raj Institutions in India. 2.3 Decentralized Governance - Importance and Limitations; Impact of Decentralized Governance on Rural Development.

2.4 Micro Finance - Role in Rural Upliftment. 2.5 Self Help Groups - Role in Women Empowerment.

Unit 3: Agriculture in Rural India

3.1 Contribution of Agriculture to GDP; Employment in Agriculture.

3.2 Types of Agriculture – Subsistence, Commercial Agriculture; Types of farmers - Marginal, Small, Medium and Large. 3.3 Land Use – Land Holding; Land Reforms.

3.4 Agricultural Marketing – Marketing Channels of Agricultural Products; Co-operative Marketing.

3.5 Agricultural Finance – Need for Agricultural Finance, Sources of Agricultural Finance; Kisan Credit card; Role of NABARD in Rural Development.

Unit 4: Demography in Rural India

4.1 Rural Population – Size, Sex and Age Distribution; Working Age Population in Rural Areas; Growth Rates of Rural Population. 4.2 Literacy - Rural Literacy Rates; Causes for Low Literacy Rate; Measures to Increase the Literacy in Rural Area. 4.3 Poverty - Meaning and Measure; Extent of Rural Poverty; Government Measures to Eradicate Rural Poverty. 4.4 Rural Unemployment - Meaning of

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Unemployment; Rural Work-Force Participation Rate; Gender Differentials in Rural Workforce Participation Rate; Government Measures to Reduce Rural Unemployment.

Suggested Reading:

1. Balaramulu; Public Policies: An Evaluation of Integrated Rural Development Programme", Ajantha Publications, New Delhi, 1991.

2. Sheo Kumar Lal and Umed Rajnahar – Rural Social Transformation; Rawat Publications, 1992.

3. Jain S.C – Community Development and Panchayat Raj in India. Allied Publishers, 1967.

4. Kurian C.T – Poverty Planning and Social Transformation; Allied Publishers, 1978.

5. Agricultural Development Policy: Concepts and Experiences – Narton R.D; John Wiley and Sons Ltd., 2004.

6. Indian Agricultural Policy at the cross roads – S.S Acharya; Rawat Publications, 2013.

7. Indian Economy – A.N. Agarwal; New Age International Publications, 2019.

8. Indian Economy – Rudra Dutt and Sundaram, S Chand Publishers, Latest edition.

9. Mishra and Puri; Himalayan Publishing House, Latest edition7. Sankaran, K., & Kumar, M. (2010) Group Discussion and Public Speaking. M.I.Pub,Agra, Adams Media.

10. Schuller, Robert. (2010). Positive Attitudes. Jaico Books.

11. Trishna's (2006). Howtodowellin GDs & Interviews, Trishna Knowledge Systems.

SEMESTER VII

LXXXVII.   MAJOR COURSE- MJ 16:
HISTORY OF ECONOMIC THOUGHT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objectives:
The course comprises of a study of the main schools of economic thought starting from early views of Mercantilists and Physiocrats. The Classical, Neo-Classical and the Marginalist Revolution, Economic thought of Socialists like Sismondi and Marx have been covered. The syllabus also includes the valuable contributions of Indian economic thinkers like Kautilya, Dada Bhai Naoroji, B.R. Ambedkar, M.K. Gandhi and A.K. Sen.

Course Outcome:
The students will analytically learn how the economic thought has evolved over time. They will critically and analytically study the main contributions of great economists who have influenced economic thought over time.

Course Content:
Unit 1: Economic Thought of Early Modern School
1.1 Mercantilism (16th to 18th century) - Main Characteristics; Thomas Munn as a Mercantilist.

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1.2 Physiocracy (1757-1776) - Quesnay (1759 -1766): Natural Order; Laissez Faire; Primacy of Agriculture; Social Classes; Tableau Economique; Taxation.
1.3 Economic ideas of Physiocrats: Tourgot; Petty; Locke and Hume.

Unit 2: Economic Thought in the Classical Period
2.1 Adam Smith (1723-1790) - Division of Labour; Theory of Value; Capital Accumulation; Distribution; Views on Trade; Economic Progress.
2.2 David Ricardo (1772-1823) – Value; Theory of Rent; Stationary State; Distribution; Ideas on International Trade.
2.3 Thomas R. Malthus (1776-1834) - Theory of Population; Theory of General Glut.
2.4 J. B. Say (1767-1832) - Individual Liberty and Private Property; Importance of Free Markets; Law of Markets.

Unit 3: Economic Ideas of Neo-Classical School, Marginalists and Keynesian School
3.1 Leon Walras (1834-1910) - Marginal Theory of Value; General Equilibrium Theory; Walras law.
3.2 H. H. Gossen (1810-1858) - Utilitarianism; Marginalism; Gossen's First Law; Second Law; Third Law.
3.3 A. Marshall (1842-1924) - Markets and Role of Time in Price Determination; Ideas on Consumer's Surplus; Elasticity; Representative Firm; Quasi-Rent; External and Internal Economies; Partial Equilibrium Analysis.
3.4 A.C. Pigou (1877-1959) - Dual Criteria for Increase in Social Welfare; Conditions for Welfare Maximisation; Policy Recommendations for Increasing Social Welfare.
3.5 Vilfredo Pareto (1848-1923) - Pareto Principle (80/20 Rule), Welfare Economics-Pareto Optimality; Pareto Efficiency.
3.6 J.M. Keynes (1883-1946) - A Monetary Economist; Keynesian Revolution; General Theory; Liquidity Preference; Multiplier; Rejection of Say's Law and Laissez-Faire; Recommendations for Economic Policy.

Unit 4: Economic Thought of Socialists
4.1 J.C.L. Sismondi (1773-1842) - His Criticism of Capitalist System; Human welfare; Class Conflict; State Intervention.
4.2 Karl Marx (1818-1883) - Dynamics of Social Change; Labour Theory of Value; Surplus Value; Profit and Theory of Capitalist Crisis.
4.3 J.S. Mill (1806-1873): Liberal Socialism, Liberty and Utilitarianism; Advocate of government intervention for social upliftment.

Unit 5: Economic Thought of Indian Writers

5.1 Kautilya (375-283 BC): Wealth, Varta and importance of agriculture, labour, trade, population, welfare state, public finance.

5.2 Dada Bhai Naoroji (1825-1917): National income of India, Taxation and Military Expenditure, Drain theory and Poverty.

5.3 M. K. Gandhi (1869-1948): Non-Violent Economy, Decentralisation- Cottage industries, Khadi Industry, Village Sarvodaya, Trusteeship Doctrine, Food problem, Population, Labour Welfare, Exchange economy.

5.4 Amartya Kumar Sen (1933): Poverty and Famines, Poverty and Inequality, Concept of Capability and Entitlement.

Suggested Readings:

1. Schumpeter J., A History of Economic Analysis. Oxford University Press, (1954).
2. 2.Keynes J.M. General Theory of Employment, Interest and Money., Atlantic Publishers and Distributors
3. Schumpeter J.A. Ten Great Economists: From Marx to Keynes. (Any edition).
4. Bhatia, H.L., History of Economic Thought, (English, Hindi) Vikash Publishing House.
5. Ganguli, B.N(1977): Indian Economic Thought: A 19th Century Perspective, Tata Mcgraw Hill.
6. Hajela, T.N (2011) : History Of Economic Thought (English, Hindi) , Ane Books.
7. Jhingan, M.L (2008): Aarthik Vicharon Ka Itihas, Vrinda Publications, New Delhi.
8. Kautilya (1992), The Arthashastra, Translated and Introduced by L.N. Rangarajan, Penguin Books.
9. Loknathan, V (2009): History of Economic Thought, S. Chand & Company.
10. Roll, Eric: History of Economic Thaught, Faber.
11. Sinha, V.C (2011): Aarthik Vicharon Ka Itihas, Mayur Publications.
12. Staley, Charles.E, "A History of Economic Thought: From Aristole to Arrow", Blackwell Publishing.

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LXXXVIII.   MAJOR COURSE- MJ 17:
BASIC ECONOMETRICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
The course objective of "Statistics & Basic Econometrics" is to provide students with a solid foundation in statistical techniques and econometric methods used in empirical economics research. The course aims to develop students' understanding of statistical concepts and their applications in analysing economic data. The course includes Probability & Distribution, Introduction and Methodology of Econometrics, Two Variable Regression Model and Application & Problems of Regression Analysis.

Course Learning Outcome:
After completing the course successfully, the students will be able to understand the use of various statistical techniques to analyse the data and interpret the results. Through this course they will get a broad knowledge to make use of econometric models in their academic work. Moreover, job of data scientists, financial analysts require knowledge of econometrics.

Unit 1: Probability & Distribution
1.1 Basic Concept – Random Experiments; Sample Space and Events.
1.2 Definition of Probability – Classical; Statistical and Axiomatic.
1.3 Rules of Probability – Addition and Multiplication Theorem; Conditional Probability; Bayes Theorem.
1.4 Normal Distribution; Poisson Distribution; Binomial Distribution.
1.5 Test of Hypothesis - t - test, Z- test, Chi Square test.

Unit 2: Introduction and Methodology of Econometrics
2.1 Definition of Econometrics; Importance of Econometrics.
2.2 Relationship between Econometrics, Mathematical Economics and Statistics.
2.3 Limitations of Econometrics.
2.4 Specification of the Model; Collection of Data and Estimation of the model.
2.5 Evaluation of the Coefficients of the Model and Testing the Significance of Coefficients.

Unit 3: Two Variable Regression Model
3.1 Stochastic and Non- Stochastic Relations; Reasons for the inclusion of Random or Stochastic Variable.
3.2 The Classical Linear Regression Model; Assumptions; Ordinary Least Square Method of Estimation of parameters.
3.3 Properties of Least Square Estimates (BLUE); The Gauss Markov Theorem.
3.4 The Coefficient of Determination R^2 – A Measure of Goodness of Fit.

Unit 4: Problems of Regression Analysis
4.1 Autocorrelation: Meaning, Consequences.
4.2 Heteroscedasticity: Meaning, Consequences.
4.3 Multicollinearity: Meaning, Consequences.

Suggested Readings:
1. Koutsoyiannis, A., (1977), Theory of Econometrics, 2nd Edition, the Mc-Milan Press Ltd, London.
2. Gujarati, D.N; (1995) Basic Econometrics, 2nd Edition, Mc Graw Hill, New Delhi.
3. Gujarati, D.N., C Porter and Sangeetha Gunasekar (2012) Basic Econometrics, 5th Edition, Tata Mc Graw Hill Eduaction Pvt. Ltd, New Delhi.
4. Maddala G.S. (Ed) 1993, Econometric Methods and Application, Aldershot, UK.
5. Shyamala, Navdeep Kaur and T. Arul Pragasam (2008) A Textbook on Econometrics Theory and Application, 16th Edition, Vishal Publishing Co., New Delhi.
6. Gupta, S.C., Fundamental of Statistics, Himalaya Publishing House.

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LXXXIX.   MAJOR COURSE- MJ 18:
ECONOMICS OF SOCIAL SECTOR

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
This course is designed to introduce the students to the basic structure of economy and how each sector contributes in the nation building. It also reviews policies and programmes status in different institutions.

Course Learning Outcome:
The students will be able to understand the role of health and education as a vital asset to frame the behaviour of an individual, institution and economy. They will also have an idea about the objective of health and education, and related Institutions that typically covers various topics related to the functioning of health systems, economic development, and the role of educational institutions in the economy program and policies.

Course Content:
Unit 1: Human Resource and its Role in Economic Development
1.1 Human Resource: Meaning and Importance in Economic Development.
1.2 Social Sector Meaning and Components.
1.3 Government Policies for Educational Development; NEP 2020.
1.4 Policies for Health: Ayushmann Bharat; System of Delivery of Public Health.

Unit 2: Education and Development
2.1 Education as Public Goods; Education as an instrument of Economic Growth.
2.2 Benefits of Education: Private and Social Benefits; Cost Benefit Analysis of Education.
2.3 Committees and Commission on Education.
2.4 Demand for Education - Private Demand and Social Demand; Determinants of Demand for Education.
2.5 Costs of Education - Private Costs and Social Costs; Wastage and Stagnation in Education.

Unit 3: Economics of Health
3.1 Health: Meaning and Determinants of Health, Mortality and Morbidity.
3.2 Measurement of Health Status - BMI; Stunting; Wasting; Underweight.
3.3 Factors Influencing Health and Nutrition.
3.4 Inequalities in Health in India: Class and Gender Perspectives.
3.5 Public Expenditure on Health in India.

Unit 4: Development Policy in India
4.1 Gender Analysis Framework; Gender Mainstreaming and Gender Budgeting.
4.2 Analysing Policy and Programmes: Gender blind; Gender Neutral and Gender Redistributive Policy.
4.3 Women's Education - Gender Bias in Enrolment, Drop-Outs, Information Technology - Impact on Women's Development Sustainable Development and Impact on Women.
4.4 Health Status of Women in India – Mortality and Morbidity Factors Influencing Health and nutrition. Globalization and Women in India.

Suggested Readings:
1. Arya P.P. and B.B. Tandon (Ed) 2004: Human Resource Development, Deep & Deep Pub. New Delhi.
2. Goel, S.L. and P.N. Gautam (2005): Human Resource Development in the 21st century, Concept and case studies, Deep & Deep Pub. New Delhi.
3. Meier, Gerald M. and James' E. Rauch (2010): Leading issues in economic development, Oxford Univ. Press, New York.
4. Todaro, Michael P and Stephen C. Smith (2003): Economic Development, Pearson Education Ltd.
5. World Development Report (World Bank).
6. Human Development Report (UNDP).

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XC.   MAJOR COURSE- MJ 19:
MODELS OF GROWTH AND DEVELOPMENT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:

Basic models of growth and development have been included initially before going over to contemporary models of development. Finally, it introduces students to open economy macro issues and provide a long run perspective to policy-making by framing policies in a dynamic context.

Course Learning Outcomes:

Students will develop a critical understanding of the classical, neo-classical and contemporary issues and models in economic growth and development. Students will be exposed to macroeconomic policies and global issues in development and will thus be better prepared to face the professional world and can use this knowledge base in a variety of jobs, including in the corporate, civil service and NGO sectors.

Unit 1: Growth and Development Models and Empirics

1.1 The Harrod-Domar model.

1.2 Solow model and its variants.

1.3 Ricardian Theory.

1.4 Marxian Theory.

1.5 Rostow's Stages of Growth Theory.

Unit 2: Theories of Growth and Development

2.1 Structural change and Lewis 'Model of Unlimited Supplies of Labour

2.2 The Big Push Theory

2.3 Leibenstein's Theory of Critical Minimum Efforts.

2.4 Balanced and Unbalanced Growth Theories

Unit 3: Contemporary Models of Development and Underdevelopment

3.1 Theories of Endogenous Growth with special reference to Romer's Model.

3.2 Underdevelopment as Coordination Failure.

3.3 Theory of Multiple Equilibria.

Unit 4: Macro Economic Policies and Global issues in Development

4.1 Role of Monetary policy in Economic Development.

4.2 Role of Fiscal Policy in Economic Development.

4.3 Indian Planning Commission and NITI Aayog.

4.4 Financial Instability in Globalised Economies.,

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4.5 Trade and Perpetuation of Global Inequalities.

Suggested Readings:

1. Ray, D. (1998). Development economics. Princeton University Press.

2.Todaro, Michael P. and Stephen C. Smith, Economic Development, 8e. Delhi: Pearson Education, 2003.

3.Misra, S. K. and Puri, Growth and Development, Mumbai: Himalaya Publishers, 2005.

4.Human Development Report. Relevant years.

5.Thirlwall, A.P. Growth and Development 8e. New York: Palgrave McMillan, 2005.

6. Meier, Gerald M. and James E. Rauch, Leading issues in Economic Development, 8e. New Delhi: Oxford University Press.

SEMESTER VIII

I.   MAJOR COURSE- MJ 20:
MONETARY ECONOMICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
The course objective of macroeconomic analysis is to provide students with a comprehensive understanding of the macroeconomic principles and tools used to analyse and evaluate the performance of an economy as a whole.

Course Learning Outcome:
After completing this course, the students will be equipped with a solid understanding of the key concepts, theories, and tools used to analyse the overall behaviour and performance of an economy like Consumption Function, Investment Function, Money, Pricing & Employment and Trade Cycle.

Course Content:
Unit 1: Theories of Employment and Consumption Function
1.1 Classical Theory of Employment. 1.2 Consumption Function; APC; MPC; Saving Function; APS; MPS.
1.3 Keynesian theory of Effective Demand; Inflationary Gap; Deflationary Gap.
1.4 Factors affecting Consumption Function; Absolute Income Hypothesis; Relative Income Hypothesis; Permanent Income Hypothesis; Life Cycle Hypotheses.
1.5 Consumption under Uncertainty – Modern approach.

Unit 2: Investment Function
2.1 Investment Function - Autonomous and Induced Investment.
2.2 Marginal Efficiency of Capital (MEC); Factors affecting MEC.
2.3 Neo-Classical Theory of Investment. 2.4 Tobin's Q Theory of Investment.

Unit 3: Money, Pricing and Employment
3.1 Demand for Money and its determinant.
3.2 Supply of Money and its determinants; Components of Money Supply ($M_1, M_2, M_3 M_4$).
3.3 Keynesian Theory of Money and Prices.
3.4 Philips Curve 3.5 Milton Friedman's Theory of Money and Prices.

Unit 4: Trade Cycle
4.1 Meaning; Phases 4.2 Keynesian Multiplier. 4.3 Theory of Accelerator.
4.4 Hicks-Samuelson Theory of Business Cycle; Hawtrey Theory of Trade Cycle.
4.5 Measures to control Trade Cycle- Monetary and Fiscal.

Suggested Readings:
1. Branson, W.A. (1989): Macroeconomic Theory and Policy, (3rd Edition), Harper and Row, New York.
2. B.L Scarfe. (1977): Cycles, Growth and Inflation, McGraw Hill, New York.
3. D.L. Romer, (1996): Advanced Macroeconomics, McGraw Hill Company Ltd., New York.
4. E Shapiro. (1996): Macroeconomic Analysis, Galgotia Publications, New Delhi.

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5. G. Ackley, (1978): Macroeconomics: Theory and Policy, Macmillan, New York.
6. Hall, R.E. and J.B. Taylor (1986): Macroeconomics, W.W. Norton, New York.
7. Heijdra, B.J. and V.P. Frederick (2001): Foundations of Modern Macroeconomics, Oxford Univ. Press, New Delhi.
8. R. Dornbusch and F. Stanley (1997): Macroeconomics, McGraw Hill, Inc., New York.
9. R. Jha, (1991): Contemporary Macroeconomic Theory and Policy, Wiley Eastern Ltd., New Delhi.
10. S.B Gupta: Monetary Economics Institutions Theory and Policy.

II. ADVANCED MAJOR COURSE- AMJ 1A:
MATHEMATICAL ECONOMICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
This course technique of optimisation of functions in one and more variables using the tools of first and second order differentiation in one and more explanatory variables. The use of total differentials and Hessians have been incorporated and the use of integration in economics. Dynamic analysis has been explained with the help of difference and differential equations. Finally, the application of Matrix algebra in solving system of linear equations and in the fields of Linear Programming, Game Theory and Input-Output have been covered.

Course Outcome:
The course will enable the students to have an understanding of economics with the help of mathematics. Study of Mathematical Economics equips the students to develop models. It is useful in problem-solving and decision-making in organisations.

Unit 1: Differentiation and Its Application for Unconstrained Optimisation of Functions
1.1 Optimisation of function with one independent variable - Relative Versus Absolute Extreme Value; First and Second Order Conditions for Relative Maxima and Minima; Inflexion Point; Economic Applications of Optimisations - Maximisation of Total Utility, Total Revenue and Profit; Minimisation of Costs.
1.2 Functions of two or more Independent Variables; Production Function and Isoquants; Utility function and Indifference Curves 1.3 First and Second Order Partial Differentiation; Young's Theorem.

Unit 2: Constrained Optimisation in Case of More Than One Independent Variable
2.1 Technique of Optimisation in case of two independent variables - Necessary Condition (using Lagrangian multiplier) and Sufficient Condition (Using Total differential or Bordered Hessian)
2.2 Consumer's Equilibrium- Maximisation of Utility Subject to Budget Constraint.
2.3 Producers Equilibrium - Maximisation of Output Subject to Cost Constraint; Minimisation of Cost Subject to Output Constraint.

Unit 3: Integration, Difference Equations and Differential Equations and their Applications.
3.1 Integration: Indefinite and Definite Integrals.
3.2 Economic Applications of Indefinite Integrals - MC, MR, MPS, MPC, Investment.
3.3 Economic Applications of Definite Integrals- Consumer's Surplus; Consumer's Surplus under Monopoly; Consumer's and Producer's Surplus under Perfect Competition.
3.4 Difference Equations - Concept; Solution of Linear Non-Homogeneous First Order Difference Equation - General and Particular Solutions
3.5 Application of First Order Difference Equations to Market - Simple Cobweb Model.
3.6 Differential Equations - Concept and Types; Solution of Linear Non-Homogeneous First Order Differential Equations - General and Particular Solutions; Stability of Market Equilibrium with Differential Equations.

Unit 4: Advanced Matrix Operations and Their Applications
4.1 Singular and Non-Singular Matrix; Matrix Inversion; Rank of Matrix.

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4.2 Solution of Linear Non-Homogeneous Equation System using Matrix Method.

4.3 Linear Programming- Concepts; Assumptions and Limitations; Formulating a Linear Programming problem; Graphic Solution to a Linear Programming problem; Dual of LLP problem.

4.4 Game Theory - Concepts of Zero sum and Constant Sum game, Saddle point; Graphic Solution of Game Involving Pure and Mixed Strategies.

4.5 Input-Output Analysis - Meaning and Assumptions; Transaction Matrix and Technology Matrix; Solution of Open- Static Input-Output model.

Suggested Readings:
1. Allen, RGD, Mathematical Analysis for Economists, All India Publishers and Distributors
2. Allen, RGD, Mathematical Economics, All India Publishers and Distributors
3. Chiang, AC, Fundamental Methods of Mathematical Economics, McGraw Hill Publications
4. Srivastava, R, A Textbook on Advanced Mathematical Economics, Disha International Publishing House
5. Mehta, BC and Madnani GMK (Hindi) Mathematics for Economists, Sultan Chand and Sons

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OR   ADVANCED MAJOR COURSE- AMJ 1B:
AGRICULTURAL ECONOMICS

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Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

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(Credits: Theory-04) **60 Lectures**

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Course Objective:
This course is designed to expose the students to the nature, scope and Principles of agricultural Economics. The emphasis of this course is on concepts and introduction of various tools required for analysis in agricultural economics. In particular, the course aims to deepen students' understanding of how economic theory can be applied to analyse policy problems of agricultural sectors. It also focuses on analysing the Principles of Agricultural production, costs and prices.

Course Outcome:
On completion of the course, the students will be able to understand the role of agriculture in economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy as a whole. The students can develop understanding of economic theories applicable in analysing the problems of agricultural production, costs and prices.

Course Content:
Unit 1: Overview of Agricultural Economics
1.1 Nature and scope of agriculture: Traditional agriculture and its modernization;
1.2 Role of Agriculture in economic development; Interdependence of Agriculture and Industry.
1.3 Mellor's approach and Lewis Model; Linkages between agriculture and industry; Sustainable agricultural development.
1.4 Ranis – Fei Model of Agricultural Growth.

Unit 2: Principles of Agricultural Economics
2.1 Farm Management; Features and Kinds of firm ownership.
2.2 Farm Size and Productivity.
2.3 Intensive and Extensive Cultivation.
2.4 Classification of Agricultural Products (Cash and Food Crops, Cereal and Non-Cereal Crops).

Unit 3: Principles of Agricultural Production
3.1 Production and Production Functions: Short Run and Long Run Production Function.
3.2 Relationship between TPP, APP and MPP.
3.3 Factor-Product Relationship.
3.4 Factor-Factor Relationship: Isoquant, Iso Cost line, least cost combination.
3.5 Laws of Returns: Law of Increasing Returns, Law of Constant Returns and Law of Diminishing Returns.

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3.6 Product-Product Relations: Production Possibility Curve, Iso Revenue line, Optimum Product combination.

Unit 4: Agricultural Marketing and Agricultural Prices
4.1 Meaning and scope of Agricultural Marketing.
4.2 Significance of Agricultural Marketing.
4.3 Marketed and Marketable Surplus.
4.4. Agricultural Prices: Meaning and determination of agricultural Prices, Trends in   Agricultural Prices, Causes and impact of price fluctuations.

Suggested Readings:
1. Andrew Barkley, Principles of Agricultural Economics, Routledge Taylor and Francies, London and New York.
2. Sadhu, A. N. and Singh Amarjeet: Fundamental of Agricultural Economics, Himalaya Publ. House, New delhi.
3. Lekhi, R. K. & Singh, Joginder: Agricultural Economics-An Indian Perspective, Kalyani Publishers, New Delhi.
4. S. Subba Reddy, P. Raghu Ram, T.V. Neelakanta Sastry, I. Bhavani Devi: Agricultural Economics, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
5. Arun Katyan: Krishi Vigyan ke Sidhant, Kitab Mahal Publishers, New Delhi.

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III.   ADVANCED MAJOR COURSE- AMJ 2A:
ECONOMETRICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
Unit 1 is devoted to the examination of the assumptions of multiple linear regression model, their economic meaning, implications for the values of the parameters of the economic relations, their tests and matrix approach to regression analysis. Unit 2 is about the method of analysis of variance and its use in connection with regression analysis. Unit 3 explains dummy variables, its uses, dummy explanatory variables and dummy dependent variable model, dummy variable model alternative to chow test. Unit 4 includes simultaneous dependence of economic variables. The system of simultaneous relations requires the application of more elaborate econometric techniques for their measurement.

Course Learning Outcome:
After completing the course successfully, the students will be able to understand the use of various statistical techniques to analyse the data and interpret the results.

Unit 1: Multiple Linear Regression Model
1.1 Multiple Linear Regression Model with two Explanatory Variables.
1.2 Statistical Properties of the Estimates $\hat{\beta}_0$, $\hat{\beta}_1$ and $\hat{\beta}_2$.
1.3 Tests of Significance of Parameters; Testing the Hypothesis; Confidence Interval.
1.4 Goodness of Fit R^2; Adjusted Coefficients of Determination $\bar{R}^2$.
1.5 Matrix Approach to Regression Analysis.

Unit 2: Analysis of Variance and Regression
2.1 Meaning.
2.2 The Method of Analysis of Variance as a Statistical Method.
2.3 Regression Analysis and Analysis of Variance.
2.4 Comparison between Regression Analysis and Analysis of Variance.
2.5 Tests based on ANOVA.

Unit 3: Dummy Variables
3.1 Meaning and Uses of Dummy Variables.
3.2 Interaction Effect using Dummy Variables.
3.3 Features of Dummy Variable Models.
3.4 The Dummy Variable Model alternative to Chow Test.
3.5 Dummy Dependent Variable Models.

Unit 4: Simultaneous Equation Models
4.1 Simultaneous Dependence of Economic Variables.
4.2 Consequences of Simultaneous Relations.
4.3 Solution to the Simultaneous Equation Bias.
4.4 Structural Versus Reduced Form.
4.5 The Method of Instrumental Variables.

Suggested Readings:
1. Koutsoyiannis A (1977) Theory of Econometrics, 2nd Edition, the Mc Milan Press Ltd, London.
2. Gujarati, D.N; (1995) Basic Econometrics, 2nd Edition, Mc Graw Hill, New Delhi.
3. Gujarati, D.N., C Porter and Sangeetha Gunasekar (2012) Basic Econometrics, 5th Edition, Tata Mc Graw Hill Eduaction Pvt. Ltd, New Delhi.
4. Maddala G.S. (Ed) 1993, Econometric Methods and Application, Aldershot, UK.
5. Shyamala, Navdeep Kaur and T.Arul Pragasam (2008) A Textbook on Econometrics Theory and Application, 16th Edition, Vishal Publishing Co., New Delhi.

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OR   ADVANCED MAJOR COURSE- AMJ 2B:
GENDER AND DEVELOPMENT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
The course intends to make the students aware of the gender disparities in areas like literacy, occupational structure, work force participation, income levels, asset ownership, health, and education, to name a few. It also develops in them an understanding of it's causes and consequences specially in the light of development. The course also enhances the knowledge of the students on issues of social security and empowerment of women and the role of Panchayats and Self-Help groups in emancipation of women.

Course Learning Outcome:
The well-planned course contents will enable the students to have a sound information of the status of women in various important variables and their causes. A knowledge of Global measures of gender inequality and of the social security schemes, panchayats and SHGs in empowering women will enhance their administrative and planning skills.

Course Content:
Unit 1: Demography of female population
    1.1 Female Age structure; Literacy; Occupational Pattern; Mortality rates; and Sex Ratio.
      1.2 Causes of Declining Sex Ratios and Fertility rates in LDCs, particularly India.
        1.3 Factors Affecting Access of Women to Nutrition, Health and Education.

Unit 2: Economic Growth and Gender Equality
2.1 Women's Contribution to GDP in India;
2.2 Two-Way Relationship between Economic growth and Gender Inequality/Equality.
2.3 Feminisation of Poverty - Concept and Causes.
2.4 Gender Budgets – Meaning; Importance. 2.5 Gender Issues in the Millennium Development Goals. 2.6 Incorporation of the Gender Factor into the Human Development Index - Gender Development Index (GDI); Gender Empowerment Measure (GEM).

Unit 3: Socio-Economic Status of Women
3.1 Female Work-Participation and Gender Differentials in Labour Market; Factors affecting Female Entry in Labour Market in India;
3.2 Income Level and Gender Differentials in India; Health of Women in India and Gender Differences; Education of women in India and Gender differences;
3.3 Asset Ownership of Women; Inheritance Rights of Women.

Unit 4: Development of Women
4.1 Social security of women: Meaning; Entitlements; Status;
4.2 Women Empowerment: Meaning, Indicators and Importance;
4.3 Role of Self-Help Groups in Providing Social Security;
4.4 Government Schemes for Safety-Net of Women;
4.5 Democratic Decentralization (Panchayats) and Women's Empowerment in India;
4.6 Climate Change and Impact on Women.

Suggested Readings:
1. Boserup E. (1970), Women's Role in Economic Development, George Allen and Unwin, London.
2. Desai, N. and M.K. Raj. (Eds.) (1979), Women and Society in India, Research Centre for Women Studies, SNDT University, Bombay.
3. Government of India (1974), Towards Equality — Report of the Committee on the Status of Women in India, Department of Social Welfare, Ministry of Education and Social Welfare, New Delhi.
4. Seth, M. (2000), W omen and Development: The Indian Experience, Sage Publications, New Delhi.

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5. Srinivasan K. and A. Shroff (1998), India: Towards Population & Development Goals, Oxford Univ Press, N. Delhi.
6. Venkateswaran, S. (1995), Environment, Development and the Gender Gap, Sage Publications, New Delhi.
7. Wazir, R. (2000), The Gender Gap in Basic Education: NGOs as Change Agents, Sage Publications, New Delhi.
8. Krishnaraj, M.R.M. Sudarshan and A. Shariff (1999), Gender, Population and development, Oxford Univ. Press, N.Delhi.

IV.   ADVANCED MAJOR COURSE- AMJ 3A:
PROBLEMS OF INDIAN AGRICULTURE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
This course is designed to make the students understand the nature of development of Indian agriculture and study the agriculture and farming in the economic system; basic economic concepts, and problems of agriculture; credit and marketing problems, state farm programs affecting the farmer's economic position and impact of economic reforms on Indian agriculture. It provides the students an exposure to selected aspects of sustainability of agricultural development in India.

Course Outcome:
On completion of course, the students will gain knowledge on the development and problems of Indian agriculture. The students can analyse the impacts of economic reforms on Indian agriculture.

Course Content:
Unit 1: Status of Agricultural Economy in India
1.1 Farm sector and non-farm sector in Indian economy.
1.2 Diversification of Agriculture; Agriculture and Allied Activities (Fisheries, Horticulture, Floriculture) Status and Growth, Problems and State Policies, Cattle Wealth of India and Dairying in Indian Economy.
1.3 Trends in Agriculture Growth and Agriculture Productivity. Pattern of Agricultura Development in India and Regional Variation.
1.4 Agricultural labour: characteristics and problems.
1.5. Agricultural Finance: Sources of Agricultural Finance, Problems of Agricultural Finance

Unit 2: Technological Changes in Agriculture
2.1 Technological Advancement in agriculture; Traditional techniques and practices; Green Revolution and HYV seeds, fertilizer and water technology.
2.2 Sustainable Agriculture; Emerging Trend in Agricultural Technology.
2.3 Evaluation of the New Agricultural Strategy.
2.4 Micro Farming; Organic Farming; Contract Farming; Dry Land Farming; Use of Bio-Technology Techniques.

Unit 3: Agricultural Marketing
3.1 Nature of Demand and Supply of Agricultural Products.
3.2 Structure and Type of Agricultural Markets.
3.3 Marketing Channels for foodgrains.
3.4 Defects and Problem of Agricultural Marketing.
3.5 Need for State Intervention in Agricultural Marketing.

Unit 4: State and Agriculture
4.1 Agriculture Planning in India: Decentralized Planning and Indicative Planning
4.2 Incentives in Agriculture: Price and Non-Price Incentives: Input Subsidies; Agriculture Price Policies (APP)
4.3 Agricultural Credit: Meaning, Definition, Need and Classification
4.4 Food Security in India and Public Distribution System.

Suggested Readings:
1. C.B. Mamoria: Agricultural Problems of India, Kitab Mahal, New Delhi.
2. Amarjit Singh & A.N. Sadhu: Agricultural Problems in India, Himalayan Publishing House.
3. C.H. Hanumantha Rao: Agriculture, Food Security, Poverty and Environment, Oxford University Press, New Delhi.

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4. B.B. Tripathi: Bhartiya Krishi Samasyain, Vikas Evam Sambhavnayein, Kitab Mahal, New Delhi.
5. O.P. Sharma: Bhartiya Krishi Ki Adhunik Pravritiyan, Subline.

OR ADVANCED MAJOR COURSE- AMJ 3B:
LABOUR AND INDUSTRIAL ECONOMICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
The syllabus is designed to enable the students to have an understanding of the basics of industrial economics and labour economics. It covers the nature, scope and importance of industrial economics. Important topics like Industrial Revolution, Business organisations, Industrial productivity, and Industrial finance are included. Industrial growth pattern in India along MSME sector has been covered. Different aspects of Labour Economics have been introduced before exploring the labour market, labour legislations and wage boards in India. The course ends with composition of labour force, Industrial disputes and social security of labour in India.

Course Outcome:
The course has been so designed that it will equip the students to have a thorough grasp of different aspects of Industrial and Labour Economics with focus on India.

Course Content:
Unit 1: Industrial Economics: An Introductory Framework
1.1 Meaning and Definition of Industrial Economics; Subject Matter of Industrial Economics; Nature of Industrial Economics Importance of the study of Industrial Economics;
1.2 Industrial Revolution; Industrialisation in India; Index of Industrial Production (IIP)
1.3 Need for rapid industrialisation; Obstacles to Industrialisation
1.4 Business Organisation: Definition; Types (Proprietorship, Partnership, Corporations and Limited Liability Companies); Firms: Meaning; Ownership; Objectives

Unit 2: Industrial Production and Finance
2.1 Public and Private Sector- Meaning, Role and Performance
2.2 Industrial Productivity- Meaning, Measure and Factors affecting Industrial Productivity,
2.3 Industrial finance- Internal and External Sources of Debt versus Equity
2.4 Major funding agencies -IDBI, IFCI, SFCs, SIDBI and Commercial Banks.

Unit 3: Labour Economics and Labour market
3.1 Meaning and Definition of Labour Economics; Scope and Importance of Labour Economics
3.2 Concept of Labour Market; Analysis of Demand and Supply of labour; Factors affecting demand and Supply of labour 3.3 Characteristics of labours Market in India.
3.4 Types of Wages in India; Wage Policies in India: Minimum Wages Act; Equal Remuneration Act 1976, Payment of Bonus Act 1965
3.5 Wage Board: Meaning and Objectives; Wage Board in India.

Unit 4: Labour in India and Social Security Measures
4.1 Working age population and labour force participation rate; Labour Force Participation Rate in India
4.1 Meaning of Industrial Disputes; Causes and effects of Industrial Disputes; Machinery of settling the Industrial Disputes in India
4.2 Social Security: Meaning; Scope; Objectives; Importance; Category of Social Security Measures; Social Security Schemes in India

Suggested Readings:
1. George, J. Borjas, (2013 6th edition)Labour Economics, McGraw Hill.
2. Hay, D. and Morris, D J (1979) Industrial Economics: Theory and Evidences, Oxford Univ. Press, New Delhi.
3. Burthwal, R.R. (1985), Industrial economics, Wiley Eastern Ltd., New Delhi.
4. Singh, A. and Sadhu, A.N. (1988), Industrial Economics, Himalaya Publishing House.

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5. Tyagi, B.P. (2009), Economics and Social Welfare-Revised Edition, Sage Publication, New Delhi.
6. Gupta, S.B., (2022), Audyogik Arthshastra, SBPD Publications.
7. Sinha, V.C., Shram Arthashastra, SBPD Publications.
8. Yadav, Ravi Prakash (2015) Social Security in India, Avishkar Publishers.

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COURSES OF STUDY FOR FYUGP IN **"ECONOMICS" MINOR**

MINOR COURSE-1A
   (SEM-I)

V.   MINOR COURSE- MN 1A:
INTRODUCTORY ECONOMICS   **(Credits: Theory-04) 60 Lectures**

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

Course Objective:
        This course is designed to introduce the students to the basic concepts and principles of Micro Economic theory comprising of central problems of the economy, national income, public finance and international trade.

Course Learning Outcome:
        The students will be able to understand the functioning of the economy at the micro and macro level. They will also have an idea about the monetary and fiscal policies, taxes and development issues. A study about the Jharkhand Economy will enlighten them about its growth and sectoral composition.

Unit 1: Introduction
1.1 Definition of Economics. Central Problems of the Economy.
1.2 Micro and Macro Economics – Meaning; Difference, Importance and Limitations.

Unit 2: Micro Economics
2.1 Law of diminishing Marginal Utility; Law of Equi - Marginal Utility.
2.2 Law of Demand and Supply; Factors Affecting Demand and Supply.
2.3. Elasticity of Demand – Types; Measurement.
2.4 Market Equilibrium with the help Market Demand and Market Supply.

Unit 3: Macro Economics
3.1 National Income - Different Concepts. 3.2 Money – Definition; Functions.
3.3 Inflation – Definition; Cost Push and Demand-Pull Inflation.
3.4 Commercial and Central Banks – Definition and Functions.
3.5 Monetary and Fiscal Policies – Meaning and Objectives.

Unit 4: Indian Economy
4.1 Sectoral Growth of Indian Economy.
4.2 Large Scale Industries of India, Definition and Classification of MSME Sector; Their Importance in Indian Economy. 4.3 Problems of Agricultural Sector; Sources of Agricultural Credit in India; Green Revolution.
4.4 Jharkhand Economy - Growth and Sectoral Composition; Sex; Age; Education; Workforce and Social Composition.

Unit 5: Public Finance and International Trade
5.1 Taxes – Sources; Direct and Indirect Taxes. 5.2 Goods and Services Tax (GST).
5.3 Comparative Cost Advantage Theory.
5.4 Balance of Payments - Meaning and Components; Difference between Balance of Payments and Balance of Trade.

Unit 6: Developmental Issues in Economics

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6.1 Millennium Development Goals. 6.2 Concepts of Growth; Development.

Suggested Readings:

1. Ahuja, H.L, Principles of Microeconomics. 22nd Edition, S. Chand Publications (English & Hindi).
2. Varian, Hal R., Intermediate Microeconomics,8TH Edition, Affiliated East-West Press.
3. Mithani, D.M., Money, Banking, International Trade & Public Finance. 20TH Revised Ed, Himalayan Publication.
4. Dutt, R. & KPM Sundaram, Indian Economy, 57th Edition, S. Chand Publications.
5. Seth, M.L., Money, Banking, International Trade & Public Finance (2020). L.N. Agarwal Publication.
6. Singh, Neelu, अर्थशास्त्र का परिचय, Disha International Publishing House, 2022
7. Sahu, S.K., Mrinal Gaurav, Mrityunjay Kumar, Introductry Economics, Agra(U.P.), Shiksha Sagar Pub. and Distributors
8. Sahu, S.K., Mrinal Gaurav, Mrityunjay Kumar, परिचयात्मक अर्थशास्त्र, Agra (U.P.), Shiksha Sagar Pub. and Distributors

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MINOR COURSE-1B
(SEM-III)

VI.   MINOR COURSE- MN 1B:
INDIAN ECONOMY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Lectures**

Course Objective:

On completion of the course students will be able to develop ideas of the nature and features and also understand the trends and growth of Indian economy. They will understand the problems of poverty and unemployment. Course also covers topic on human development, agricultural and industrial problems, remedies and also foreign trade of the economy.

Course Outcome:

At the end of the course students will aware about recent economic affairs. Students will get benefit about various economic issues at national and global level.

Course Content:
Unit 1: Indian Economy and Its Problems
1.1 Nature of the Indian Economy – India as a Developing Economy.
1.2 Trends and growth of Indian Economy.
1.3 Poverty – Causes; Anti-Poverty Schemes – NRLM; Pradhan Mantri Awas Yojna;   IRDP; Food for Work Program.
1.4 Unemployment – Causes; Government Initiatives – MGNREGA; Skill India Mission; Make in India Program; Start Up India Scheme; Pradhan Mantri Kaushal Vikas Yojna.

Unit 2: Planning and Development
2.1 Economic Planning in India – Historical background up to NITI Aayog.
2.2 Objectives of Indian Planning.
2.3 New Economic Policy (1991) – Objectives; Features; Impact on different sectors.
2.4 Recent initiatives for development – National Social Assistance Program (NSAP); Pradhan Mantri Gram Sadak Yojna (PMGSY); Antyodya Anna Yojna (AAY); NRHM.

Unit 3: Agriculture

3.1 Agriculture – Issues; Challenges.

3.2 Trend in Agriculture Production and Productivity.

3.3 New Agriculture Policy.
3.4 Problem of Food Security; National Food Security Act.

Unit 4: Industrial Sector
4.1 Industry – Issues and Challenges.
4.2 Trends in Industrial production.
4.3 Problems of Industrial development in India.
4.4 Performance of the Public Sector.

Suggested Readings:
1. Puri V.K and Mishra S.K, Indian Economy, (English and Hindi) (January 2022), Himalaya
2. Publishing House.
3. Dutt, Gaurav and Sundaram, Indian Economy, (English and Hindi) (Latest edition), S Chand & Co Ltd.
4. Kapila, Uma, Indian Economy: Performance and Policies, (22nd edition 2021), Academic Foundation Publications.
5. Jalan Bimal, India's Economic Policy (2000), Penguin India Publication.
6. Sinha V.C, Indian Economy Performance and Policies (2019), SBPD Publications
7. Verma Sanjeev, The Indian Economy (2020), Unique Publishers.
8. Mishra J.P, Bharat ki Arthik Nitiyan (2019), Sahitya Bhavan Publications.
9. Singh, Ramesh, Bharitiya Arthavyavastha (14th edition), Mc Graw Hills.

MINOR COURSE-1C
    (SEM-V)

VII.   MINOR COURSE- MN 1C:
      ELEMENTARY MICRO ECONOMICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
This course is designed to expose the students to the principles of Microeconomics in the field of consumption, production, equilibrium under different market forms, distribution and welfare economics.

Course Learning Outcome:
On completion of course, the student will be able to understand the basic principle of microeconomics in the optimizing behavior of consumer, producers and firm. They will be able to apprehend the process by which factors of production are priced and also the welfare aspects of distribution of income in an economy.

Course Content:
Unit 1: Introduction
1.1 Definition of Economics; Scope of Economics.
1.2 Central problems of an Economy.
1.3 Economic Systems (Socialism & Capitalism).
1.4 Micro and Macro Economics.

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1.5 Production Possibility Curve.

Unit 2: Market Forces: Demand & Supply

2.1 Demand – Meaning & Determinants; Law of Demand; Individual demand and Market demand Curve.

2.2 Elasticity of Demand – Meaning; Types; Measurement.

2.3 Supply – Meaning and Determinants, Law of Supply, Individual Supply and Market Supply Curve, Elasticity of supply

2.4 Market Equilibrium will the help of Demand & Supply.

Unit 3: Consumer Behavior

3.1 Utility – Cardinal and Ordinal.

3.2 Cardinal Utility Analysis – Total and Marginal Utility, Law of Diminishing Marginal Utility, Law of Equi-Marginal Utility & Consumers equilibrium.

3.3 Indifference Curves (Ordinal Utility Analysis) – Meaning; properties; Budget line; Consumer Equilibrium.

3.4 Price Effect; Income Effect; Substitution Effect (Hicks & Slutsky).

3.5 Consumer's Surplus.

Unit 4: Production, Cost and Revenue

4.1 Product function – Concept and Types.

4.2 Law of Variable Proportions.

4.3 Isoquants – Meaning and Properties.

4.4 Optimum factor combination and Expansion Path.

4.5 Returns to Scale.

4.6 Concept of cost; Cost Curves - Short run and long run; Relationship among Cost Curves.

4.7 Concept of Revenue; Revenue curves under P.C. & Monopoly; Relationship among Revenue curves.

Unit 5: Market Forms & Equilibrium

5.1 General Analysis of Firm's Equilibrium.

5.2 Market Classification and Firm's Revenue Concepts.

5.3 Concept of Market, perfect Market and Imperfect Market.

5.4 Perfect competition - Characteristics, Concept of Firm and Industry; Short Run and Long Run Equilibrium of firm under Perfect competition; Industry Equilibrium.

5.5 Monopoly – Meaning & Characteristics; Equilibrium in Short Run and Long Run.

Unit 6: Factor Pricing / Distribution

6.1 Factor of production & Rewards of the factors.

6.2 Theories of Distribution; Rent – Concept; Ricardian Theory of Rent, Modern Theory of Rent.

6.3 Wage – Concept; Classical Theory; Marginal Productivity Theory

6.4 Interest; Profit – Concept; Risk & Uncertainty Theory of Profit, Innovation Theory of Profit

Suggested Readings:

1. Koutsoyiannis A. (1975). Modern Micro-economics (2nd edition). London Macmillan Publishers Ltd.
2. Ahuja, H.L., "Advance Economic Theory", S. Chand & Company Pvt. Ltd (English & Hindi medium).
3. Jhingan, M.L., "Micro Economics", Vrinda Publication Pvt. Ltd. (English & Hindi medium).
4. Verma, K.N. (2014). Micro Economic Theory (2nd edition). Vishal Publishing Co., Hindi Medium.
5. Dwivedi, D.N. (2006). Micro-economics Theory & Application Pearson.

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MINOR COURSE-1D   **(SEM-VII)**

VIII.   MINOR COURSE- MN 1D:
MONEY, BANKING, PUBLIC FINANCE AND
INTERNATIONAL TRADE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Lectures**

Course Objective:
This course is designed to introduce the students to the basic concepts and principles of Money, Banking, Public Finance and international Trade.

Course Learning Outcome:
The students will be able to understand the financial behaviour of the individual, institution and economy. They will also have an idea about the monetary and fiscal policies, taxes and development issues.

Unit 1: Money
1.1 Money: Concepts and Functions.
1.2 Determinants of Demand for Money and Supply of Money.
1.3 Components of Money Supply (M_1, M_2, M_3 & M_4).

Unit 2: Banking
2.1 Functions of Central Bank; Functions of Commercial Banks.
2.2 Money creation by the Commercial Banking System.
2.3 Instruments of Credit Control of Central Bank – Quantitative and Qualitative.

Unit 3: Public Finance
3.1 Importance of Public Finance; Scope of Public Finance.
3.2 Theories of Public Finance; Theory of Maximum Social advantage.
3.3 Taxation: Definition; characteristics; Types of taxation; Merits and Demits of Direct Tax and Indirect Tax.
3.4 Public Expenditure; Trends in Public Expenditure in India.

Unit 4: Government Budget and Economy
4.1 Government Budget: Meaning; Objectives; Components.
4.2 Classification of Receipts: Revenue Receipts and Capital Receipts.
4.3 Classification of Expenditure: Revenue Expenditure and Capital Expenditure.
4.4 Meaning of Government Deficit – Revenue Deficit and Fiscal Deficit.

Unit 5: International Trade
5.1 Theories of International Trade: Absolute Cost Advantage Theory; Comparative Cost Advantage Theory; Heckscher Ohlin Theory.
5 .2 Free Trade Vs Protection. 5.3 Gains from Trade.

Unit 6: Balance of Trade and Balance of Payment
6.1 Components of Balance of Payment.
6.2 Disequilibrium in the Balance of Payments.

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6.3 Measures to correct the disequilibrium in the Balance of Payments.

Suggested Readings:
1. Vaish, M.C., Money, Banking, Trade & Public Finance, New Age International Pvt Ltd.
2. Sundaram, K.P.M., Money, Banking and International Trade, S Chand Publications.
3. Varian, Hal R., Intermediate Microeconomics, 8th Edition, Affiliated East-West Press.
4. Lekhi, R.K., & Singh, Joginder. Public Finance, 11th Edition, Kalyani Publishers.
5. Mithani, D.M., Money Banking, International Trade & Public Finance, 20th Edition, Himalayan Publishers.
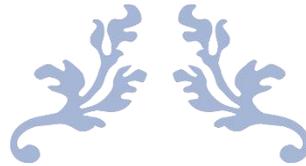
FYUGP

POLITICAL SCIENCE HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented from 3rd Semester of Academic Session 2022-26

& From 1st Semester of Session 2023-27 Onwards

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Members of Board of Studies for preparing provisional Syllabus of the Four Year Undergraduate Programme

Externals

1. **Dr. S.P.Singh**
   (Former (HOD& Dean), University Department of Political Science, R.U., Ranchi

2. **Dr. B.K. Sinha** (Associate Professor)
   Department of Political Science, St. Xavier's College, Ranchi

3. **Dr. Ashutosh Kumar Pandey** (Assistant Professor)
   Department of Political Science, St. Xavier's College, Ranchi

4. **Dr. Bagesh Chandra Verma**, (Assistant Professor)
   Mandar College, Ranchi

5. **Dr. Bahalen Horo**, (Assistant Professor)
   Department of Political Science, Marwari College, Ranchi

6. **Dr. Smita Kiran Toppo**, (Assistant Professor)
   Department of Political Science, Ram Lakhan Singh Yadav College, Ranchi

7. **Dr. C.K. Bhagat**, (Assistant Professor)
   Department of Political Science, Birsa College, Khunti

Internal Members

1. **Dr. Jay Prakash Khare, Associate Professor**
   University Department of Political Science, R.U., Ranchi

2. **Dr. Dhirendra Tripathi, Assistant Professor**
   University Department of Political Science, R.U., Ranchi

3. **Dr. Shweta Singh, Assistant Professor**
   University Department of Political Science, R.U., Ranchi

4. **Dr. Sarita Kumari, Assistant Professor**
   University Department of Political Science, R.U., Ranchi

Dr. Rani Pragati Prasad
(Chairperson)
Reader
University Department of Political Science,
R.U., Ranchi

DIRECTOR
IQAC, RANCHI UNIVERSITY
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Students are Instructed to

Refer Syllabus of Allied/ Opted Subjects from R.U. Website

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HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1st of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:
  - i) Odd Semester: **From first Monday of August to third Saturday of December**
  - j) Even Semester: **From first Monday of January to third Saturday of May**
- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester

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will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
  - ➢ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
  - ➢ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
  - ➢ Bachelor's Degree after a 3-year (6 semesters) programme of study,
  - ➢ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
  - ➢ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

  i) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.

  One credit for Theory   = <u>15 Hours of Teaching</u> i.e., 15 Credit Hours
  One credit for Practicum   = <u>30 Hours of Practical work</u> i.e., 30 Credit Hours

  j) For credit determination, instruction is divided into three major components:
  Hours (L) – Classroom Hours of one-hour duration.
  Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
  Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.

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- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

xli.   The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

xlii.   No student will be detained in odd Semesters (I, III, V & VII).

xliii. To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

xliv.   To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

xlv.   To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

xlvi.   However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

xlvii. Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

xlviii. To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year.

xlix.   A student has to pass in minimum 3 papers out of the total 4 papers.

l.   It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result of the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)													
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)													
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree													
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4

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	Exit Point: Bachelor's Degree with Hons. /Hons. with Research	160	224

Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

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COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME
2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	AEC-1	Language and Communication Skills (MIL 1 - Hindi/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Hindi)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4
IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2

	VAC-2	Value Added Course-2	2
	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4
	RC/	Research Internship/Field Work/Dissertation OR	12/
	AMJ-1 AMJ-2 AMJ-3	Advanced Major paper-1 (Disciplinary/Interdisciplinary Major) Advanced Major paper-2 (Disciplinary/Interdisciplinary Major) Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	 4 4

			4
		Total Credit	**160**

NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	ix. Discipline/ Interdisciplinary courses and x. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64
Minor	ix. Discipline/ Interdisciplinary courses and x. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8

SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Double Major Courses		Credits
	Code	**Papers**	
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4

	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:

AEC   Ability Enhancement Courses

SEC   Skill Enhancement Courses

IAP   Internship/Apprenticeship/ Project

MDC   Multidisciplinary Courses

MJ   Major Disciplinary/Interdisciplinary Courses

DMJ   Double Major Disciplinary/Interdisciplinary Courses

MN   Minor Disciplinary/Interdisciplinary Courses

AMJ   Advanced Major Disciplinary/Interdisciplinary Courses

RC   Research Courses

AIMS OF BACHELOR'S DEGREE PROGRAMME IN POLITICAL SCIENCE

The broad aims of the LOCF for Political Science are:

1. The main objective of the course is to provide a comprehensive understanding of the discipline to the students who join at the undergraduate level in the University and Colleges of Jharkhand, India.
2. The students who join these courses are not necessarily trained in the fundamentals of the discipline, as they come from diverse disciplinary backgrounds.
3. The program aims at making them understand the fundamental concepts, theories, perspective sand ideological discourses in Political Science.
4. This will enable them to explain and evaluate the functioning of political systems and governments of diverse kinds along with their respective 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.
5. The aim of the course is to expose the students to the diverse political philosophies, from the ancient to modern times, and the manner in which they have envisioned and engaged with the issues of rights, liberty, equality, justice, citizenship, constitution and constitutionalism.
6. 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 interdisciplinary modules to demonstrate the interconnectedness of the discipline with other subjects and areas which do not essentially comprise the core of Political Science
7. The objective is also to understand the national interests of India in a comprehensive manner and assess the Indian endeavors and responses to emerging challenges and issues in a fluid and dynamic global scenario.
8. 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 graduation.
9. The aim is also to train the students in research design and application of tools and techniques for empirical and normative research.
10. A concerted effort shall be made to provide knowledge and skill to the students so that they are able to pursue further studies in Political Science in related areas or multidisciplinary areas that can be helpful for self- employment/entrepreneurship.

PROGRAM LEARNING OUTCOMES

The broad programme learning outcomes in Political Science are:

1. The students who opt for Bachelor's Degree Programme in Political Science generally are the ones who wish to get exposed to the core of several disciplines instead of moving towards specialization in one.
2. As the students are from a diverse disciplinary background, the course has been designed to teach them the core areas of Political Science such as political theory, Indian constitution and international relations.
3. The aim is not just to impart factual and theoretical information but also to develop critical thinking on political issues and phenomena.
4. The course contains a mixed bag of discipline-centric, interdisciplinary and skill-based modules. This will lay a strong foundation enabling students to pursue higher studies and research in the discipline as well as skills and techniques to get employment.
5. The course module seeks to enlighten the students about the functioning of the Indian Political System and how India manages its broad national interests in global politics.
6. The objective of the course is to educate students so that they become informed, reflective, active and responsible citizens of India.

SEMESTER WISE COURSES IN POLITICAL SC. MAJOR-1 FOR FYUGP
2022 onwards

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	Political Theory	4	25	75	---
II	MJ-2	Indian Political Thought	4	25	75	---
	MJ-3	Indian National Movement And Constitutional Development	4	25	75	---
III	MJ-4	Indian Government And Politics	4	25	75	---
	MJ-5	Public Administration	4	25	75	---
IV	MJ-6	Comparative Government And Politics	4	25	75	---
	MJ-7	Western Political Thought	4	25	75	---
	MJ-8	International Politics	4	25	75	---
V	MJ-9	Political Ideology	4	25	75	---
	MJ-10	Human Rights In India	4	25	75	---
	MJ-11	Perspectives On International Relations	4	25	75	---
VI	MJ-12	Public Policy And Administration In India	4	25	75	---
	MJ-13	Foreign Policy Of India	4	25	75	---
	MJ-14	International Organization	4	25	75	---
	MJ-15	Federalism In India	4	25	75	---
VII	MJ-16	Understanding Gandhi	4	25	75	---
	MJ-17	Global Politics	4	25	75	---
	MJ-18	Political Process In India	4	25	75	---
	MJ-19	Political Sociology	4	25	75	---
VIII	MJ-20	Local Self Government In India	4	25	75	---
	AMJ-1	Paper Name	4	25	75	---
	AMJ-2	Academic Writing And Communication Skill	4	25	75	---
	AMJ-3	State Politics In India	4	25	75	---
	or RC-1	Research Methodology	4	25	75	---

	RC-2	Project Dissertation/ Research Internship/ Field Work	8	---	---	200
		Total Credit	**92**			

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Skill Enhancement Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	Managing Elections And Election Campaign	3	---	75	---
II	SEC-2	Public Policy Management	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	**9**			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Minor Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	Introductory Political Science	4	25	75	---
III	MN-1B	Nationalism In India	4	25	75	---
V	MN-1C	The Indian Constitution	4	25	75	---
VII	MN-1D	Understanding Gandhi And Ambedkar	4	25	75	---
		Total Credit	**16**			

INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There will be <u>Only One Semester Internal Examination</u> in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

I. (SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

J. (SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Conversion of Attendance into score may be as follows:

Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

M. (ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

N. (ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of

1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

O. (ESE 100 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

<table>
<tr><td colspan="3" align="center">**Subject/ Code**</td></tr>
<tr><td>**F.M.** =10</td><td align="center">**Time**=1Hr.</td><td align="right">Exam Year</td></tr>
<tr><td colspan="3">
General Instructions:
xxi. **Group A** carries very short answer type compulsory questions.
xxii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
xxiii.Answer in your own words as far as practicable.
xxiv.Answer all sub parts of a question at one place.
xxv. Numbers in right indicate full marks of the question.
</td></tr>
<tr><td colspan="3" align="center">**Group A**</td></tr>
<tr><td>13.</td><td></td><td align="right">[5x1=5]</td></tr>
<tr><td></td><td>
xxi.   ....
xxii.   ....
xxiii.   ....
xxiv.   ....
xxv.   ....
</td><td></td></tr>
<tr><td colspan="3" align="center">**Group B**</td></tr>
<tr><td>14. ....</td><td></td><td align="right">[5]</td></tr>
<tr><td>15. ....</td><td></td><td align="right">[5]</td></tr>
<tr><td colspan="3">**Note:** There may be subdivisions in each question asked in Theory Examination.</td></tr>
</table>

Question format for **20 Marks**:

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Subject/ Code

F.M. =20	Time=1Hr.	Exam Year

General Instructions:
xxi. **Group A** carries very short answer type compulsory questions.
xxii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
xxiii.Answer in your own words as far as practicable.
xxiv.Answer all sub parts of a question at one place.
xxv. Numbers in right indicate full marks of the question.

Group A

17.   [5x1=5]

  xxi.   ....
  xxii.   ....
  xxiii.   ....
  xxiv.   ....
  xxv.   ....

18. ....   [5]

Group B

19. ....   [10]
20. ....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION
Question format for **50 Marks**:

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Subject/ Code

F.M. =50   **Time**=3Hrs.   <u>Exam Year</u>

General Instructions:

vii. **Group A** carries very short answer type **compulsory** questions.

viii. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.

xv.   Answer in your own words as far as practicable.

xvi. Answer all sub parts of a question at one place.

xvii. Numbers in right indicate full marks of the question.

<u>Group A</u>

25.   [5x1=5]

        xxi.   ....

        xxii.   ....

        xxiii.   ....

        xxiv.   ....

        xxv.   ....

<u>Group B</u>

26. ....   [15]

27. ....   [15]

28. ....   [15]

29. ....   [15]

30. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **60 Marks**:

Subject/ Code

F.M. =60   **Time**=3Hrs.   <u>Exam Year</u>

General Instructions:

ix. **Group A** carries very short answer type **compulsory** questions.

x.   **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.

xv.   Answer in your own words as far as practicable.

xvi. Answer all sub parts of a question at one place.

xvii. Numbers in right indicate full marks of the question.

<u>Group A</u>

33.   [5x1=5]

        xxi.   ....

        xxii.   ....

        xxiii.   ....

        xxiv.   ....

        xxv.   ....

34. ....   [5]

35. ....   [5]

<u>Group B</u>

36. ....   [15]

37. ....   [15]

38. ....   [15]

39. ....   [15]

40. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **75 Marks**:

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Subject/ Code

F.M. = 75   **Time**=3Hrs.   Exam Year

General Instructions:
ix. **Group A** carries very short answer type **compulsory** questions.
x. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xv. Answer in your own words as far as practicable.
xvi. Answer all sub parts of a question at one place.
xvii. Numbers in right indicate full marks of the question.

Group A

37.   [5x1=5]

  xxi.   ....
  xxii.   ....
  xxiii.   ....
  xxiv.   ....
  xxv.   ....

38. ....   [5]
39. ....   [5]

Group B

40. ....   [15]
41. ....   [15]
42. ....   [15]
43. ....   [15]
44. ....   [15]
45. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

Subject/ Code

F.M. = 100   **Time**=3Hrs.   Exam Year

General Instructions:
ix. **Group A** carries very short answer type **compulsory** questions.
x. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xv. Answer in your own words as far as practicable.
xvi. Answer all sub parts of a question at one place.
xvii. Numbers in right indicate full marks of the question.

Group A

5.   [10x1=10]

  xxi.   ....   vi.   ....
  xxii.   ....   vii.   ....
  xxiii.   ....   viii.   ....
  xxiv.   ....   ix.   ....
10. ..xxv.............   x   ....   [5]
11. ....   [5]

Group B

28. ....   [20]
29. ....   [20]
30. ....   [20]
31. ....   [20]
32. ....   [20]
33. ....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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SEMESTER I

VIII.   MAJOR COURSE –MJ 1:
POLITICAL THEORY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) Theory: 60 Lectures

Course Objectives:
1. The course has been designed to introduce key concepts in politics to the students in order to sharpen their understanding of political discourses and the ability to make scientific enquiry into political phenomena and political questions.
2. Diverse traditions and approaches have been included in the scheme of teaching to make understanding comprehensive and insightful.
3. Contemporary debates on key concepts and theories shall allow the students to understand the expanding horizons of the discipline.

Learning Outcomes:
1. The course shall enable a solid understanding of theoretical aspects of the discipline.
2. The different traditions and approaches of Political Theory shall enable a better understanding of the various nuances of the discipline of Political Science.
3. The course shall also train the students to critically analyse political phenomena through the conduit of political theory.
4. The students shall be able to familiarize themselves with contemporary debates in democracy and the changing role of the state.

Course Content

UNIT I

1.   Meaning Nature and Significance of Political theory

2.   Traditions of Political Theory: Liberal and Marxist

3.   Different Approaches of Political Theory

   a.   Normative Approach

   b.   Empirical Approach

4.   Critical and Contemporary Perspectives in Political theory

   a.   Feminist

   b.   Post-Modern

UNIT II

1   Democracy

   a.   Theories of Democracy and Contemporary Debates

   b.   Elitist v/s Pluralist Theory

Reference Books:

1. S.P. Verma- Modern Political Theory
2. Sushila Ramaswamay – Political Theory
3. O.P. Gauba, Political Ideas and Ideologies
4. Ernest Barker– Principles of Social and Political Theory
5. R. Dhal- Modern Political Analysis
6. Rajiv Bharghava and Ashoka Acharya- Political Theory: An Introduction
7. Norman P. Barry – An Introduction to Modern Political Theory

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IX.   SKILL ENHANCEMENT COURSE- SEC 1:
MANAGING ELECTIONS AND ELECTION CAMPAIGN

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03)   **Theory: 45 Lectures**

Course Objectives:

This course exposes students to a wide range of conceptual and practical issues and elements pertaining to electoral democracy in India.
1. Elections and their nature have changed significantly with the support of social media and new technologies.
2. Parties are using these mediums and techniques and adjusting to the new nuances emerging from it.
3. Election management has become a crucial element of electoral democracy wherein parties use all their human and material resources at their disposal.
4. This module exposes the students to the techniques of man and material resources to manage the elections.

Learning Outcomes:

1. They will learn about how to file election nominations and the technical issues involved in it.
2. They will be able to explain the election code of conduct including the ethics to be maintained in expenditure and elections campaign.
3. They will be made aware of the role of new media and technology involved in election campaign.
4. They will get to know about the required skills for media management during the elections.
5. They will be able to answer what are debates on state funding of political parties in elections.

Contents:
UNIT I: Electoral Democracy and Management of Elections
a. Electoral Democracy: A Theoretical Perspective
b. How Crucial is Management of Elections?

UNIT II: Elections and Model Code of Conducts
a. Model Code of Conducts: What it is?
b. Filing Election Nominations and Election Affidavits
c. Knowing your Candidates

UNIT III: Management of Election Campaign
a. Traditional methods of Electoral Campaign; Poster, Pamphlets
b. Use of New Techniques and Methods in Election Campaign
c. Ethics in Electoral Campaign, Studies in use and abuse of communication

UNIT IV: Media Management
a. Role of Print, Electronic and Social Media in Elections
b. Electoral Campaign and the Issue of Fake News

UNIT V: Fund Management for the Party
a. Traditional and New Ways of Generating Funds
b. Issue of Unaccounted Expenditure in Elections
c. State Funding of Elections

UNIT VI: Organization and Human Resource Management
a. Membership Drive
b. Responsibility management
c. Booth Management

Suggested Readings:

1. Lambert, P. (2000). A Decade of Electoral Democracy: Continuity, Change and Crisis in Paraguay. Bulletin of Latin American Research, 19(3), pp. 379-396.
2. Krouse, R., & Marcus, G. (1984). Electoral Studies and Democratic Theory Reconsidered. Political Behavior, 6(1), pp. 23-39.
3. Varshney, A. (2007). India's Democratic Challenge. Foreign Affairs, 86(2), pp. 93-106. 61
4. Hauser, W., & Singer, W. (1986). The Democratic Rite: Celebration and Participation in the Indian Elections. Asian Survey, 26(9), pp. 941-958.
5. Yadav, Y. (1999). Electoral Politics in the Time of Change: India's Third Electoral System, 1989-99. Economic and Political Weekly, 34(34/35), pp. 2393-2399.
6. Paul, S. (2003). Right to Information on Candidates: How Will the Voters Know? Economic and Political Weekly, 38(15), pp. 1447-1449.
7. Kumar, V. (2005). People's Right to Know Antecedents of Their Election Candidates:
8. A Critique of Constitutional Strategies. Journal of the Indian Law Institute, 47(2), pp.135-157.
9. Herrnson, P. (1988). The Importance of Party Campaigning. Polity, 20(4), pp. 714-719.
10. West, D. (1994). Television Advertising in Election Campaigns. Political Science Quarterly, 109(5), pp. 789-809.
11. Goldstein, K., & Freedman, P. (2002). Campaign Advertising and Voter Turnout: New Evidence for a Stimulation Effect. The Journal of Politics, 64(3), pp. 721-740.
12. Kahn, K., & Kenney, P. (1999). Do Negative Campaigns Mobilize or Suppress Turnout? Clarifying the Relationship between Negativity and Participation. The American Political Science Review, 93(4), pp. 877-889. 62
13. Rogers, L. (1949). Notes on the Language of Politics. Political Science Quarterly,64(4), pp. 481-506.
14. Shirky, C. (2011). The Political Power of Social Media: Technology, the Public Sphere, and Political Change. Foreign Affairs, 90(1), pp. 28-41.
15. Newton, K. (1999). Mass Media Effects: Mobilization or Media Malaise? British Journal of Political Science, 29(4), pp. 577-599.
16. Carlisle, J., & Patton, R. (2013). Is Social Media Changing How We Understand Political Engagement? An Analysis of Facebook and the 2008 Presidential Election. Political Research Quarterly, 66(4), pp. 883-895.
17. Allcott, H., & Gentzkow, M. (2017). Social Media and Fake News in the 2016 Election. The Journal of Economic Perspectives, 31(2), pp. 211-235.
18. Samuels, D. (2001). Does Money Matter? Credible Commitments and Campaign Finance in New Democracies: Theory and Evidence from Brazil. Comparative Politics, 34(1), pp. 23-42.
19. George, H. (1883). Money in Elections. The North American Review, 136(316), pp. 201-211.
20. Jain, S. (2001). State Funding Of Elections and Political Parties in India. Journal of the Indian Law Institute, 43(4), pp. 500-511. 63
21. Dolly, A. (2000). State Funding of Elections: Some Posers. Economic and Political Weekly, 35(37), pp. 3283-3286.
22. Kumar, B. V. (1999). Funding of Elections: Case for Institutionalised Financing. Economic and Political Weekly, 34(28), pp. 1884-1888.
23. Sridharan, E. (2007). Toward state funding of elections in India? A comparative perspective on possible options. The Journal of Policy Reform, 3:3, pp. 229-254.
24. Rosenblum, N. (2000). Political Parties as Membership Groups. Columbia Law Review, 100(3), pp. 813-844.
25. Bowman, L., & Boynton, G. (1966). Recruitment Patterns among Local Party Officials: A Model and some Preliminary Findings in Selected Locales. The American Political Science Review, 60(3), pp. 667-676.
26. Part, I. The Need for Greater Party Responsibility. (1950). The American Political Science Review, 44(3), pp. 15-36.
27. Ackerman, B., & Ayres, I. (2006). The Secret Refund Booth. The University of Chicago Law Review, 73(4), pp. 1107-1129.
28. Ayres, I., & Bulow, J. (1998). The Donation Booth: Mandating Donor Anonymity to Disrupt the Market for Political Influence. Stanford Law Review, 50(3), pp. 837-891.

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SEMESTER II

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IX.   MAJOR COURSE- MJ 2:
INDIAN POLITICAL THOUGHT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:

1. This course intends to acquaint students with the vast repository of ideas and institutions produced by ancient Indian philosophers/political thinkers like Manu, Kautilya, Swami Vivekananda Tilak, Gandhi, Vinoba Bhave, Ambedkar Lohia, Jai Prakash Narayan, Dean Dayal Upadhayaya on politics and management of statecraft.
2.   The thinking on politics and statecraft has been in all the great civilizations including India which is one of the most ancient and rich civilizations of the world.
3.   In India, academic sages and philosophers produced huge treasures of wisdom on politics, kingship, the functioning of government including the monarchy and bureaucracy, and their relationship with the people.
4. This course module will make them understand the ideas of some prominent ancient political thinkers of India in light of the key sources like Vedas, Mahabharat, Ramayan, Puranas and some of the texts written by some individual philosophers themselves.

Course Learning Outcomes:

1.   The student will come to know about the sources of ancient Indian political thought and the ideas of individual sages, political thinkers and philosophers on politics and functioning of government.
2.   They will be able to interlink the themes on the functioning of the Monarchy and its relationship with the people taking the cue from the ideas of individual thinkers.
3.   Students will be able to explain the trajectory of ideas on key political questions and institutions of ancient India and their proponents.

Course Content

UNIT I: 1. Manu- Manusmriti – Theory of Kinship principles of Jurisprudence.
2. Kautilya – Saptang and Mandal Theory
UNIT II: 1. Mahatama Gandhi Ahinsa, Satya and Satyagraha, Gram Swara
2. B.R. Ambedkar – Social Democracy & Political and Social Ideas
UNIT III: 1. Lohia – 4 pillars of Democracy & Decentralization
2. J.P. Narayan – Total Revolution & Party less Democracy.
UNIT IV: 1. Deen Dayal Upadhayaya: Integral Humanism and V.D. Savarkar: Hindutva and Social Reforms

Reference Books:

1. Hkkjrh; jktuhfrd fpad&iqjkkt tS
2. Hkkjrh; jktuhfrd fopkjd&t sHl w
3. Hkkjrh; jktuhfrd fopkjd&MMdcky ukjk.k
4. Hkkjrh; jktuhfrd fopkjd&ihds¥kxh
5. Ram Ratan and Ruchi Tyagi - Indian Political Thought
6. S.P. Verma - Modern Indian Political Thought
7. R.C. Gupta - Indian Political Thought

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

8.   K. Rao - New Ideas on Administration
9.   M.N. Dutt - Manusmiriti
10. Dhananjay Keer -Veer Savarkar
11. V.D. Savarkar -Hindutva
12. V.V. Nene -Pt. Deen Dayal Upadhyaya- Ideology and Perception, Part-2 Integral Humanism,
13. D. Swaroop- Deendayal Upadhyay's Integral Humanism

X.   MAJOR COURSE- MJ 3:
INDIAN NATIONAL MOVEMENT AND CONSTITUTIONAL DEVELOPMENT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
1. The aim of the course is to introduce to the students the Indian National Movement as an important building bloc in the making of Modern India.
2. The course aims at making the students aware of the richness of historical data and the plurality of perspectives that have developed on the premises of the national movement.
3. Through a survey of the course, the students will be sensitized to the complex process through which modern politics was introduced in India.

Course Learning Outcomes:
1. The students will be able to identify the causes that led to the rise of Nationalism in India
2. The students shall be able to discuss the various stages of the National Movement in India.
3. The students will be able to understand the underpinnings of Indian nationalism which developed as a concept during the Indian Independence movement due to the excesses of British rule.
4. It will enable them to understand that Indian nationalism is inclusive of all types of people of India, despite their ethnic, linguistic and religious backgrounds and how it continues to strongly influence the politics of India.

Course Content
UNIT I
1. Indian National Movement: The Liberal Phase
2. Indian National Movement: The Extremist and Revolutionary Phase

UNIT II
1. The Gandhian Phase: Non-Cooperation Movement, Civil Disobedience Movement and Quit India Movement.

UNIT III
1. Morley-Minto Reform Act of 1909 and Montague Chelmsford Act of 1919
2. Simon Commission and Government of India Act of 1935- Main Provisions
3. Indian Independence Act of 1947 - Main Provisions

Reference Books:
1. B.L. Fadia - Indian Government and Politics
2. Bidyut Chakrabarty - Indian Government and Politics
3. K.K. Ghai- Indian Government and Politics
4. M.P. Sharma -Indian National Movement and Constitutional Development
5. S. Chand- Constitutional Development and National Movement of India

6.   A.P. Avasthi – Indian Government and Politics
7.   Irfan Habib- A People's History of India- The National Movement- Part 2: The Struggle for Freedom, 1919-1947

XI.   SKILL ENHANCEMENT COURSE- SEC 2:
PUBLIC POLICY MANAGEMENT

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03)   **Theory: 45 Lectures**

Course Objectives:
The purpose of the paper is to provide conceptual as well as practical skills to the students to manage the public policies.
1. They will be exposed to formulations, implementations and regulatory mechanism involved in public policy.
2. They will be imparted skills to monitor and evaluate the working of the public policies.
3. The course will have an interdisciplinary approach in which the students will come to know about the tools of empirically evaluate the success and failures of the policies.
4. This course makes a solid grounding of the students in the management of public policy which requires a lot of skills in man, material and procedure monitoring and follow up actions to make the policy successful.

Learning Outcomes:
The student will be able to
1. To understand the processes and complexities involved in the decision making
2. Students will learn the skill of project monitoring and project evaluation
3. They will have skills to manage policy implementation.

Contents:
UNIT I: Introduction to Public Policy Management
a. What is Public Policy?
b. Public Policy making

UNIT II: Public Policy Implementation
a. Policy Implementation and Bureaucracy
b. Legal and Regulatory Mechanism
c. Citizen Participation and shared Governance
d. Special Care in implementation of Public Policy

UNIT III: Public Policy Monitoring
a. Meaning and Significance of Policy Monitoring
b. Monitoring of Public Policies and Good Governance
c. Approaches to Policy monitoring
d. Limitations in Policy Monitoring

UNIT IV: Methods of Policy Evaluation
a. Some Basics in Applied Economics and Statistics
b. Cost-Benefit Analysis
c. Cost-Effectiveness Analysis
d. Policy Alternative

Suggested Readings:
1. Hill, M. (Ed.). (2014). Studying public policy: An international approach. Clifton, Bristol, UK; Chicago, IL, USA: Bristol University Press.
2. Howlett, M., Cashore, B. (2014). Conceptualizing Public Policy. In Engeli I., Allison C.R. (Eds.), Comparative Policy Studies. Research Methods Series. Palgrave Macmillan, London.
3. Keeney, R. L. (2004). Framing public policy decisions. International Journal of Technology Policy and Management, 4(4), pp. 95-115.
4. Knoepfel, P., Larrue, C., Varone, F., & Hill, M. (2007). Public policy analysis. Bristol: Bristol University Press.

5. Maheshwari, S., & Maheswari, S. (1987). Public Policy Making in India. The Indian Journal of Political Science, 48(3), pp. 336-353.

6. Stout, M. (2011). In Search of a Holistic Public Policy Theory Primer. Public Administration Review, 71(2), pp. 322-326.

7. Attewell, P., & Gerstein, D. (1979). Government Policy and Local Practice. American Sociological Review, 44(2), pp. 311-327.

8. Barthwal, C., & Sah, B. (2008). Role of Governmental Agencies in Policy Implementation. The Indian Journal of Political Science, 69(3), pp. 457-472.

9. Benjamin, B. R. (1984). Strong Democracy. Berkley: University of California Press.

10. Hays, R. A. (1985). Perceptions of Success or Failure in Program Implementation:

11. Larson, J. S. (1980). Why Government Programs Fail: Improving Policy Implementation. New York: Praeger.

12. Lipsky, M. (1980). Street-Level Bureaucracy: Dilemmas of the Individual in Public Services. New York: Russell Sage Foundation.

13. Regens, J., & Rycroft, R. (1986). Measuring Equity in Regulatory Policy Implementation. Public Administration Review, 46(5), pp. 423-431.

14. Seigler, D. (2011). Renewing Democracy by Engaging Citizens in Shared Governance. Public Administration Review, 71(6), pp. 968-970.

15. Kresnaliyska, G. (2015). Public Policies   A Modern Tool of Good Governance, American International Journal of Contemporary Research, (5)5, pp. 43-47.

16. Monitoring government policies: A toolkit for civil society organizations in Africa. Available at https://www.internationalbudget.org/wp-content/uploads/Monitoring- Government-Policies.pdf.

17. Blum, J., Damsgaard, A., & Sullivan, P. (1980). Cost-Benefit Analysis. Proceedings of the Academy of Political Science, 33(4), pp. 137-147.

18. Gregory, R., & Keeney, R. (1994). Creating Policy Alternatives Using Stakeholder Values. Management Science, 40(8), pp. 1035-1048.

19. Hummel-Rossi, B., & Ashdown, J. (2002). The State of Cost-Benefit and Cost- Effectiveness Analyses in Education. Review of Educational Research, 72(1), pp. 1-30.

20. Patton, C. V., & Sawicki, D. S. (1986). The Need for Simple Methods of Policy Analysis and Planning. In Patton, C. V. Basic Methods of Policy Analysis and Planning. Prentice-Hall.

21. Schoenefeld, J., & Jordan, A. (2017). Governing policy evaluation? Towards a new typology. Evaluation, 23(3), pp. 274 293.

22. Sunstein, C. (2014). The Real World of Cost-Benefit Analysis: Thirty-Six Questions (And Almost as Many Answers). Columbia Law Review, 114(1), pp. 167-211.

SEMESTER III

XII.   MAJOR COURSE- MJ 4:
INDIAN GOVERNMENT AND POLITICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. The course shall aim to provide a guideline of the normative and empirical premises of the Indian Constitution.
2. The aim of the course is to provide a comprehensive understanding of the working of the Indian Government.
3. The challenges faced by the Indian polity shall also be discussed so that the gap between formulation and implementation can be gauged.

Course Learning Outcomes:
1. Comprehension about the values and philosophy of the constitution will help the students to have a far-sighted vision in the course of discussing matters relevant to the state.
2. A clear understanding of the structure and functions of the various organs of the government shall lead to better understanding of the Indian polity.
3. A thorough discussion about the issues confounding the Indian polity shall help students find viable solutions for a better future.

Course Content

UNIT I
1. Indian Constitution: Salient Features and Basic Structure of the Indian constitution.
2. Preamble
3. Fundamental Rights and Duties, Directive Principles of State Policy

UNIT II
1. Union Executive: President and Prime Minister, Council of Ministers
2. Union Legislature: Lok Sabha and Rajya Sabha
3. State Government: Governor and Chief Minister, Council of Ministers

UNIT III
1. Supreme Court and High Court – Composition and Functions, Judicial Review/Activism
2. Amendment Process of Indian constitution.

UNIT IV
1. Issues in Indian Politics: Caste, Religion, Region, Language, Reservation and Naxalism

Reference Books:
1.   R. Thakur-The Government and Politics in India,
2.   D.D. Basu - An Introduction to the Constitution of India
3.   D.D. Basu and B. Parekh - Crisis Change in Contemporary India
4.   Bidyut Chakrabarty and Rajendra Pandey- Indian Government and Politics
5.   Peu Ghosh – Indian Government and Politics

6. A. P. Avasthi – Indian Government and Politics
7. K.K. Ghai- Indian Government and Politics
8. M. Laxmikant- Indian Polity

XIII.   MAJOR COURSE- MJ 5:
PUBLIC ADMINISTRATION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:

1. This course seeks to familiarize the students with meaning, key concepts, and schools of thought of Public Administration.
2. The module deals with the structure and functioning of the organization and seeks to develop an understanding amongst the students as to why do we study public administration and how to make the functioning of their working far more economic and efficient which are common goals of all the organizations.
3. Further, the dynamics of the functioning of organizations leads us to think about communication, motivation, leadership and conflict management in the organization.
4. This course will allow the students to understand and examine how different schools have responded to these questions and their limitations.

Course Learning Outcomes:

1. The students will be able to clearly distinguish between public administration and private administration.
2. They will be able to explain the journey of the discourse in public administration in the sense that how the old public administration view was contested by the idea of New Public Administration and subsequently the discourse moved beyond that and started talking about New Public Management and New Public Service.
3. Students will acquire knowledge about Theories of Scientific Management.
4. They will be able to explain the principles of organization and concepts of bureaucracy, recruitment, promotion, training, morale in Civil Services, leadership and conflict management in the organization and issues of corruption in public life.

Course Content

UNIT I
1. Meaning, Nature, Scope and Development of Public Administration
2. Theory of Scientific Management- Taylor and Fayol

UNIT II
1. Principles of Organization: Hierarchy, Centralization Versus Decentralization, Span of control, Unity of Command
2. Bureaucracy: Concept, Characteristics and Demerits, Recruitment, Promotion, Training, and Morale in Civil Service.

UNIT III
1. Local Self Government: Urban and Rural Bodies

Reference Books:
1. A. Avasthi and S.N. Maheshwari - Public Administration
2. T.N. Chaturvedi - Contemporary Administration,
3. F.W. Taylor – The Principles of ScientificManagement
4. B.L. Fadia and K. Fadia- Public Administration
5. M. Laxmikant- Public Administration
6. Mohit Bhattacharya- Public Administration

7.   Ramesh K. Arora and Rajni Goyal- Indian Public Administration Institutions and Issues
8.   Siuli Sarkar- Public Administration in India

XIV.   SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	**Pass Marks: Th (ESE) = 30**

A Common Syllabus for FYUGP   (Credits: Theory-03)
45 Hours

Instruction to Question Setter for
End Semester Examination (ESE):
There will be **objective type test** consisting of **Seventy-five questions of 1 mark each**. Students are required to mark their answer on **OMR Sheet** provided by the University.

Course Objectives:
   The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

I.   INTRODUCTION TO COMPUTER SYSTEM
1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU)   **(3 Lecture)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer
          (4 Lecture)

3. Operating system: What is an Operating System, Operating System Examples, Functions of Operating System(Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting
          (6 Hours)
4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages
       (4 Hours)

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails.
          (6 Hours)

J.   MICROSOFT OFFICE 2016 AND LATEST VERSIONS
6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents   **(7 Hours)**

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation, slide show, Master Slides, Creating photo album, Rehearse timing and record narration
          (5 Hours)

9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning

(4 Hours)

Reference Books

40.   Nishit Mathur, Fundamentals of Computer, APH publishing corporation (2010)

41.   Neeraj Singh, Computer Fundamentals (Basic Computer), T Balaji, (2021)

42.   Joan Preppernau, Microsoft Power Point 2016 step by step, Microsoft press (2015)

43.   Douglas E Corner, The Internet Book 4th Edition, prentice –Hall (2009)

44.   Steven Welkler, Office 2016 for beginners, Create Space Independent Publishing Platform (2016)

45.   Wallace Wang, Microsoft Office 2019, Wiley (January 2018)

46.   Noble Powell, Windows 11 User Guide For Beginners and Seniors, ASIN, (October 2021)

SEMESTER IV

XV.   MAJOR COURSE- MJ 6:
COMPARATIVE GOVERNMENT AND POLITICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
1. This course will enable the students to understand the functioning of governments and political systems in comparative perspectives, especially the constitutions of Britain, U.S.A, France and Switzerland.
2. This course exposes the students to concepts and approaches which can be applied to understand different political regimes in terms of the origin of governmental structures and their functioning.
3. We have different political regimes even within the broader category of democratic regimes. However, they differ from each other in many respects. This course will allow the students to understand their functioning in a comparative perspective.

Course Learning Outcomes:
1. The students will be able to understand and apply different approaches to explain the functioning of different types of governing regimes in a comparative perspective.
2. They will be able to compare democratic regimes and evaluate their functioning.
3. They will be able to critically reflect on various aspects of electoral democracy which include functioning of parties and pressure groups and the relation between representation and democracy.

Course Content
UNIT - I
1. Comparative Government and Politics: Meaning, Nature and Scope
2. Approaches to the study of Comparative Politics: System Approach and Cultural Approach
3. Constitutions and Constitutionalism

UNIT - II
1. Constitutional Structures: Executive (UK, USA, France, Switzerland)
2. Constitutional Structures: Legislature (UK, USA, France, Switzerland)
3. Constitutional Structures: Judiciary (UK, USA, France, Switzerland

UNIT - III
1. Political Party and Party System, (UK, USA, France, Switzerland)
2. Interest Groups and Pressure Groups

Reference Books:
1. Harihar Das- Comparative politics
2. J.C. Johri -Comparative Government and Politics
3. R. Hague and M Harrop – Comparative Government and Politics: An Introduction
4. J.C. Johari – Comparative Political Theory: New Dimension, Basic Concept and Major Trends
5. Vidya Bhushan- Comparative Politics

6.   Kenneth Newton- Foundation of Comparative Politics
7.   J.C. Johari- New Comparative Government

XVI.   MAJOR COURSE- MJ 7:
WESTERN POLITICAL THOUGHT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:

1. The purpose of this module is to introduce to the students some classical political thinkers from the West who shaped the ideas and key concepts of Political Science.
2. Developing a 'just society 'and a 'just state' has been a perennial question for all civilizations. But the answers are not alike. This course examines the ideas of some of the prominent classical political thinkers including Plato, Aristotle, St. Thomas Acquinas and St. Augustine who influenced political thinking.
3. The seeds of the conceptual themes which seem to be so enriched today also found expressions in older times. The course seeks to the trace those ideas and traditions and critically examine them.

Course Learning Outcomes:

1.   The course shall ensure a firm grounding of the students in political thought which is bound to lead to conceptual clarity.
2.   The course shall enable the students to have a fair degree of knowledge about historicity which shall enrich their learning and analytical skills.
3.   The increased degree of familiarity with this particular set of scholars is bound to be extremely beneficial when a comparative study is undertaken in relation to modern thinkers as well as Indian political thinkers.

Course Content

UNIT - I

1. Plato – Ideal State, Philosopher King. Theory of Justice and Education, Communism.
2. Aristotle – State, Revolution, Citizenship, Slavery

UNIT - II

1. St. Thomas Acquinas
2. St. Augustine

UNIT - III

1. Machiavelli
2. Hobbes, Locke & Rousseau

UNIT - IV

1. J.S. Mill
2. Karl Marx

Reference Books:

1. J.P. Suda- History of Political Thought
2. Sukhbir Singh- History of Political Thought

3.   E. Barker -The Political Thought of Plato and Aristotle
4.   B. Nelson- Western Political Thought
5.   S. Mukherjee and Ramaswami - A History of Political Thought
6.   Shefali Jha- Western Political Thought
7.   J.C. Johari- Political Thought Ancient and Medieval

XVII. MAJOR COURSE- MJ 8:
INTERNATIONAL POLITICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) Theory: 60 Lectures

Course Objectives:
1. The course seeks to provide building blocks for a sound understanding of international politics.

2. The key objective of this course is to introduce the students to both the mainstream International Relations theories and approaches as well as globally diverse actors, processes and outcomes.

3. It also intends to make the students aware of the key concepts of International Politics like National Interest, Power and Security as well as new international alignments.

Course Learning Outcomes:
1. The students shall be well-versed with the key theories and concepts of the discipline of International Relations after the completion of this course.

2. The course shall aim to instill in the students a degree of awareness and sensitivity regarding global occurrences.

3. The course shall aim to make students thinking individuals who understand and take cognizance of global developments.

Course Content

UNIT I:
1. International Politics: Meaning, Nature and Scope
2. Theories of International Relations: Idealist, Realist theory, System Theory

UNIT II:
1. National Interest: Concept and Elements
2. Power: Soft Power and Hard Power
3. Security: Traditional and Non-Traditional

UNIT III:
1. New-Alignments in International Politics- G-7, G-20, Quad, Indo-Pacific, ASEAN, Shanghai Cooperation Organisation (SCO)

Reference Books:
1. Mahendra Kumar - Theoretical Aspects of International Politics
2. M.P. Sullivan -Theories of International Politics: Enduring Paradigm in a Changing World
3. Manuel Spindler- International Relations: A Self- Study Guide to Theory
4. Peu Ghosh - International Relations
5. C.W. Pevehouse – International Relations
6. Christian Reus-Smit- The Oxford Handbook of International Relations
7. V.N. Khanna and Leslie K. Kumar- International Relations

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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SEMESTER V

XVIII. MAJOR COURSE- MJ 9:
POLITICAL IDEOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:

1. Students shall gain knowledge about the role of different ideologies and their impact in politics.
2. The aim of this course is to study the historical context, trace the origin, evolution and development of the differing political ideologies.
3. The course intends to trace the change and continuities in the doctrines of various ideologies and highlight its relevance in contemporary times.

Course Learning Outcomes:

1. Students will understand the basic essence of various ideologies like Liberalism, Socialism, Conservatism, Nationalism, Fascism and Environmentalism.
2. This course shall enable the students to ponder upon a particular issue from different standpoints pertaining to the disparate ideologies.
3. This course shall develop the feeling and sentiment of tolerance towards the other point of view and consequently foster the spirit of co-existence by learning to agree to disagree.

Course Content

1. Political Ideology: An Introduction
2. Liberalism
3. Socialism
4. Conservatism
5. Nationalism
6. Fascism
7. Environmentalism

Reference Books:

1. Andrew Vincent - Modern Political Ideology
2. Andrew Heywood -Political Ideologies an Introduction
3. O.P. Gauba - Contemporary Political Ideologies
4. Vincent Geoghegan and Rick Wilford – Political Ideologies
5. Andrew Heywood- Politics
6. M. Malden- Contemporary Political Philosophy

XIX.   MAJOR COURSE- MJ 10:
HUMAN RIGHTS IN INDIA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:

1. This course shall aim to provide a clear understanding of the origin, thought and philosophy about the concept of human rights to the students.
2. An effort shall be made to educate students about the universal salience of human rights through documents such as UDHR, 1948.
3. A detailed overview of the Indian mechanism for implementation of human rights shall be provided.

Course Learning Outcomes:

1. This course shall enlighten the students about the concept of human rights and what it means to be free.
2. This course aims at instilling amongst the students the much-required consciousness about human rights so that they can take personal initiative for ensuring protection of human rights and sensitizing others for the same.
3. An effort shall be made to internalize the promotion, protection and propagation of human rights in order to build a just and equitable society.

Course Content

1. Understanding Human Rights
2. Universal Declaration of Human Rights, 1948
3. UN Mechanism for the protection and monitoring of Human Rights
4. Indian Mechanism: NHRC, India
5. Human Rights Issues in India
6. RTI, 2005
7. Obstacles in implementation of Human Rights

Reference books:

1. Upendra Baxi - The Future of Human Rights
2. Tony Evans -The Politics of Human Rights
3. Mary Hawkesworth and Kogan Maurice -Encyclopedia of Government and Politics (Vol. II)
4. Lalit Kumar Arora -Human Rights- Information and Documentation
5. Asha Bajpai - Child Rights in India, Oxford University Press, New Delhi
6. Prem Kumar Shinde -Dalits and Human Rights
7. Janusz Symonides - Human Rights- International Protection and Monitoring Enforcement
8. Charles R. Beitz- The Idea of Human Rights

XX.   MAJOR COURSE- MJ 11:
PERSPECTIVES ON INTERNATIONAL RELATIONS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. This paper seeks to equip students with the basic intellectual tools for understanding International Relations.
2. It introduces students to some of the most important theoretical approaches for studying International Relations.
3. The course begins by historically contextualizing the evolution of the international state system before discussing the agency-structure problem through the levels-of-analysis approach. After having set the parameters of the debate, students are introduced to different theories in International Relations which will ensure a comprehensive understanding of the discipline of International Relations.

Course Learning Outcomes:
1. The course shall provide a fairly comprehensive overview of the major political developments and events starting from the twentieth century.
2. The course shall enable the students to learn about the key milestones in world history and equip them with the tools to understand and analyze the same from different perspectives.
3. The holistic knowledge and understanding of theory and facts shall equip students to approach the various branches of International Relations in a nuanced manner.

Course Content
1. International Relations: Meaning, Nature and Scope
2. Theoretical Perspectives:
    a. Classical Realism and Neo-Realism
    b. Liberalism and Neoliberalism
    c. Marxist Approaches
    d. Feminist Perspectives
    e. Post-Modernism
    f. Perspectives from the Global South

Reference books:
1. Tim Dunne- International Relation Theories
2. Scott Burchill – Theories of International Relations
3. Peu Ghosh- International Relations
4. Oliver Dadow- International Relations Theory
5. Dr. Richard Devetak – Theories of International Relations
6. Robert Jackson and George Sorensen – Introduction to International Relations: Theories and Approaches
7. John Baylis, Steve Smith and Patrick Owens- The Globalization of World Politics: An Introduction to International Relations
8. Rumki Basu- International Politics- Concepts, Theories and Issues

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SEMESTER VI

XXI.   MAJOR COURSE- MJ 12:
PUBLIC POLICY AND ADMINISTRATION IN INDIA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. This course aims to familiarize the students with the definition, characteristics and models of public policy in India
2. It seeks to emphasize upon the process of decentralization in governance for optimum benefit of the populace.
3. It throws light on the various mechanisms that enable smooth functioning of the government and a healthy equation between the government and the public at large.

Course Learning Outcomes:
1. The students shall be familiarized with the different public policy models that can be applied in order to perceive reality better as well as suggest viable solutions for dealing with obstacles confronting the administration,
2. The students shall be adept at explaining the crucial process of budgeting which is the lifeline of public policy identification, formulation, implementation and evaluation.
3. The students shall be in a position to critically analyze the mechanism of public service delivery installed by the Government of India.

Course Content
UNIT I: Public Policy:
1. Definition, Characteristics and Models
2. Public Policy Process in India

UNIT II: Decentralization:
1. Meaning, Significance and Approaches and Types
2. Local Self Governance: Rural and Urban

UNIT III: Budget:
1. Concept and Significance of Budget
2. Budget Cycle in India
3. Various Approaches and Types of Budgeting

UNIT IV: Citizen and Administration Interface:
1. Public Service Delivery,
2. Redressal of Public Grievances: RTI, Lokpal, Citizens' Charter and E-Governance

Reference Books:
1. Thomas R. Dye- Understanding Public Policy
2. R.B. Denhardt and J.V. Denhardt - Public Administration
3. Brooks and Cole J. Anderson - Public Policy Making
4. Y. Dror - Public Policy Making Re-examined

5. Rajesh Chakrabarti – Public Policy in India
6. Gayatri Karnam- Public Expenditure in India: Policies and Development Outcomes
   7. Rakesh Basant – The Black Box: Innovation and Public Policy in India

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XXII. MAJOR COURSE- MJ 13:
FOREIGN POLICY OF INDIA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:

1. One of the fastest growing economies in the world, India is confronted with a number of dynamic and complex issue-areas that call for multiple Geopolitical, Geo-economic and Geo-strategic engagements and alignments but not at the cost of one of the core principles of India's foreign policy, namely strategic autonomy.
2. As the 'Asian Century 'unfolds in all its spatial-geographical diversity and complexity, there is a growing appreciation of the fact that India's overall power profile has improved.
3. India cannot afford to remain silenton matters of regional and global importance and will have to take positions even on issue-areas that hitherto appeared geographically remote and geopolitically irrelevant.

Course Learning Outcomes:

At the end of the course, students shall acquire a comprehensive understanding of the following:
1. India's World View, Geopolitical Vision and Key Principles
2. New frontiers of Indian Foreign Policy and Diplomacy
3. India's Nuclear Policy and Strategy
4. India's Look East and Act East Policy.
5. India's Relation with Major Powers as well as with its neighbours,
6. India's role in SAARC and ASEAN

Course Content
UNIT- I

1. India's Foreign Policy: Key Principles, Objective and Determinants.

UNIT- II

1. India's Relations with Major Powers in 21st Century (U.S.A., Russia, China, and E.U.)
2. India's Relations with Neighbors (Pakistan, Nepal, Sri Lanka, Bangladesh)

UNIT- III

1. India's role in SAARC and ASEAN

UNIT- IV

1. India's Nuclear Policy
2. India's Neighborhood Policy
3. India's Soft power and Cultural Diplomacy

Reference Books:

1. V. N. Khanna – Foreign Policy of India
2. J.N. Dixit – Indian Foreign Policy and Its Neighbours
3. J.P. Panda - India-China Relations: Politics of Resources Identity and Authority in Multipolar World order
4. Shiv Shankar Menon - Choices: Inside the Making of India's Foreign Policy
5. Harsh V. Pant - Indian Foreign Policy: The Modi Era
6. Sumit Ganguly- India's Foreign Policy: Retrsopect and Prospect
7. Rajiv Sikri – Challenge and Strategy:Rethinking India's Foreign Policy
8. S. Jaishankar- The India Way Strategies for an Uncertain World

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Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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XXIII. MAJOR COURSE- MJ 14:
INTERNATIONAL ORGANIZATION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
1. This course aims to trace the developments that led to the failure of League of Nations and the subsequent establishment of the United Nations.
2. The students shall be familiarized with the structure and functioning of international organizations.
3. The course will enable the students to comprehend the role of various International Agencies like UNESCO, WHO, ILO and ICJ in a much better fashion.

Course Learning Outcomes:
1. Students will gain knowledge about the origin and development of UNO.
2. They will be able to understand the structure and functioning of the various organs of UNO.
3. They will understand the role of UN Agencies like UNESCO, WHO and ILO.
4. They will be able to critically explain the challenges that the United Nations confronts in the 21st century and suggested viable solutions and reform of the organization.

Course Content
1. Origin and Development of UNO

2. Organs of U.N.O – [General Assembly, Security Council] - Structure and Functions

3. Specialized Agencies:

    a. UNESCO,

    b. WHO,

    c. UNICEF

    d. ILO

4. Settlement of International Disputes under the U.N.O.

5. Challenges before UNO in the 21ST Century

Reference Books:
1. Norrie MacQueen- The United Nations
2. Rumki Basu- The United Nations in the New Millennium
3. David M. Malone- Law and Practice of the United Nations
4. Anna- Theresia Krein- Model United Nations: A Practical Guide
5. Jussi M. Hanhimaki – The United Nations- A Very Short Introduction
6. Stanley Meiser- United Nations: A History
7. C.S.R. Murthy- India in the United Nations
    8. Elizabeth Carrio – The United Nations- Behind the Stage

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Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

XXIV. MAJOR COURSE- MJ 15:
FEDERALISM IN INDIA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
1. The aim of this course is to enlighten the students about the Indian federal system and centre-state relations including the functioning of NITI AAYOG and the demand for state autonomy.
2. This course seeks to explain to the students the dynamics of the Indian electoral system, Election Commission, electoral process, election campaign, voting behavior, electoral funding, issue of fake news, role of social media and the need for electoral reform.

Course Learning Outcomes:
1. The students shall be able to develop a better understanding about the nature of Indian Federal System and centre-state Relations
2. Students will be able to understand the electoral process of India in its entirety.
3. Students will be able to make an in-depth analysis of voting behaviour
4. Students will be able to explain the electoral process in India and critically examine the role of social media and give valuable suggestions for bringing about electoral reforms.
5. Students will acquire knowledge about the composition and functions of NITI AAYOG.

Course Content
UNIT I
1. Federalism in India: Nature and Evolution.
2. Basic features of Indian Federalism.

UNIT II
1. Centre-State Relations
2. Niti Aayog
3. National Development Council

UNIT III
1. National Political Parties and Regional Political Parties
2. Inter State conflicts

Reference Books:
1. Mahendra Prasad Singh – Indian Federalism: An Introduction
2. Peu Ghosh - Indian Government and Politics – Peu Gosh
3. M. Govinda Rao- Political Economy and Federalism in India
4. Hakar Findi- New Trends in Federalism: Cooperative Federalism in India
5. C. Rangarajan – Federalism and Fiscal Transfers in India
6. Lancy Lobo – Federalism in India: Towards a Fresh Balance of Power
7. Madhav Godbole – India A Federal Union of State
8. Naseer Ahmed Khan – Challenges and Issues in Indian Fiscal Federalism

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SEMESTER VII

XXV. MAJOR COURSE- MJ 16:
UNDERSTANDING GANDHI

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives

1. This course teaches students the core elements of Gandhian thought and Gandhi's approach to the key issues of contemporary India which were also a matter of contestation before independence.
2. This course covers a wide range of issues and subjects from politics to economy to social reconstruction that provide insight into the idea of India that Gandhi dreamt of.
3. This course shall try to understand the essence of Gandhian thought and reflect upon its continuing relevance.

Course Learning Outcomes

1. The students shall be able to understand the key concepts and elements of Gandhian Philosophy.
2. They will be in a better position to appreciate Gandhi's role in India's freedom struggle.
3. They will also be able to appreciate the best practices inspired by Gandhian thought that have been embraced by the Constitution of India.

Course Content
UNIT I

1. Sources of Gandhian Thought
2. Truth, Ahimsa and Satyagraha

UNIT II

1. Gandhi and Gram Swaraj
2. Gandhi and Trusteeship

UNIT III

1. Gandhi on Women
2. Gandhian Model of Development and Environment

Reference Books:

1. Rajmohan Gandhi- Why Gandhi Still Matters: An Appraisal of the Mahtma's Legacy
2. N.K.Bose- Studies in Gandhism
3. Mahatma Gandhi-: The Story of My Experiments with Truth
4. Ramchandra Guha- Gandhi: The Years that Changed the World
5. Louis Fischer – The Life of Mahatma Gandhi
6. Jaitirth Rao – Economist Gandhi the Roots and the Relevance of the Political Economy of Mahatma
7. Ved Mehta – Mahatma Gandhi and his Apostles
8. Rupa Publications- Letters of Mahatma Gandhi

XXVI. MAJOR COURSE- MJ 17:
GLOBAL POLITICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. The objective of the paper is to familiarize the students with the contemporary global issues and challenges in the world community.
2. The course debates key issues relating to the distribution of power, wealth and resources among nations as a result of the prevalent global economic structures.
3. It also aims to develop an understanding of the emerging tension among states due to differing perceptions on key global issues and the changing global security architecture.

Course Learning Outcomes:
1. The students shall be able to develop an international outlook in the course of perceiving issues at hand.
2. They shall be able to instantly establish a linkage between the local, national and international domains while examining any phenomenon.
3. This course is most likely to broaden the horizon of thinking of young minds who will perceive themselves to be a part of the global citizenry.

Course Content
UNIT I: Globalization: Conceptions and Perspectives
      a. Understanding Globalization and its Alternative Perspectives
      b. Political: Debates on Sovereignty and Territoriality
      c. Global Economy: Its Significance
      d. Anchors of Global Political Economy: IMF, World Bank, WTO, TNCs

UNIT II: Contemporary Global Issues
      a. Ecological Issues: Historical Overview of International Environmental Agreements and Climate Change
      b. International Terrorism: Non-State Actors and State Terrorism; Post 9/11 Developments
      c. Migration

UNIT III: Global Shifts: Power and Governance

Reference Books:
1. George Ritzer - Globalization: A Basic Text
2. Manfred B. Steger - Globalization: A Very Short Introduction
3. Robert Keohane and Joseph Nye Jr - Globalization: What's New? What's Not? (And So What?)
4. John Baylis, Steve Smith and Patrick Owens - Globalization of World Politics: An Introduction to International Relations.
5. Andrew Heywood- Global Politics
6. Barry K. Gills – The Global Politics of Globalisation: Empire vs. Cosmopolis
7. Rupak Datta Gupta – Global Politics
        8. Stephen McBride and John Wiseman – Globalisation and its Discontents.

XXVII.   MAJOR COURSE- MJ 18:
POLITICAL PROCESS IN INDIA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives

1. The objective of the course is to study the interaction between political processes and the constitutional structure in detail. Providing an insight into different aspects of the political process in India, the paper focuses on the basic nature and actual functioning of the system as a whole.
2. The course shall highlight the key elements that are the driving force of the Indian political process, namely elections and political parties.
3. The amalgamation of pulls and pressures exerted by caste, ethnicity, language and regionalism in the Indian political process shall be examined in detail.

Course Learning Outcomes

1. The course shall make the students aware of the intricate web of identity politics which plays an important role in influencing the political process in India.
2.   The paper also attempts to develop a basic understanding of the determinants of voting behaviour through the study of Psephology which shall be immensely useful for all the students.
3. The students shall be able to discuss and debate controversial issues such as casteism, communalism and regionalism in a mature and responsible manner consequent to having completed this comprehensive course.

Course Content

UNIT I: Elections and Political Parties
a.   Overview of Elections
b.   Changing Nature of Party System

UNIT II: Role of Caste in Indian Politics
a.   Politics of Secularism and Communalism
b.   Policies of Indian State pertaining to Secularism and Communal Politics since 1980s

UNIT III: Regionalism
a.   Regionalism and Federal Structure
b.   Issues of Autonomy, Ethnicity and Language

UNIT IV: Psephology

Reference Books:
1.   Paul Brass- Politics of India since Independence
2.   Bipan Chandra, Aaditya Mukherjee and Mridula Mukherjee- India after Independence
3.   Partha Chatterjee - State and Politics in India
4.   Stuart Corbridge and John Harris,- Reinventing India
5.   Frankel Francine, Zoya Hasan, Rajeeva Bhargava, Balveer Arora -Transforming India
6.   Sudipto Kaviraj - Politics in India
7.   Atul Kohli - The Success of India's Democracy

XXVIII.   MAJOR COURSE- MJ 19:
POLITICAL SOCIOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
1. This course aims at highlighting the relationship between political institutions and other social entities and the mutual embeddedness between all that is political and social.
2. Political sociology tends to impart a normative orientation unlike other courses which indicates its utmost salience in the syllabus.
3. The course shall seek to make the theories and concepts relatable to the Indian context so that students can understand their relevance and applicability.

Course Learning Outcomes:
1. The students shall be acquainted with a whole range of concepts such as political culture, political socialization, political elite, political recruitment, political development and modernization.
2. This course shall enable students to appreciate the much larger role of the political realm in our everyday lives than is what is normally evident.
3. The students will become adept in understanding the relationship between state and society in the shaping of politics in India.

Course Content
1. Political Sociology: Meaning, Nature and Scope
    1. Political Culture
    2. Political Socialization
    3. Political Elite
    4. Political Recruitment
    5. Political Development and Modernization
    6. Society and Politics in India

Reference Books:
1. Elizabeth S. Clemens- What is Political Sociology?
2. Tom Bottomore- Political Sociology
3. Edwin Amanta – The Wiley- Blackwell Companion to Political Sociology
4. Shefali Roy- Society and Politics in India: Understanding Political Sociology
5. A. Ashraf – Political Sociology: A New Grammar of Politics
6. Ed. Pradip Basu – Political Sociology
7. Chakraborty Satyabrata – Political Sociology
8. M. Baruah – Political Sociology: Theories and Concepts

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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SEMESTER VIII

XXIX. MAJOR COURSE- MJ 20:
LOCAL SELF GOVERNMENT IN INDIA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives
1. This course aims to educate students about the functioning of democracy at the grass-roots level.
2. The course shall enlighten the students about the various endeavours of the government as well participation of the people in the democratic process at this crucial level of decision-making.
3. An attempt shall be made to discuss the strains in the functioning of the local-self-government and to find feasible solutions to the problems at hand.

Course Learning Outcomes
2. This course shall be the center-piece to impart practical knowledge about the concept of direct democracy.
3. The students shall discover for themselves that Gandhiji's concept of Gram Swaraj has been actualized at the level of local self- government.
4. Knowledge about democratic decentralization is bound to enhance the understanding of the students about the Indian polity as a whole.

Course Content
1. System of Local Self Government: Origin and development
2. Main provisions of the 73rd and 74th constitutional amendments
3. Finance of Local Self Government
4. Public Participation and Local Self Government: Gram Sabha and Social Audit.
5. The Impact of Women's Quota on Panchayati Raj System
6. Local Autonomy: Problem and Prospects

Reference Books:
1. S.P. Jain – Emerging Trends in Panchayati Raj in India
2. Rakesh Kumar Singh- Local Self Government including Panchayat Administration
3. Ishita Chatterjee- Local Self-Government
4. Joshua Toulmin Smith- Local Self-Government and Centralization
5. C.P. Barthwal – Understanding Local Self Government
6. Ramnarayan Prasad – Urban Local Self Government in India
7. Rajendra Bharati- Local Self Government in Jharkhand
8. V. Sethuramalingam – Tribal Leadership in Local Self Government- Problems and Performance

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XXX. ADVANCED MAJOR COURSE- AMJ 1:
ACADEMIC WRITING AND COMMUNICATION SKILL

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. The objective of this course is to understand the nuances of academic research and style of writing.
2. The course shall enable the students to give final shape to their research and share it in order to receive feedback from the academic community.
3. They shall be equipped at the end of this course to make presentations and publish their work.

Course Learning Outcomes:
1) The course shall enable students to develop an academic bent of mind.
2) The students shall be able to develop the faculties of critical analysis.
3) The writing skills of the students shall be significantly enhanced by means of opting for this course.

Course Content
1. Academic Writing:Meaning, Types and Importance
2. Writing Synopsis
3. Report writing
4. Writing Abstract
5. Writing Conference Paper
6. Referencing
7. Writing Dissertations
8. Writing Letters, Applications and preparing Resume

Reference Books:
1. C. R. Kothari and Gaurav Garg- Research Methodology Methods and Techniques
2. Ranjit Singh – Research Methodology
3. Pranjal Bora, Jibon Saikia and Anil Hazarika- A Concise Book of Research Methodology and Research and Publication Ethics
4. Max Weber and Edward Shils- The Methodology of Social Sciences
5. Alan Bryman – Social Research Methods
6. Earl Bobbie- The Practice of Social Research
7. Norman Denzin and Y. Lincoln – Collecting and Interpreting Qualitative Materials

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XXXI. ADVANCED MAJOR COURSE- AMJ 2:
STATE POLITICS IN INDIA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course objective:
1. The objective of the paper is to understand the changing power structure of the centre-state relations within the quasi-federal framework of India.
2. This paper shall make the student aware of the accommodative nature of Indian democracy.
3. It shall educate and familiarize the students with the problems and challenges being faced by Indian democracy and their impact upon state politics and centre-state relations.

Course Learning Outcomes:
1. With the completion of the course, the students will be able to comprehend the importance of state units in the politics of India.
2. Students will be able to identify important issues affecting centre-state and inter-state relations.
3. This course will make students aware about factors influencing political process in India.

Course Content
UNIT I: States as Units of Politics
   a. Formation of States
   b. Linguistic States
   c. Regional Identity Politics
   d. New Demands from sub-regions
UNIT II: Center-State and Inter-State Conflicts
   a. Issues of Centre-State conflicts—President's rule, Autonomy and Distribution of Resources
   b. Issues of Inter-State Disputes—River water and border disputes

UNIT III: Caste and State Politics
   a. Rise of Middle Peasant Castes
   b. Dalit Politics
   c. OBC Politics

UNIT IV: Religion and Communal Politics
   a. Legacy of Partition and Early Communal Politics of the North
   b. Rise of Communal Politics in the Nineties
UNIT V: Political Economy and State Politics
   a. The issue of backwardness; Response to liberalization of economy

Reference Books:
1. Frankel Francine and M.S.A. Rao - Dominance and State Power in Modern India, Volumes 1&2
2. Iqbal Narain- State Politics in India,1976
3. Roy Ramashray and Paul Wallace -Indian Politics and the 1998Elections, Regionalism, Hindutva and State Politics
4. John R. Wood - State Politics in Contemporary India: Crisis or Continuity
5. K. R. Bombwall - The Foundations of Indian Federalism
6. Chanda - Federalism in India: A Study of Union-State Relations
7. L. Fadia - State Policies in India
8. Subrata K. Mitra – Politics in India: Structure, Process and Policy

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XXXII.   ADVANCED MAJOR COURSE- AMJ 3:
POLITICAL PROCESS IN JHARKHAND

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
1. This paper focuses in detail on the political processes and the actual functioning of the political system in Jharkhand.
2. The objective of the paper is to make students aware of the movement related with the formation of the state.
3. The paper further deals with the political process of the state in detail, identifying various dependent and independent variables and their working at the state as well as local level.

Course Learning Outcomes:
1. With the completion of the course, the students will be able to understand the working of the political system in Jharkhand.
2. The students will gain insights about the history of the formation of Jharkhand.
3. The students shall become aware of the different factors influencing the political process in Jharkhand.

Course Content
UNIT I: Politics before 2000:
   a. Tribal Movement and its impact on State politics
   b. Movement for the formation of Jharkhand State

UNIT II: Regionalism and Sub-regionalism:
   a. Politics of regional identity;
   b. Issue of backwardness and regional imbalances;
   c. Demand for Greater Jharkhand

UNIT III: Caste, Tribe and Politics:
   1. Rise of Tribal hegemony;
   2. Tribal politics;
   3. Challenges to Tribal hegemony

UNIT IV: Political Economy:
   a. Agrarian interests;
   b. Urban interests

UNIT V: Electoral politics [since formation of the state in 2000]:
   a. Regional party system
   b. Crisis of dominant party system
   c. Rise of competitive coalition system

UNIT VI: Politics of Local governments:
   a. Rural local politics after 2000;
   b. Politics of urban areas

Reference Books:
1. Frankel Francine R. and M.S.A. Rao - Dominance and State Power in Modern India – Volume 2
2. Paul Brass - Politics of India since Independence
3. S. R. Sharma - The Indian Federal Structure
4. Sandeep Shastri, K.C. Suri and Y. Yadav - Electoral Politics in Indian States
5. Balbir Dutt- dgkuh >j[kMvkxaksu dh– bfrgkl lslkK(kkdkj

6. Shailendra Mahto - >kj[kMdh l ejxkFkk
7. Harivansh - >kj[kM!l e; vkS l oky
8. Harivansh, >kj[kM!l i usvkS ; FkkFkZ

COURSES OF STUDY FOR FYUGP IN **"POLITICAL SCIENCE" MINOR**

MINOR COURSE-1A
     (SEM-I)

XXXIII.   MINOR COURSE- MN 1A:
INTRODUCTORY POLITICAL SCIENCE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**
Course Objectives:
1.   Understanding Politics is integral and indispensable for a comprehensive and critical study of Political Science.
2.   The course is designed to train a student in the foundational issues of political science, which is relevant for an in-depth study and research in the field of Political Science.
3.   This course is designed to develop a sound understanding of Political Science keeping in the mind the different meanings and connotations of politics and how is it interpreted differently by people holding different ideological positions.
4.   The critical engagements with ideologies and political norms will allow the students to develop their own understanding of politics.
5.   Since the state occupies a central position in the discourses on politics, the understanding of different elements of the state, organs of the government and their functioning, will allow the students to understand the role of the state in the society and how it governs and regulates the power structure.
6.   The students will acquire the fundamental knowledge of the basic features of the Indian constitution, working of Indian Federalism, party system and the practice and pattern of State Politics in India with special reference to Jharkhand.

Course Learning Outcomes:
1.   The students will be familiar with the basic ideas and political norms of Political Science.
2.   The students would be able to explain the different concepts of political theory and the different approaches to study politics and build their own understanding of politics.
3.   To help them understand and distinguish between basic concepts like political theory, political thought and political philosophy.
4.   They will be able to analyze why the state essentially occupies a central place in the discourses on politics and how the government operates within the state.
5.   They will be able to make a distinction between Nation and State.
6.   They will come to know about different theories on Citizenship, Nationalism and Internationalism.
7.   It will help the students to understand and relate the concepts and facts with the political realities of the country and different parts of the world.
8.   Students shall be able to clearly distinguish between the concepts of constitution and constitutionalism.
9.   The course shall be able to acquaint the students with the basics of the discipline and help them to learn the basic underpinnings of the subject of Political Science.

Course Content
UNIT I
1. Political Theory: Meaning Nature and Significance
2. Concept of State and its Elements
3. Political norms: -
a. Democracy – Meaning, Types, Merits and Demerits
b. Liberty, Equality, Justice and Rights (Meaning, Definition and Types)

UNIT II
1. Citizenship
2. Nationalism
3. Internationalism

UNIT III
1. Organs of Government
a. Executive (Meaning and Function)
b. Legislative (Meaning, Types and Functions
c. Judiciary and Judicial Review

UNIT IV
1. Indian Federalism and Party System- Characteristics, Merits and Demerits
2. Constitutionalism – Concept and Characteristics

Reference Books:
1.   Hkjrh, l fo/kku ,oa jktuhfr &,l ‐l hf1&ky
2.   Hkjrh, l fo/kku% d ifjp; &MhMhckl q
3.   Hkjrh, 'kkl u ,oa jktuhfr &ch, y ‐OkfM+k
4.   l dk"kd ';lk&gekjk l fo/kku
5.   l edkyhu jktuhfrd fl)kUr &tsl h tk$jh
6.   jktuhfrd fl)kUr dh: ijs{kk &vksih xkck
7.   J.C. Johari- Indian Constitution
8.   A.P. Awasthi - Indian Govt. and Politics
9.   S.P. Verman - Modern Political Theory
10. O.P. Gauba - An Introduction to Political Theory

MINOR COURSE-1B
(SEM-III)

XXXIV.   MINOR COURSE- MN 1B:
NATIONALISM IN INDIA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course objectives:

1.   The purpose of this course is to help students understand the struggle waged by the people of India against colonialism. It seeks to achieve this understanding by looking at this struggle from different theoretical perspectives that highlight its different dimensions. The course begins with the nineteenth century Indian responses to colonial dominance in the form of reformism and its criticism and continues through various phases up to the events leading to Partition and Independence.
2.   This course seeks to highlight its various conflicts and contradictions by focusing on its different dimensions especially, communalism and class struggle.

Course Learning Outcomes

1.   The student will be able to examine and explain the impact of British colonialism in
2.   India.
3.   They will come to understand the different interpretations of Indian nationalism by the different schools
4.   of thought.
5.   They will be able to understand the role of different movements which contributed to the freedom movement of India in a very significant manner.
6.   They will be able to understand why and on what basis the country was partitioned.

Course Content

UNIT I: Approaches to the Study of Nationalism in India

a.   Nationalist, Imperialist, Marxist, and Subaltern Interpretations

UNIT II: Nationalist Politics and Expansion of its Social Base

a.   Phases of Nationalist Movement: Liberal Constitutionalists, Swadeshi and the Radicals;
b.   Beginning of Constitutionalism in India
c.   Gandhi and Mass Mobilisation: Non-Cooperation Movement, Civil Disobedience
d.   Movement, and Quit India Movement
e.   Socialist Alternatives: Congress Socialists and Communists

UNIT III: Partition and Independence

a.   Communalism in Indian Politics
b.   The Two-Nation Theory and Negotiations over Partition

Reference Books:

1.   jkepanzi Zku] jkt l sLojkt rd
2.   S. Bandopadhyay -From Plassey to Partition: A History of Modern India
3.   R. Thapar - Interpretations of Colonial History: Colonial, Nationalist and Post-colonial
4.   P. DeSouza - Contemporary India: Transitions
5.   Pravin Kumar Jha – Nationalism in India
6.   Bipan Chandra – Nationalism and Colonialism in Modern India

7. Mushirul Hasan - Nationalism and Communal Politics in India
8. Bipan Chadra – The Rise and Growth of Economic Nationalism in India

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MINOR COURSE-1C
(SEM-V)

XXXV.   MINOR COURSE- MN 1C:
THE INDIAN CONSTITUTION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. This course shall help students acquire fundamental knowledge about the making of the Indian constitution.
2. The purpose of the course is to familiarize the students with the philosophy of the India Constitution.
3. Students will be able to explain the structures, powers sand functions of the three organs of the government and their mutu

Course Learning Outcomes:
1. The students will be able to explain the core philosophy and ideals of the Indian Constitution.
2. The students will be able to understand differences and relations between fundamental rights and DPSP.
3. Students will be able to explain the structures, powers and functions of the three organs of government and their mutual relationship and engagements.

Course Content
1. The making of the Indian Constitution

2. Philosophy of the Indian Constitution

3. Fundamental Rights and Fundamental Duties

4. Directive Principles of State Policy

5. Union Government: Legislature, Executive and Judiciary

Reference Books:
1. R. C. Lohoti, R.C.- Preamble: The Spirit and Backbone of the constitutions of India
2. R. Mukherjee - The Fundamental Unity of India
3. A. Shourie - Harvesting our Souls
4. Durga Das Basu – Introduction to the Constitution of India
5. P.M. Bakshi – The Constitution of India
6. Subhash C. Kashyap – Introduction to the Constitution of India
7. Austin Granville – The Indian Constitution
8. Bojja Tharakam – In Quest of Equality: Indian Constitution since Independence

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MINOR COURSE-1D   **(SEM-VII)**

XXXVI.   MINOR COURSE- MN 1D:
UNDERSTANDING GANDHI AND AMBEDKAR

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:

1. This course teaches students the core elements of Gandhian thought and Gandhi's approach to the key issues of contemporary India which were also matter of contestations before independence.
2. This course covers a wide range of issues and subjects from politics to economy and from social reconstruction to religion that provide insight into the idea of India which Gandhi envisioned. Gandhi responded to the questions which were posed to him in his times but they continue to debated even today; whether it is Hindu-Muslim relations or critique of modern society; whether it is the idea of Swadeshi or religious conversion, which continue to render Gandhian thought relevant in the prevalent political discourses.
3. This module will examine and assess Gandhi as a modern political philosopher. It shall grapple with nuances such as whether Gandhi's language was positioned against science and modernity or whether he can be considered to be a post-modern thinker.
4. This course shall also critically examine the arguments and the standpoint of Dr. B.R Ambedkar on key social, political, constitutional and democratic issues in India.
5. The course also deals with constitutional questions and struggle of the oppressed communities which are largely popular in academic and political discourses. The course has been designed to make students understand Gandhi's ideas on the partition of the country and the Indian historiography.

Course Learning Outcomes:

1. The students shall be able to explain the concept of truth and non-violence which is the bedrock of Gandhian philosophy.
2. They will come to know about the standpoint of Gandhi on issues like Hindu-Muslim unity, gender, cast and untouchability, religious conversion and cow protection.
3. They will be able to answer explain Gandhi's preference for Swadeshi and his critique of Modern Industrial Civilization.
4. They will be able to answer how serious Gandhi was about cow protection in India and how his ideas are different from present - day campaign against cow slaughter.
5. They will be able to answer why Gandhi criticized the works of religious conversion by Christian missionaries in India.
6. Students will be able to explain how Ambedkar rejected the Aryan Invasion Theory.
7. Students will be able to explain why and how Ambedkar opposed Sharia laws and spoke in favour of the Uniform Civil Code. Students will learn about his views on democracy, citizenship, freedom, and justice.
8. Students will be able to explain his views on the language question and organization of states in India.

Course Content
UNIT I

1. Core of Gandhian Philosophy
   a. Truth and Non-violence
   b. Satyagraha
2. Gandhian Views on Man, Machine and Modern Human Civilization

UNIT II

1.   Gandhi and Indian Politics
     a.   Hindu-Muslim Relation
     b.   Untouchability and Caste System
     c.   Religions Conversion
     d.   Gandhi and Women

UNIT III

1.   Indian Historiography and Ambedkar
     a.   Aryan Invasion Theory
     b.   Religions Conversion

UNIT IV

1.   Ambedkar and Core Issues of Indian constitution
     a.   Role as Chairman of Drafting Committee
     b.   Ambedkar's Idea of Social Democracy, Citizenship, Equality, Freedom and Justice
2.   Ambedkar and Dalit Politics

Reference Books:

1.   A. J. Parel - Gandhi Freedom and Self Rule
2.   A.J. Parel, - Gandhi and the Emergence of the Modern Indian Political Canon
3.   Louis Fischer – The Life of Mahatma Gandhi
4.   Lloyd I. Rudolph and Susanne Hoeber Rudolph - Post Modern Gandhi and Other Essays
5.   B.R. Ambedkar – Ambedkar's India A Collection of 3 Works by B.R. Ambedkar on Castes and Constitution
6.   S. Laland K.S.Sexena- Ambedkar and Nation Building
7.   N. Gehlot-Dr. Ambedkar, Mahatma Gandhi and Dalit Movement
8.   CAD Vol. II - Constituent Assembly Debates

FYUGP

GEOGRAPHY HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented from 3rd Semester of Academic Session 2022-26

& From 1st Semester of Session 2023-27 Onwards

स्नातकोत्तर भूगोल विभाग
राँची विश्वविद्यालय, राँची

University Department of Geography
Ranchi University, Ranchi

Ref ....   Date 30|05|2023

Members of Board of Studies of Four-Year Under-Graduate Programme (FYUGP) Syllabus as per Guidelines of the Ranchi University, Ranchi

1. Chairman –

  Dr. Jagdish Kumar Mahto
  Associate Professor & Head
  University Department of Geography, Ranchi University, Ranchi

2. Internal Members-

  i)   **Dr. Jitendra Shukla**
         Assistant Professor (S. S.)
         University Department of Geography, Ranchi University, Ranchi

  ii)   **Dr. Ajay Kumar Sharma**
         Assistant Professor
         University Department of Geography, Ranchi University, Ranchi

  iii)   **Dr. G K Singh**
         Assistant Professor
         University Department of Geography, Ranchi University, Ranchi

  iv)   **Dr. Sunil Kumar**
         Assistant Professor
         University Department of Geography, Ranchi University, Ranchi

  v)   **Dr. U. C. N. Tiwari**
         Assistant Professor
         University Department of Geography, Ranchi University, Ranchi

  vi)   **Dr. Rajesh Kumar Lal**
         Assistant Professor
         University Department of Geography, Ranchi University, Ranchi

  vii)   **Dr. Rajeev Ranjan Shrivastava**
         Assistant Professor (S. S.)
         PG Dept. of Geography, St. Xavier's College, Ranchi

         Dr. Debjani Roy
         Assistant Professor Head,
         PG Dept. of Geography, Nirmala College, Ranchi

Session 2022-26 onwards

DIRECTOR
IQAC, RANCHI UNIVERSITY
RANCHI-834 001

HEAD
University Deptt. of Geography
Ranchi University, Ranchi

Arts Block - C, Morabadi Campus, Ranchi - 834008, Jharkhand
e-mail : geography@ranchiuniversity.in

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

स्नातकोत्तर भूगोल विभाग
राँची विश्वविद्यालय, राँची

University Department of Geography
Ranchi University, Ranchi

Ref ....   Date 30/05/2023

ix)	**Dr. Surbhi Sahu** Assistant Professor, Head, Dept. of Geography, Ranchi Women's College, Ranchi
x)	**Dr. Smita Linda** Assistant Professor Dept. of Geography, Ranchi Women's College, Ranchi
xi)	**Dr. Sandeep Chandra** Assistant Professor, PG Dept. of Geography, St. Xavier's College, Ranchi

3. External Members-

i)   **Dr. Sarvottam Kumar**
     Associate Professor Head,
     PG Dept. of Geography, DSPMU, Ranchi

ii) **Shri Nalini Kant Mahato**
     Assistant Professor
     PG Dept. of Geography, DSPMU, Ranchi

4. Invite Member

i)   **Dr. Neeraj**
     Assistant Professor,
     University Department of Chemistry, R.U. Ranchi

DIRECTOR
IQAC, RANCHI UNIVERSITY
RANCHI-834 001

Head **HEAD**
University Department of Geography
Ranchi University, Ranchi

Session 2022-26 onwards   iii

Table of Content

Students are Instructed to

Refer Syllabus of Allied/ Opted Subjects from R.U. Website

HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1st of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:
  - k)Odd Semester: **From first Monday of August to third Saturday of December**
  - l) Even Semester: **From first Monday of January to third Saturday of May**
- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
  - ➤ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
  - ➤ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
  - ➤ Bachelor's Degree after a 3-year (6 semesters) programme of study,
  - ➤ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
  - ➤ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

k) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.

One credit for Theory   = <u>15 Hours of Teaching</u> i.e., 15 Credit Hours
One credit for Practicum   = <u>30 Hours of Practical work</u> i.e., 30 Credit Hours

l) For credit determination, instruction is divided into three major components:

Hours (L) – Classroom Hours of one-hour duration.
Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.
- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

li.　　The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

lii.　　No student will be detained in odd Semesters (I, III, V & VII).

liii.　　To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum <u>9 papers</u> out of the total 12 papers.

liv.　　To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum <u>18 papers</u> out of the total 24 papers.

lv.　　To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum <u>26 papers</u> out of the total 34 papers.

lvi.　　However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

lvii.　　Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

lviii.　　To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year. a student has to pass in minimum 3 <u>papers</u> out of the total 4 papers.

lix.　　It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result if the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)													
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)													
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree													
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4
Exit Point: Bachelor's Degree with Hons. /Hons. with Research												**160**	**224**

Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME
2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	AEC-1	Language and Communication Skills (MIL 1 - Hindi/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Hindi)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4
IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2

	VAC-2	Value Added Course-2	2
	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4
	RC/	Research Internship/Field Work/Dissertation OR	12/
	AMJ-1 AMJ-2 AMJ-3	Advanced Major paper-1 (Disciplinary/Interdisciplinary Major) Advanced Major paper-2 (Disciplinary/Interdisciplinary Major) Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	4 4

			4
		Total Credit	**160**

NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	xi. Discipline/ Interdisciplinary courses and xii. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64
Minor	xi. Discipline/ Interdisciplinary courses and xii. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8

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SEC	Courses to be developed by the University	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Double Major Courses		Credits
	Code	**Papers**	
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:

AEC   Ability Enhancement Courses
SEC   Skill Enhancement Courses
IAP   Internship/Apprenticeship/ Project
MDC   Multidisciplinary Courses
MJ   Major Disciplinary/Interdisciplinary Courses
DMJ   Double Major Disciplinary/Interdisciplinary Courses
MN   Minor Disciplinary/Interdisciplinary Courses
AMJ   Advanced Major Disciplinary/Interdisciplinary Courses
RC   Research Courses

AIMS OF BACHELOR'S DEGREE PROGRAMME IN GEOGRAPHY

The aim of bachelor's degree programme in Geography is intended to provide:

1. **Basic Concept:** The fundamental concepts and philosophical foundation of each course need to be discussed.
2. **Understanding Landscape:** An understanding of landscape at different levels needs to be discussed and understood for a thorough knowledge of spatial dimensions.
3. **Understanding Ecosystem Structure and Potential:** To comprehend the dynamic dimensions of human and ecosystem relationships.
4. **Human Perception and Behaviour:** Learning human perception and behaviour to acquire the geographical knowledge evolved over time, is essential to improve decision making process.
5. **Identification of Critical Problems and Issues:** Detection and identification of the critical problems and spatial issues are essential for sustainable development.
6. **Field Based Knowledge:** Field based knowledge is essential to understand the ground reality, spatial patterns and processes.
7. **Spatial Tools and Techniques:** The basics and applications of spatial tools and techniques are essential to make the studies more scientific and applicable.
8. **Statistical Techniques:** Use of statistical tools and techniques is essential for precise and objective geographic analysis and interpretation of complex phenomena.
9. **Applied Dimensions:** Identification of the critical problems and spatial issues form the core of the modern geography for various applications and decision making, including
10. **Planning:** Resources, Environment & Disaster Management, Land Use Planning, and Urban and Regional Development together with Climate Change Mitigation and Adaptation, etc.
11. **Case Study based Analysis:** There is a need to understand the specificities of the problems in specific areas for them in depth comprehension and solution. The case studies are essential, especially to find out the solutions to the lagging regions for their solutions based on first-hand information.

PROGRAM LEARNING OUTCOMES

The programme learning outcomes relating to Honours/Research Degree in Geography:

1. Demonstrating the understanding of basic concepts in geography.
2. Demonstrating the coherent and systematic knowledge in the discipline of geography to deal with current issues and their solution.
3. Display an ability to read and understand maps and topographic sheets to look at the various aspects on the space.
4. Cultivate ability to evaluate critically the wider chain of network of spatial aspects from global to local level on various time scales as well.
5. Recognize the skill development in Geographical studies programme as part of career avenues in various fields like teaching, research and administration.
6. It is also suggested that after the completion of FYUGP Hons./Research, students should be able to demonstrate the knowledge obtained in such way so that they can explore the employability options and service to the society.

SEMESTER WISE COURSES IN GEOGRAPHY MAJOR-1 FOR FYUGP   <u>2022 onwards</u>

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	Evolution of Geographical Thought	4	25	75	---
II	MJ-2	Physical Geography	4	25	75	---
	MJ-3	Practical-I (Cartographic Techniques)	4	---	---	100
III	MJ-4	Human and Settlement Geography	4	25	75	---
	MJ-5	Practical-II (Statistical Methods in Geography)	4	---	---	100
IV	MJ-6	World Regional Geography	4	25	75	---
	MJ-7	Fundamentals of Remote Sensing & GIS	4	25	75	---
	MJ-8	Practical-III (Remote Sensing & GIS)	4	---	---	100
V	MJ-9	Economic Geography	4	25	75	---
	MJ-10	Geography of India & Jharkhand	4	25	75	---
	MJ-11	Practical-IV (Instrumental Survey and Socio-Economic Project Work)	4	---	---	100
VI	MJ-12	Population Geography	4	25	75	---
	MJ-13	Agricultural Geography	4	25	75	---
	MJ-14	Regional Planning and Development	4	25	75	---
	MJ-15	Practical-V (Physical Survey Practical)	4	---	---	100
VII	MJ-16	Natural Resource Management And Environmental Geography	4	25	75	---
	MJ-17	Social and Tribal Geography	4	25	75	---
	MJ-18	Transport and Tourism Geography	4	25	75	---
	MJ-19	Practical-VI (Advanced Cartography)	4	---	---	100
VIII	MJ-20	Geomorphology	4	25	75	---
	AMJ-1	Urban Geography	4	25	75	---
	AMJ-2	Soil and Hydrology	4	25	75	---
	AMJ-3	Practical-VII (Advance Major Practical)	4	---	---	100
	or RC-1	Research Methodology	4	25	75	---

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	RC-2	Project Dissertation/ Research Internship/ Field Work	8	---	---	200
		Total Credit	**92**			

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Skill Enhancement Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	Field Techniques and Surveying Methods	3	---	75	---
II	SEC-2	Introduction to Geographic Information System and GPS	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	**9**			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Minor Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	Introductory Geography	4	15	60	25
III	MN-1B	Geography of India and Jharkhand	4	15	60	25
V	MN-1C	Environmental Geography & Sustainable Development	4	15	60	25
VII	MN-1D	Climate Change Vulnerability and Adaptation	4	15	60	25
		Total Credit	**16**			

INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There will be Only One Semester Internal Examination in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

K. (SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

L. (SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Conversion of Attendance into score may be as follows:

Attendance Upto 45%, 1mark; $45<$Attd.<55, 2 marks; $55<$Attd.<65, 3 marks; $65<$Attd.<75, 4 marks; $75<$Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

P. (ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

Q. (ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of

1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

R. (ESE 100 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

<div style="border:1px solid black;">

Subject/ Code

F.M. =10   Time=1Hr.   Exam Year

General Instructions:
xxvi. **Group A** carries very short answer type compulsory questions.
xxvii.   **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
xxviii.   Answer in your own words as far as practicable.
xxix. Answer all sub parts of a question at one place.
xxx. Numbers in right indicate full marks of the question.

Group A

16.   [5x1=5]

xxvi.   ....
xxvii.   ....
xxviii.   ....
xxix.   ....
xxx.   ....

Group B

17. ....   [5]
18. ....   [5]

Note: There may be subdivisions in each question asked in Theory Examination.

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Question format for **20 Marks**:

Subject/ Code

F.M. =20   **Time**=1Hr.   Exam Year

General Instructions:
xxvi. **Group A** carries very short answer type compulsory questions.
xxvii.   **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
xxviii.   Answer in your own words as far as practicable.
xxix. Answer all sub parts of a question at one place.
xxx. Numbers in right indicate full marks of the question.

Group A

21.   [5x1=5]

    xxvi.   ....
    xxvii.   ....
    xxviii.   ....
    xxix.   ....
    xxx.   ....

22. ....   [5]

Group B

23. ....   [10]
24. ....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION
Question format for **50 Marks**:

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Subject/ Code

F.M. =50   **Time**=3Hrs.   <u>Exam Year</u>

General Instructions:

ix. **Group A** carries very short answer type **compulsory** questions.
x. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
xviii.Answer in your own words as far as practicable.
xix. Answer all sub parts of a question at one place.
xx. Numbers in right indicate full marks of the question.

Group A

31.   [5x1=5]

    xxvi.   ....
    xxvii.   ....
    xxviii.   ....
    xxix.   ....
    xxx.   ....

Group B

32. ....   [15]
33. ....   [15]
34. ....   [15]
35. ....   [15]
36. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **60 Marks**:

Subject/ Code

F.M. =60   **Time**=3Hrs.   <u>Exam Year</u>

General Instructions:

xi. **Group A** carries very short answer type **compulsory** questions.
xii. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
xviii.Answer in your own words as far as practicable.
xix. Answer all sub parts of a question at one place.
xx. Numbers in right indicate full marks of the question.

Group A

41.   [5x1=5]

    xxvi.   ....
    xxvii.   ....
    xxviii.   ....
    xxix.   ....
    xxx.   ....

42. ....   [5]
43. ....   [5]

Group B

44. ....   [15]
45. ....   [15]
46. ....   [15]
47. ....   [15]
48. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **75 Marks**:

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Subject/ Code

F.M. = 75	**Time**=3Hrs.	Exam Year

General Instructions:

xi.   **Group A** carries very short answer type **compulsory** questions.
xii. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xviii.Answer in your own words as far as practicable.
xix. Answer all sub parts of a question at one place.
xx.   Numbers in right indicate full marks of the question.

Group A

46.   [5x1=5]

        xxvi.   ....
        xxvii.   ....
        xxviii.   ....
        xxix.   ....
        xxx.   ....

  47. ....   [5]
48. ....   [5]

Group B

  49. ....   [15]
  50. ....   [15]
  51. ....   [15]
  52. ....   [15]
  53. ....   [15]
  54. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

Subject/ Code

F.M. = 100	**Time**=3Hrs.	Exam Year

General Instructions:

xi.   **Group A** carries very short answer type **compulsory** questions.
xii. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xviii.Answer in your own words as far as practicable.
xix. Answer all sub parts of a question at one place.
xx.   Numbers in right indicate full marks of the question.

Group A

6.   [10x1=10]

   xxvi.   ....   vi.   ....
   xxvii.   ....   vii.   ....
   xxviii. ....   viii.   ....
   xxix.   ....   ix.   ....
  12. ...xxx...............   x   ....   [5]
  13. ....   [5]

Group B

  34. ....   [20]
  35. ....   [20]
  36. ....   [20]
  37. ....   [20]
  38. ....   [20]
  39. ....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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SEMESTER I

X.   MAJOR COURSE –MJ 1:
EVOLUTION OF GEOGRAPHICAL THOUGHT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To explain the concept, definition and scope of Geography as a distinct discipline
2. To recognize the various branches, streams and school of thought in Geography

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Distinguish the paradigms in geography discipline through time
2. Understand the geographical thinking in different regions of world
3. Appreciate the past and future trends of world geography in general and Indian geography in particular

Course Content:
Unit 1- Definition, nature and scope of geography, Development of geographical thought in India. Paradigms in Geography

Unit 2- Pre-Modern- Early Origins of Geographical Thinking with reference to the Classical and Medieval Philosophies.

Unit 3- Modern -Evolution of Geographical Thinking and Disciplinary Trends in Germany, France, Britain, United States of America.

Unit 4- Debates - Environmental Determinism and Possibilism, Neo-Determinism/ Probablism Systematic and Regional, Ideographic and Nomothetic.

Unit 5- Trends - Quantitative Revolution and its Impact, Behaviouralism, Systems Approach, Radicalism, Feminism; Towards Post-Modernism - Changing Concept of Space in Geography, Future of Geography, Paradigmatic shift in geography

Reference Books:
1. Bhat, L.S., (2009): Geography in India (Selected Themes). Pearson
2. Bonnett, A., (2008): What is Geography? Sage.
3. Dikshit, R. D., (1997): Geographical Thought: A Contextual History of Ideas, Prentice Hall India.
4. Freeman, R., (1970): Hundred year of Geography, Hutchinson. London.
5. Hartshone, R., (1959): Perspectives of Nature of Geography, Rand MacNally and Co.
6. Harvey, David., (1969): Explanation in Geography, London: Arnold
7. Holt-Jensen, A., (2011): Geography: History and Its Concepts: A Students Guide, SAGE.
8. Hussain, M., (2005): Bhougolik Chintan Ka Itihas, Rawat Publications
9. Johnston, R. J., (Ed.): Dictionary of Human Geography, Routledge.
10. Kapur, A., (2001): Indian Geography Voice of Concern, Concept Publications.
11. Martin Geoffrey J., (2005): All Possible Worlds: A History of Geographical Ideas, Oxford.
12. Sudeepta, Adhikari., (2015): Fundamentals of Geographical Thought, Orient Black Swan Pvt Ltd, Hyderabad

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XI. SKILL ENHANCEMENT COURSE- SEC 1:
FIELD TECHNIQUES AND SURVEYING METHODS

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objective:

The Learning objective of this course are as follows-
1. To familiarise students the techniques of field work, its merit and demerit
2. To make student learn about designing field report, interpretation techniques, and writing the report

Course Learning Outcome:

After the completion of the course, the students will have the ability to:

1. Conduct field work in physical and human geography

2. Develop tools to collect primary data from the field and interpret them meaningfully;

3. Prepare field report with suitable tables, maps and diagrams based on the field data

Course Content:

Unit 1- Field work in Geographical Studies – Definition, Concept, Role, Value and Ethics of Field work.

Unit 2- Defining the Field and Identifying the Case Study – Rural / Urban / Physical / Human / Environmental, Types of data.

Unit-3- Field Techniques – Merits, Demerits and Selection of the Appropriate Technique; Observation method (Participant / Non Participant); Surveying methods: Questionnaires and schedule (Open/ Closed / Structured / Non-Structured); Interview with Special Focus on Focused Group Discussions;

Unit-4- Designing the Field Report – Aims and Objectives, Methodology, Analysis, Interpretation and Writing the Report.

Practical Record

1. Each student will prepare an individual report based on primary and secondary data collected during field work.

2. The word count of the report should be about 6,000 to 10,000 excluding figures, tables, photographs, maps, references and appendices.

3. Students are advised to make use of navigation satellite positioning (GNSS/GPS) during observation and its report. One copy of the report on A4 size paper should be submitted in soft binding.

References:

1. Creswell, J., (1994): Research Design: Qualitative and Quantitative Approaches, Sage Publications, California.
2. Dikshit, R. D. (2003). The Art and Science of Geography: Integrated Readings, Prentice-Hall of India, New Delhi.

SEMESTER II

XXXVII.   MAJOR COURSE- MJ 2:
PHYSICAL GEOGRAPHY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To explain the concept, definition and scope of earth systems
2. To recognize the structure of the earth, its atmosphere and describe its characteristic features

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. To classify earth into various domains according to its physical features
2. Understand the elements of weather and climate and its impacts at different scales.
3. Understand the oceanic process and availability of resources.

Course Content:

Unit 1- Geomorphology: Nature and Scope, Origin of the solar system, Earth: Interior Structure and Isostasy; Earth Movements: Plate Tectonics, Types of Folds and Faults, Earthquakes and Volcanoes.
Unit 2- Geomorphic Processes: gradation (erosion and weathering), Cycle of Erosion (Davis and Penck). Evolution of Landforms (Erosional and Depositional): Fluvial, Karst, Aeolian, Glacial, and Coastal;
Unit 3- Climatology- Atmospheric Composition and Structure; Insolation, Atmospheric Pressure and Winds
Unit 4- Climatic classifications (Koppen's and Thornthwaite) and Regions. Cyclones: Tropical and Temperate Cyclones, Monsoon - Origin and Mechanism, El-Nino.
Unit 5- Oceanography- Ocean Floor Topography and Oceanic Water Movements: Waves, Currents and Tides. Ocean Salinity: Distribution and Determinants; Coral Reefs and Marine Deposits.

Reference Books:
1. Barry, R. G., and Chorley, R. J., (2009): Atmosphere, Weather and Climate (9th Edition),Routledge, New York.
2. Critchfield, H. J., (1987): General Climatology, Prentice-Hall of India, New Delhi
3. Gupta, L.S., (2000): Jalvayu Vigyan(Hindi),Madhyam Karyanvay Nidishalya, Delhi Vishwa Vidhyalaya, Delhi
4. Lal, D. S., (2006): Jalvayu Vigyan(Hindi),, Prayag Pustak Bhavan, Allahabad
5. Oliver, J. E., and Hidore J. J., (2002): Climatology: An Atmospheric Science, Pearson Education, N. Delhi.
6. Pinet, P. R., (2008): Invitation to Oceanography (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.
7. Singh, S., (2009): Jalvayu Vigyan (Hindi),, Prayag Pustak Bhawan, Allahabad
8. Strahler, A.N., (1987) Modern Physical Geography, John Wiley and Sons, New York, Singapore.
9. Trewartha, G. T., and Horne L. H., (1980): An Introduction to Climate, McGraw- Hill.
10. Shukla, J (2016) Geomorphology, Disha International Publishing House, Delhi

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XXXVIII.   MAJOR COURSE- MJ 3:
PRACTICALS-I: (CARTOGRAPHIC TECHNIQUES)

Marks: Pr (ESE: 3Hrs) =100	**Pass Marks: Pr (ESE) = 40**

(Credits: Practicals-04)   **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Course Objective:
The Learning objective of this course are as follows-
      1. To explain the concept of scale, cross profiles, and weather maps
      2. To familiarise students about topographical maps, various types of projections

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Read and prepare maps.
2. Comprehend locational and spatial aspects of the earth surface.
3. Use and importance of maps for regional development and decision making.

Course Content:
Unit 1- Scale-Plain, Comparative, Diagonal
Unit 2- Cross Profiles- Serial, Superimposed, Projected, Composite; Geological Map/ cross-section: 1,2,6,8,10,12,15,17 and completion of geological maps
Unit 3- Topographical Map: Introduction, Interpretation, Identification of physical and cultural features
Unit 4- Projection: Simple Conical (one standard and two standard parallel), Bonne's , Cylindrical (Equal area and equi-distant, Gall's Stereographic) Zenithal (Polar Zenithal-Gnomonic and Stereographic Zenithal) Mercator's, Globular, Interpreted Sinusoidal and Mollweide projection
Unit 5- Interpretation of weather maps, drawing of Climograph & Hythergraph

Practical Record: Practical record book- at least one exercise from all the topics.

Reference Books:
1. Misra, R.P.,(2014): Fundamentals of Cartography (Second Revised and Enlarged Edition), Concept Publishing, New Delhi.
2. Monkhouse, F. J. and Wilkinson, H. R.,(1973): Maps and Diagrams, Methuen, London.
3. Robinson, A. H.,(2009): Elements of Cartography (6th Edition), John Wiley and Sons, New York.
4. Sarkar, A.,(2015):Practical geography: A systematic approach, Orient Black Swan Private Ltd., New Delhi
5. Sharma, J. P., (2010): Prayogic Bhugol(Hindi), Rastogi Publishers, Meerut.
6. Singh, R.L. and Singh R.P.B.,(1999): Elements of Practical Geography, Kalyani Publishers, New Delhi.
7. Singh, R.L. &Dutta, P.K., (2012):Prayogatmak Bhugol(Hindi), Central Book Depot, Allahabad
8. Singh,R.L.,& Singh, Rana. P.B.,(1991):Prayogtmak Bhugol ke Mool Tatva (Hindi), Kalyani Publishers, New Delhi
9. Steers, J.A. (1970):An Introduction to the Study of Map Projections, University of London Press, London.

XXXIX.   SKILL ENHANCEMENT COURSE- SEC 2:
INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEM AND GPS

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students the techniques of Geographical information system (GIS), its components
2. To make student learn about application of GIS in Natural resource management, urban sprawl, land use land cover

Course Learning Outcome:

After the completion of the course, the students will have the ability to:
1. Appreciate the basic principles and components of GIS;
2. Apply raster and vector data structure for GIS analysis;
3. Analyse the basic resources, land use and urban related data using GIS software for meaningful interpretation.

Course Content:
Unit 1- Geographic Information System (GIS): Meaning, Definition, and its Components.

Unit 2- GIS Data Structures: Types (Spatial and Non-spatial), Raster and Vector Data Structure; GIS Data Analysis, Overlays and network analysis.
Unit 3. Recent Trends in GIS; Application of GIS, GIS in land resource management (LIS)- Jharbhoomi,
Biharbhumi, Bhuvan (ISRO-NRSC) platform and its services
Unit 4- Global Positioning System (GPS) and Indian Regional Navigation Satellite System (IRNSS/NavIC)– Definition and Components; Principles and Application of GPS
Unit 5- Collecting waypoint using GPS handsets or mobile apps (GPS Waypoint/others), geotagging, Transferring waypoint to computer, editing non-spatial information, creating basic maps using waypoints

References:
1. Burrough, P.A., and McDonnell, R.A. (2000) Principles of Geographical Information System-Spatial Information System and Geo-statistics, Oxford University Press, Oxford.
2. Chauniyal, D.D. (2010) Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad.
3. Heywoods, I., Cornelius, S and Carver, S. (2006) An Introduction to Geographical Information system. Prentice Hall, New Jersey.

SEMESTER III

XL.   MAJOR COURSE- MJ 4:
HUMAN AND SETTLEMENT GEOGRAPHY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To explain the concept, definition and themes of human geography
2. To familiarise students about human settlement types and patterns

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Know the changing human and cultural landscape at different levels.
2. Understand patterns and processes of population growth and its implications.
3. Appreciate the nature and quality of human landscapes

Course Content:
Unit 1- Introduction: Defining Human Geography; Major Themes; Contemporary Relevance, World migration pattern
Unit 2- Space and Society: Cultural Regions; Race; Religion and Language, Racial conflicts
Unit 3- Human adaptation to extreme environment- Eskimos, Bushman, Pgymi, Gond
Unit 4- Settlements: Types and pattern of Rural Settlements; Classification of Urban Settlements; Trends and Patterns of World Urbanization
Unit 5- Primate city, Rank size rule, Central Place theory by Christller,

Reference Books:
1. Chandna, R.C., (2017):Population Geography, Kalyani Publishers, New Delhi.
2. Roy D (2022): Population Geography, 2nd Edition, Books & Allied, Kolkata
3. Daniel, P.A. and Hopkinson, M.F. (1989):The Geography of Settlement, Oliver & Boyd, London.
4. Hassan, M.I. (2005):Population Geography, Rawat Publications, Jaipur
5. Hussain, Majid., (2012):Manav Bhugol, Rawat Publications, Jaipur.
6. Johnston, R., Gregory, D.,& Pratt, G., et al. (2008):The Dictionary of Human Geography, Blackwell Publication.
7. Jordan-Bychkov., et al., (2006):The Human Mosaic: A Thematic Introduction to Cultural Geography, W. H. Freeman and Company, New York.
8. Kaushik, S.D., (2010):Manav Bhugol, Rastogi Publication, Meerut.
9. Maurya, S.D., (2012):Manav Bhugol, Sharda Pustak Bhawan, Allahabad.
10. Rozenblat., Celine., Pumain., Denise and Velasquez., Elkin Eds. (2018): International and Transnational Perspectives on Urban Systems, Springer, Japan, pages 393.
11. Singh, R.B., Ed. (2015): Urban Development Challenges, Risk and Resilience in Asian Mega Cities- Sustainable Urban Future of Emerging Asian Mega Region, Springer, Tokyo, Pages 488, 2015.

XLI.   MAJOR COURSE- MJ 5:
PRACTICALS-II: (STATISTICAL METHODS IN GEOGRAPHY)

Marks: Pr (ESE: 3Hrs) =100	**Pass Marks: Pr (ESE) = 40**

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Course Objective:
The Learning objective of this course are as follows-
1. To explain the concept quantitative information in general and Geographical data in particular.
2. To explain the importance of data analytics. The ways data is collected, or data is taken from different sources.
3. To familiarise students about methods of graphic data representations

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Use statistical methods and techniques in geographical analysis
2. Understand quantitative data, methods of sampling, graphical data representation.
3. Understand method of population projection

Course Content:
Unit 1- Use of Data in Geography: Significance of Statistical Methods in Geography; Sources of Data, Scales of Measurement (Nominal, Ordinal, Interval and Ratio).
Unit 2- Tabulation and Descriptive Statistics: Frequencies (Deciles, Quartiles), Cross Tabulation, Central Tendency (Mean, Median and Mode, Centro-graphic Techniques, Dispersion (Standard Deviation, Variance and Coefficient of Variation).
Unit 3- Sampling: Purposive, Random, Systematic and Stratified. Association and Correlation: Rank Correlation, Product Moment Correlation, and Simple Regression.
Unit 4- Diagrammatic Data Presentation –Choropleth, Dot, pie, spherical and Proportional Circles; Point Data Isopleths
Unit 5- Graphic representation -Histogram, polygons, frequency curve (Ogive), Scatter diagram, Lorenz curve, Block pile diagram, Method of population projection

Practical Record: Each student will submit a record containing exercises from each topic

Reference Books:
1. Ajai, S. G. and Sanjaya, S.G. (2009) Statistical Methods for Practice and Research, Sage Publications, New Delhi.
2. Berry, B. J. L. and Marble, D. F. (eds.): Spatial Analysis A Reader in Geography.
3. Ebdon, D., (1977): Statistics in Geography: A Practical Approach.
4. King, L. S., (1969): Statistical Analysis in Geography, Prentice-Hall.
5. Mahmood, A., 1977: Statistical Methods in Geographical Studies, Concept.
6. Pal, S. K., (1998): Statistics for Geoscientists, Tata McGraw Hill, New Delhi.
7. Rogerson,P. A., (2001) Statistical Methods for Geography, Sage Publications, New Delhi.
8. Sarkar, A. (2013): Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi

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XLII. SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

A Common Syllabus for FYUGP   (Credits: Theory-03)
45 Hours

Course Objectives:
The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

K. INTRODUCTION TO COMPUTER SYSTEM

1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU)   **(3 Lecture)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer
                            (4 Lecture)

3. Operating system: What is an Operating System, Operating System Examples, Functions of Operating System(Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting
                                        (6 Hours)

4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages
            (4 Hours)

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails.
                            (6 Hours)

L. MICROSOFT OFFICE 2016 AND LATEST VERSIONS

6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents   **(7 Hours)**

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation, slide show, Master Slides, Creating photo album, Rehearse timing and record narration
            (5 Hours)

9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning
                    (4 Hours)

Reference Books
47.   Nishit Mathur, Fundamentals of Computer, APH publishing corporation (2010)
48.   Neeraj Singh, Computer Fundamentals (Basic Computer), T Balaji, (2021)
49.   Joan Preppernau, Microsoft Power Point 2016 step by step, Microsoft press (2015)
50.   Douglas E Corner, The Internet Book 4th Edition, prentice –Hall (2009)
51.   Steven Welkler, Office 2016 for beginners, Create Space Independent Publishing Platform (2016)
52.   Wallace Wang, Microsoft Office 2019, Wiley (January 2018)
53.   Noble Powell, Windows 11 User Guide For Beginners and Seniors, ASIN, (October 2021)

SEMESTER IV

XLIII. MAJOR COURSE- MJ 6:
WORLD REGIONAL GEOGRAPHY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To explain the physical features, drainage and climatic feature of continents
2. To familiarise students about major physiographic region of continents

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Locate physical features of the world major continents.
2. Understand climatic condition and climatic pattern of the continents.
3. Understand the drainage of the continents

Course Content:
 Unit 1- Asia - Physical features, Drainage & Climatic condition & Climatic Regions; agriculture and major industry; geographical account of Great plains of China, Indus basin
Unit 2-Europe- Physical features, Drainage & Climatic condition & Climatic Regions, agriculture and major industry, geographical account of Steppe's grassland, Rhine basin
   Unit 3-North America - Physical features, Drainage & Climatic condition & Climatic Regions, agriculture and major industry, geographical account of Appalachian Highland, Central Plains
   Unit 4-South America - Physical features, Drainage & Climatic condition & Climatic Regions, agriculture and major industry, geographical account of Pampas, and Amazon Rainforest
  Unit 5-Australia & New Zealand (Oceania) - Physical features, Drainage & Climatic condition & Climatic Regions, agriculture and major industry, geographical account of Dawns grassland, and Great Sandy desert

References-
1. Douglas, L. Johnson.,(2009): World Regional Geography, Tenth edition, Pearson Education Inc, New Jersey.
2. Baker, A. R. H. and Billinge, M. (forthcoming) Geographies of England: the North–South Divide, Imagined and Real (Cambridge)

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3.   Brigham, A. P. 1903 Geographic Influences on American History (Boston)
4.   Brooks, C. E. P. 1926 Climate through the Ages (London).
5.   Hussain, M. (2016) World Geography, Rawat Publications

XLIV. MAJOR COURSE- MJ 7:
FUNDAMENTALS OF REMOTE SENSING & GIS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To explain the meaning, concept, and definition Remote sensing and GIS, as an important tool in the study and explaining geographic phenomenon
2. To familiarise students about satellite remote sensing, data processing and interpretation, classification
3. To aware students about use of GPS and GIS, its principle, working mechanism and applications

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Appreciate the strength and application of remote sensing and GIS
2. Map the resources, their location and availability
3. Apply this knowledge for sustainable development

Course Content:
Unit 1- Remote Sensing: Meaning, Definition & Scope; Development of Remote Sensing; Components and Process of Remote Sensing; EMR Interaction with Atmosphere and Earth Surface;
Unit 2- Remote Sensing Platforms & Sensors, Satellite Imagery Interpretation: Visual & Digital Interpretation Techniques; Elements and Interpretation Keys for Visual Interpretation. (Shape, Size, Colour, Tone, Texture, Association), Image Enhancement Techniques; Application of Remote Sensing
Unit 3- Geography & Geographic Information System: Definition & Development of GIS; Elements and components of GIS, Spatial Data: Elements & Types of Spatial Data; Raster & Vector Data Structures;
Unit 4- Coordinate Systems, Geo- Referencing of Spatial Data, GIS Database: Creation of Spatial & Non-Spatial Data Base;;
Unit 5- Digital Elevation Models (DEM), Basic Principles of Computer Assisted Cartography. Integration of GIS with Remote Sensing & Global Positioning System (GPS)

 Reference Books:
   1. Anji Reddy, M. (2008): Textbook of Remote Sensing and Geographic Information System, B.S. Publication, Hyderabad
   2. Campbell, J. B., (2007): Introduction to Remote Sensing, Guildford Press.
   3. Chauniyal, D.D., (2010): Sudur Samvedan evam Bhogolik Suchana Pranali (Hindi), Sharda Pustak Bhawan, Allahabad.
   4. Jensen, J. R., (2004): Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall Inc., New Jersey.
   5. Jensen, J.R. (2007): Remote Sensing of the Environment: An Earth Resource Perspective, Prentice-Hall Inc., New Jersey.
   6. Joseph, G. (2005): Fundamentals of Remote Sensing, United Press India.
   7. Lillisand, T.M., and Kiefer, P.W., (2007): Remote Sensing and Image Interpretation,6th Edition, John Wiley & Sons, New York.

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XLV. MAJOR COURSE- MJ 8:
PRACTICALS-III: (REMOTE SENSING & GIS)

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students to use satellite remote sensing imagery, data interpretation, ground data verification and classification using computers or manually
2. To make students learn application of GIS, GPS technology, land use and vegetation mapping

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Use and apply methods of remote sensing, GIS and GPS
2. Map the resources, their location and availability and changes
3. Apply technology in solving many real time problems and issues in land use, forestry management

Course Content:
Unit 1- Image Analysis: Principles of Visual Image Interpretation, Recognition Elements and Interpretation Keys for Visual Interpretation. (Shape, Size, Colour, Tone, Texture, Association); Interpretation of a Satellite Image (Landsat, LISS III, LISS IV, Cartosat etc).

Unit 2- Introduction to Digital Image Processing, Image Rectification and Registration, Image Enhancement, Browsing Satellite Data (NRSC, GLCF, Glovis), Image Display, Preparing Mosaic, Layer Stack etc.

Unit 3- True Colour and False Colour Composite Images and Preparation of Interpretation Keys; Mapping Land Use/land Cover with any Software (at least one exercise each on Point, Line and Polygon Features), Vegetation Mapping using NDVI, Supervised and Unsupervised Classification, Accuracy Assessment and Ground Truthing; Digital Elevation Models.

Unit 4- Introduction to GIS Software, Geo-Referencing and Projection, Spatial Data Entry, Editing, Topology Creation and Linking Spatial and Non Spatial Data, Spatial Data Visualization, Output Map Generation

Practical Record: Practical record book- at least one exercise from all the topics.

Reference Books:
1. Chauniyal, D.D., (2010): Sudur Samvedan evam Bhogolik Suchana Pranali (Hindi), Sharda Pustak Bhawan, Allahabad.
2. Jensen, J.R. (2007): Remote Sensing of the Environment: An Earth Resource Perspective, Prentice-Hall Inc., New Jersey.
3. Joseph, G. (2005): Fundamentals of Remote Sensing, United Press India.

SEMESTER V

XLVI. MAJOR COURSE- MJ 9:
ECONOMIC GEOGRAPHY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students about nature, scope and importance of economic geography
2. To explain the concepts of industrial location, various types of economic activities

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Distinguish different types of economic activities and their utilities.
2. Appreciate the factors responsible for the location and distribution of activities.
3. Examine the significance and relevance of theories in relation to the location of different economic activities.

Course Content:
Unit 1- Nature, scope and importance of Economic Geography, Spatial Structure of Economy. Factors Affecting location of Economic Activity with special reference to Agriculture, Industry and Industrial location (Weber's and Losch theory)
Unit 2- Primary Economic Activities: Hunting, Fishing, Food gathering, Agriculture and Mining, Subsistence and Commercial Economic Activities; Fishing ground and aquaculture. Issues and Challenges for the Development of fishing and forestry.
Unit 3- Secondary Activities: Manufacturing, Concept of Manufacturing Regions (Cotton Textile, Iron and Steel), Special Economic Zones and Technology Parks. Knowledge –based Technologies, Electronic age, spatial information Technology, Telecommunication
Unit-4 Tertiary Activities: Transport (Land, Air, Water and Pipelines), Trade (National and International) and Services.
Unit 5- Economic Growth and Development; Definition, concept of Development and Sustainable Development, Human resource development; concept, Measurement, indicators and component;

Reference Books:
1. Alexander, J. W., (1963): Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
2. Bagchi-Sen, S. and Smith, H. L., (2006): Economic Geography: Past, Present and Future, Taylor and Francis.
3. Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. (2000): The New Oxford Handbook of Economic Geography, Oxford Press.
4. Coe, N. M., Kelly P. F. and Yeung H. W., (2007): Economic Geography: A Contemporary Introduction, Wiley-Blackwell.
5. Combes, P., Mayer T. and Thisse, J. F., (2008): Economic Geography: The Integration of Regions and Nations, Princeton University Press.
6. Durand, L., (1961): Economic Geography, Crowell.
7. Hodder, B. W. and Lee, Roger, (1974): Economic Geography, Taylor and Francis

8. Knowles, R. &Wareing, J., (2004): Economic and Social Geography Made Simple, Rupa& Co., Kolkata.
9. Saxena, H.M.,(2013): Economic Geography, Rawat Publications, Jaipur.
10. Siddhartha, K., (2013): Economic Geography, Kisalaya Publications Pvt. Ltd., New Delhi

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XLVII.   MAJOR COURSE- MJ 10:
GEOGRAPHY OF INDIA & JHARKHAND

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students about physical geography of India, its demography, social attributes
2. To explain the concepts of regionalisation on the basis of physiography, socio-cultural and economic characteristics

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Understand the physical profile of the country
2. Study the resource endowment and its spatial distribution and utilization for sustainable development
3. Synthesis and develop the idea of regional dimensions.

Course Content:
Unit 1- Physical: Location, Physiographic Divisions, Climate: characteristics and classification; Soil and Natural vegetation
Unit 2- Population: Distribution and Growth, Structure; Social: Distribution of Population by Race, Caste, Religion, Language, Tribes and their Correlation.
Unit 3- Regionalisation of India: Physiographic (R. L. Singh), Socio-Cultural (Sopher), Economic (Sengupta)
Unit 4- Economic: Mineral and Power Resources: Distribution and Utilization of Iron Ore, Coal, Petroleum, Gas; Agricultural Production of Rice, Wheat, Cotton and Sugarcane; Industrial Development: Industrial Corridors and Industrial Regions.
Unit 5- Regional Account of Jharkhand: Geological structure, Physiography, Drainage, Climate, Natural vegetation, Population and Tribes (Santhal, Oraon, Munda); Economic features: Agriculture, Minerals and Industry -Iron and Steel Industry, Silk, Tourism

Reference Books:
1. Deshpande, C. D., (1992): India: A Regional Interpretation, ICSSR, New Delhi.
2. Douglas, L. Johnson.,(2009): World Regional Geography, Tenth edition, Pearson Education Inc, New Jersey.
3. Johnson, B. L. C., ed. (2001): Geographical Dictionary of India. Vision Books, New Delhi.
4. Khullar, D.R. (2014): India: A Comprehensive Geography, Kalyani Publishers, New Delhi.
5. Majid Husain (2009): Geography of India, Tata McGraw hill Education Private Ltd, New Delhi.
6. Pathak, C. R. (2003): Spatial Structure and Processes of Development in India. Regional Science Assoc., Kolkata.
7. Sdyasuk, Galina and P, Sengupta., (1967): Economic Regionalisation of India, Census of India.
8. Sharma, T.C. (2013): Economic Geography of India. Rawat Publication, Jaipur.
9. Singh R. L., (1971): India: A Regional Geography, National Geographical Society of India.
10. Singh, R. B. and Prokop, Pawel.,(2016): Environmental Geography of South Asia, Springer, Japan.
11. Spate O. H. K. and Learmonth A. T. A., (1967): India and Pakistan: A General and Regional Geography, Methuen.
12. Tirtha, Ranjit (2002): Geography of India, Rawat Publs., Jaipur & New Delhi.
13. Tiwari, R.C. (2007): Geography of India. Prayag Pustak Bhawan, Allahabad
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XLVIII.   MAJOR COURSE- MJ 11:
PRACTICALS-IV:
(INSTRUMENTAL SURVEY AND SOCIO-ECONOMIC PROJECT WORK)

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students about various Instruments, methods, tools and techniques of ground survey
2. To make student learn and apply project development, carrying out primary survey for data collection

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Understand the importance of field work, types of survey and application of instruments for leveling
2. Handle and apply the instrument to measure height, spot height determination techniques
3. Synthesis and develop the idea of project work on the basis of secondary and primary survey.

Course Content:
Unit 1: Importance of field work, Scope and purpose, Types of survey, Principles and applications of selected survey instruments, Plane Table, Plan preparation, Resection method: two-point problem, three-point problem, all methods.
Unit 2: Prismatic Compass: Open and closed traverse, Other smaller instruments: Sextant, Abney Level and Indian Clinometer. Dumpy Level: Traverse Survey, Spot height determination and contour plan preparation,
Unit 3: Theodolite: horizontal and vertical (height) measurement, Accessible and inaccessible method. Survey of selected area, Preparation of base map by the use of surveying instruments.
Unit 4: Socio-economic project work based on primary or secondary data sources

Practical Record:
a. Practical record book- at least one exercise from all the topics.
b. Unit 4- a project report- word count of the report should be about 5,000 to 8,000 excluding figures, tables, photographs, maps, references and appendices

Reference Books:
1. Robinson A.H (1995) Elements of Cartography John Wiley &Sons USA
2. Sarkar A.K.(1997): Practical Geography :A Systematic Approach, Oriental Longman Calcutta
3. Sharma J.P.(2010): Prayogatmak Bhugol,(Hindi) Sahitya Bhawan, Agra
4. Monkhouse F.J and Wilkinson HR (1952) Maps and Diagrams, their Compilations and Concentration, Muthuen & Co. London.

5. Harwel JD, Newson MD. (1973)- Techniques in Physical Geography, Mc. Millan Edu. Ltd. London.

6. Sarkar, A: Practical Geography – A Systematic Approach.

7. R.L. Singh (2010) Practical Geography, Sharada Pustak Bhavan, 11, University Road, Allahabad

8.   Kaanetkar and Kulkarni: Surveying and Levelling, Part-I and Part-II.
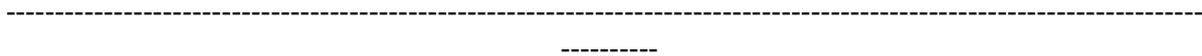
SEMESTER VI

XLIX. MAJOR COURSE- MJ 12:
POPULATION GEOGRAPHY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective
The Learning objective of this course are as follows-
1. To familiarize student with the nature and scope of Population geography.
2. To make students learn about the population change, and its dynamics

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Know the pattern of population change and its dynamics.
2. Understand processes of population growth and its implications.
3. Appreciate the growth, distribution and composition of population in different parts of the world

Course Content:
Unit 1: - Nature and Scope of Population Geography, Population Geography and Demography, Sources of Population Data, Distribution and Density of Population, Distribution and its Pattern in the World, Factors Influencing Distribution of Population in the world.

Unit 2:- Concept of Population Composition, Population Change: Growth of Population in the World and India, Components of Population Change, Fertility, Mortality and Migration, Determinants of Fertility and Mortality, Demographic Transition Theory.

Unit 3:- Migration - Meaning and Types, Causes and Consequences, Theories of Migration – Ravenstein & Lee.

Unit 4:- Population and Resources, Optimum Population, Population Projection, Malthus Population Theory, Population Policy of India

Unit 5- Population-Resource Relationship, Population Resource Regions, Trends of world population and policy

Reference Books:
1. Chandna R.C. (2009), Geography of Population, Kalyani Publicishers, Ansari Road, Daryaganj, N. Delhi-2.

2. Majid Hussain (1999), Human Geography, Rawat Publications, Jaipur.

3. Trewartha GT. (1959) A Geography of Population, World Patterns, John Wiley and Sons Inc. New York.

4. Ghosh BN. (1987) Fundamentals of Population Geography, Sterling Publishing Company, New Delhi

5. R.K. Tripati ((2000) Populaton Geography, Commonwealth Publishers, New Delhi.

6. Kayastha, S.L. (1998) Geography of Population, Rawat Publications, Jaipur.

7. Clerk I (1984) Geography of Population, Approaches and Applications, Pergamon Press, Oxford, UK.

8. Tiwari, Ram Kumar (2015): Jansankhya Bhugol, Prwalika Publication, Allahabad.

9. Hiralal (2007): Jansankhya Bugol Ke Mul Tatwa, Radha Publication, New Delhi.

10. Mourya, S.D. (2011): Jansankhya Bhugol, Sharda Pustak Bhawan, Allahabad.

11. Dubey, K.K. & Singh, M.B. (2001): Jansankhya Bhugol, Rawat Publication, Jaipur.
12. Roy, Debjani (2022) Population Geography, Books and Allied publisher, Kolkata
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L.   MAJOR COURSE- MJ 13:
AGRICULTURAL GEOGRAPHY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective
The Learning objective of this course are as follows-
1. To familiarize student about the nature, scope, significance and approaches of agriculture geography.
2. To make students learn about the determinants of agricultural land use, new trends in Indian Agriculture, food security

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Conceptualize the agriculture and its determinants.
2. Get the overview of Indian agriculture regions and systems.
3. Have sound knowledge of agriculture revolutions and food security

Course Content:
Unit 1- Nature and scope, Significance and development of agricultural geography, Approaches to the study of agricultural geography, Origin and dispersal of agriculture, Sources of agricultural data.
Unit 2- Determinants of agricultural land use – Physical, economic, social and technological, Land holding and land tenure systems, Land reforms
Unit 3- Land use policy and planning, Cropping pattern, Intensity of cropping.
Unit 4- Theories of agricultural location based on several multi-dimensional factors, Von Thunen's model and its recent modifications, Whittlesey's classification of agricultural regions, Agro-climatic regions of India.
Unit 5- Agriculture in India – Land use and shifting cropping pattern, New trends in Indian agriculture, Green Revolution, White Revolution, Blue Revolution, Problems of Indian agriculture, Agricultural Policy of India, Food security

References:
1. Mohammad Shafi (2006): Agricultural Geography, Dorling Kindessley (India) Pv. Ltd. New Delhi.

2. Negi. B.S. (2003) Indian Agriculture: problems, Progress & Prospects, Vikas publishing house Pvt. Ltd. S. Ansari Road, Daryagani, New Delhi-2.

3. Majid Hussain (2000): Agricultural Geography, Ed Anmol Publishing Pvt. Ltd. Ansari Road, Daryagani, New Delhi-2.

4. Shafi M. (1999): Agricultural Geography, Kedarnath Ram Nath, 132, College road, Meetat UP-1.

5. Singh & Dhillion (2000): Agricultureal Geography, Prayag Pustak Bhavan, 20 A, University road, Allahabad-211002, UP.

6. Jasbir singh (2001): Agricultureal geography, Prayog Pustak Bhavan, 20 A, University road, Allahabad-211002, UP.

7. Memonia CB (1998): Aricultural Problems in India: Prayog Pustak Bhavan, 20 A, University road, Allahabad-211002, UP.

8. Majid Husain (2007): Systematic Agricultural Geography, Rawat publications, Jawahar Nagar, Jaipur, N. Delhi-92.

9. Tiwari, R.C., & Singh, B.N. (2015): Krishi Bhugol, Prawalika Publications, Allahabad
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LI.   MAJOR COURSE- MJ 14:
REGIONAL PLANNING AND DEVELOPMENT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective
The Learning objective of this course are as follows-
1. To familiarize the concept of Region and regional planning, Its need and techniques
2. To make students learn about the theories and models for regional planning, Indicators of development, Multi-Purpose Projects

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Identify notable lagging regions and solutions for their overall development
2. Have comprehensive understanding regarding the different regions and application of different models and theories for integrated regional development.
3. Select appropriate indicators for the measurement of socio-economic regional development

Course Content:

Unit 1- concept of Region, Types, hierarchy, characteristics and delineation of Regional planning, Geography of regional planning, concept, scope, methods, techniques and need of regional planning. Regionalization of India for Planning (Agro Ecological Zones)

Unit 2- Theories and Models for Regional Planning: Growth Pole Model of Perroux; Growth Centre Model in Indian Context; Myrdal, Hirschman, Rostow and Friedmann; evaluation of regional disparities/imbalances, method of measuring imbalances

Unit 3- Concept of Development, Indicators of development, problems and issues of development, planning process-sectoral, multi-level, decentralized planning,

Unit 4- Integrated area development (IADP), planning tribal and hill areas, draught prone areas, command areas in watershed, Border area development, Urban Green belt, Planning for metropolitan region

Unit 5- Niti Ayog, Policy and framework; backward regions: identification and its development- a case study- Dandakaranya, North-East region; Multi-Purpose river valley projects- Damodar, Sardar Sarovar Project

Reference Books:
1. Agyeman, Julian, Robert, D. Bullard and Bob, Evans., (Eds.) (2003): Just Sustainabilities: Development in an Unequal World. London: Earth scan. (Introduction and conclusion.).
2. Anand, Subhash.,(2011):Ecodevelopment : Glocal Perspectives, Research India Press, New Delhi.
3. Baker, Susan., (2006): Sustainable Development. Milton Park, Abingdon, Oxon; New York, NY: Routledge (Chapter2," The concept of sustainable development"
4. Blij, H. J. De., (1971): Geography: Regions and Concepts, John Wiley and Sons.
5. Friedmann, J. and Alonso W. (1975): Regional Policy - Readings in Theory and Applications, MIT Press, Massachusetts.
6. Haynes J., (2008): Development Studies, Polity Short Introduction Series.
7. Misra, R. P., Sundaram, K.V. and V.L.S. Prakasa Rao, (1974): Regional Development planning in India, Vikas Publishing House Delhi.
8. Peet, R., (1999): Theories of Development, The Guilford Press, New York.
9. Singh, R.B. (2002): Human Dimensions of Sustainable Development, Rawat Pub., Jaipur, pages
10. UNDP (2001-04): Human Development Report, Oxford University
11. Shukla, J (2016) Regional Planning and Development, Disha Publication, Delhi
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LII.   MAJOR COURSE- MJ 15:
PRACTICALS-V: (PHYSICAL SURVEY PRACTICAL)

Marks: Pr (ESE: 3Hrs) =100	**Pass Marks: Pr (ESE) = 40**

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Course Objective
The Learning objective of this course are as follows-
1. To develop and expose students to an extensive field survey of wider region of India.
2. To make students identify various physical landforms, processes, and their impact on human and biological world

Learning Outcomes:
After the completion of course, the students will have ability to:
1. to conduct an extensive survey of a contiguous wider region of India
2. identify salient landforms, their genesis and their impact on human life, flora and fauna.
3. Carrying out extensive field study outside the class room

Unit 1: Trace the prominent features of the area to be surveyed. Identify the salient landform features of the selected area on a topographical sheet.

Unit 2: Identify the landforms on the surface, while in the field. Also note the agents of erosion, transportation and deposition associated with the landforms.

Unit 3: Identify and classify the biodiversity in the area (Flora and Fauna).

Unit 4: Observe the relationship of various landforms, flora and fauna with land use, settlement, structure and life style of the people.

Note:

1. University/College will provide the requisite fund for conducting the survey

2. Based on observations of the above characteristics, prepare a field survey report. The report need to be supplemented with maps, sketches, diagrams and photographs etc.

3. The practical exercises should aim at identification of micro-geomorphic features on the ground and their relationship to land use/settlement pattern. This is also a training in Report Writing.

4. Two written questions in the practical examination based on the physical survey report-

   a. writing method

b.   physical survey

References-
1. Creswell, J., (1994): Research Design: Qualitative and Quantitative Approaches, Sage Publications, California.
2. Dikshit, R. D. (2003). The Art and Science of Geography: Integrated Readings, Prentice-Hall of India, New Delhi.
3. Dash and Roy, (2022) Field Work In Social Work Education, Atlantic publisher
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SEMESTER VII

LIII.   MAJOR COURSE- MJ 16:
NATURAL RESOURCE MANAGEMENT AND ENVIRONMENTAL GEOGRAPHY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To familiarize the concept of Natural resource management, and its concepts
2. To make students learn about the Ecosystem, its structure, functions and various policy with regard to environmental conservation

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Understand the dynamic interactive relationship between man and environment.
2. Have sound understanding on distribution, utilization and proper management of natural resources at global level.
3. Make assessment and review of planning and policies related to environment and natural resources.

Course Content:
   Unit 1- Environment and Natural Resource Management: Concept, Human-Environment Relationships;
   Unit 2- Ecosystem: Concept, Structure and Functions.
   Environmental Issues in Tropical, Temperate and Polar Ecosystems.
   Unit 3- Natural Resource: Concept, Classification; Distribution, Utilization, Problems and Management of Land, Water Forests and Energy.
   Unit 4- Appraisal and Conservation of Environment and Natural Resources and Sustainable Resource Development.
   Unit 5- Environmental Programmes and Policies – Global, National and Local levels

Reference Books:
1. Chandna, R. C., (2002): Environmental Geography, Kalyani, Ludhiana.
2. Cunninghum, W. P. and Cunninghum, M. A., (2004): Principals of Environmental Science: Inquiry and Applications, Tata Macgraw Hill, New Delhi.
3. Goudie, A., (2001): The Nature of the Environment, Blackwell, Oxford.
4. Holechek, J. L. C., Richard, A., Fisher, J. T. and Valdez, R., (2003): Natural Resources: Ecology, Economics and Policy, Prentice Hall, New Jersey.
5. Miller, G. T., (2004): Environmental Science: Working with the Earth, Thomson Brooks Cole, Singapore.
6. Mitchell, B., (1997): Resource and Environmental Management, Longman Harlow, England.
7. MoEF, (2006): National Environmental Policy-2006, Ministry of Environment and Forests, Government of India.
8. Odum, E. P. et al, (2005): Fundamentals of Ecology, Ceneage Learning India.
9. Saxena, H.M., 2012: Environmental Studies, Rawat Publications, Jaipur.
10. Singh, Savindra., (2001): Paryavaran Bhugol (Hindi), Prayag Pustak Bhawan, Allahabad. (in Hindi)
11. UNEP, (2007): Global Environment Outlook: GEO4: Environment for Development, United Nations

Environment Programme

LIV.   MAJOR COURSE- MJ 17:
SOCIAL AND TRIBAL GEOGRAPHY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To familiarize the about social geography, its concept, nature and scope; migration social categories
2. To make students learn about Tribal geography and its concepts; Tribes and their economic activities, marriage, faith and practices

Learning Outcomes:

After the completion of course, the students will have ability to:-

1. Understand the nature, scope and relationships of geography and human wellbeing;
2. Acquire knowledge on spatial dimensions of social diversity components;
3. Understand the aspects of Tribal geography and tribal socio-economic activities

Course Content:

Unit 1- Social Geography: Concept, Origin, Nature and Scope.
Unit 2- Peopling Process of India: Technology and Occupational Change; Migration.
Unit 3- Social Categories: Caste, Class, Religion, Race and Gender and their Spatial distribution
Unit 4- Tribal Geography- meaning, concept, and scope of tribal geography; Tribes and their habitat- Geographical distribution of Indian tribes, groups and sub-groups; Economic activities; Socio-Political Organization- Family, Marriage and kinship, faith, beliefs and practices,
Unit 5- Tribal rights- Land, forests, water; Emerging social problems- Health and education, malnutrition, illiteracy, Alcoholism; Industrialization and tribe, mining and tribes, displacement

References
1. Ahmed A., 1999: Social Geography, Rawat Publications.
2. Casino V. J. D., Jr., 2009) Social Geography: A Critical Introduction, Wiley Blackwell.
3. Cater J. and Jones T., 2000: Social Geography: An Introduction to Contemporary Issues, Hodder Arnold.
4. Panelli R., 2004: Social Geographies: From Difference to Action, Sage.
5. Rachel P., Burke M., Fuller D., Gough J., Macfarlane R. and Mowl G., 2001: Introducing Social Geographies, Oxford University Press.
6. Smith D. M., 1977: Human geography: A Welfare Approach, Edward Arnold, London.
7. Smith S. J., Pain R., Marston S. A., Jones J. P., 2009: The SAGE Handbook of Social Geographies, Sage Publications.
8. Sopher, David (1980): An Exploration of India, Cornell University Press, Ithasa
9. Valentine G., 2001: Social Geographies: Space and Society, Prentice Hall.

LV.   MAJOR COURSE- MJ 18:
TRANSPORT AND TOURISM GEOGRAPHY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Course Objective:
The Learning objective of this course are as follows-

1. To be aware of the various dimensions of Tourism Geography and make the students aware about various types of tourism

2. To assess sustainable ecotourism and other contemporary forms of tourism

3. To critically evaluate the infrastructure in tourism in India along with reviewing the tourism policy

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Learn the concept of transport, its types and factors
2. Equip with a basic understanding of nature and scope, trends and patterns of various types of tourisms
3. Apply the principles of Geo-tourism and analyse the prospects and problems associated with pilgrimage tourism.

Contents:
Unit- I Nature, scope, significance of and Development of Transport Geography, factors of Development: Physical, Economic, Social, Economic and transport and regional Modes development, relative significance of transport (railways, roadways, Waterways).

Unit- II Accessibility and flow models; network structure, measurement of accessibility, Models of network change, Function, pattern of movement and transport Development.

Unit- III Nature, scope and extent, concept of tourism, Relationship between geography and Tourism, Eco- tourism, Geotourism, Agro-tourism, Heritage Religions tourism and Adventure tourism.

Unit-IV Types of tourism- Domestic and the international, Adventure, wildlife, Pilgrimage, Business, Leisure, Pleasure, and cultural tourism, Local, National and international, Socio-Economic impact of tourism.

Unit-V Infrastructural approach for the development of tourism, Govt. policies for Planning and Promotion of tourism in India, prospect and manning of tourism in India. Case studies: Hill Station – Mount Abu, Shimla, Ooty, Beach points- Kwalum, Goa and Mariano Beach, Historical Centre – Mysore, Jaipur, Delhi, Religious- Puri, Deoghar Tirupati, Kedarnath, Mahakal (Ujjain); Dams- Tehri, Hirakud, Masanjor National Parks-Palamu Tiger reserve, Kanjiranga and Gir.

References-
1. Hagget, F and Chorley; R.J.Network analysis, Edward Arnold, London.1973
2. Raza, M and Agrawal, Y.P., Transport Geography in India. Concept Publication New Delhi, 1985.
3. White, H.P. and Senior, M.L; Transport- Longmon London, 1983.
4. Ulman, E.L. American Commodity flow, University of Washington press, 1957.
5. Bhatia, A.K. (1996) Tourism Development sterling   Publisher, New Delhi.
6. Singh, R.L. and Kashi Nath Singh; Reding in Rural Settlement, Geographers.
7. Sharma , J.K. (2000) Tourism, Plannings, and Development – A New perspective Kanishks.

LVI.   MAJOR COURSE- MJ 19:
PRACTICALS-VI: (ADVANCED CARTOGRAPHY)

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students about methods, tools and techniques of cartography
2. To make student learn and apply principles of map design, thematic mapping techniques and preparation of an Atlas

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Have sound knowledge regarding construction of maps using computers or manual methods.

2. Have proper utilization of maps for the planning and development.

3. Appreciate the preparation of various thematic maps with the application of various techniques.

Course Content:

Part-A (DISCIPLINE BASED MAPPING)

Unit 1- Mapping of Pollution Intensity, Air Quality index, Mapping and measuring traffic density, traffic flow map
Unit 2- Water potential zones (study and its interpretation in India and Jharkhand), simple numerical problems related to determining permeability in the field and laboratory, Ground water flow, Well hydraulics, Mapping religious contour of India (on an outline map of India), Mapping tribal pattern and contour in India and Jharkhand, mapping and analysis of international boundary of India

Part-B (THEMATIC ATLAS- CASE STUDY BASED MAPPING**)**

Unit 3- Principles of Map Design; Cartographic Overlays – Point, Line
     and Areal Data; Diagrammatic Data Presentation – Line, Bar and Circle.
Unit 4- Thematic Mapping Techniques – Properties, Uses and Limitations- Isopleths, Dot,
     Chorochromatic, Proportional Circles
Unit 5- Thematic Maps – Preparation and Interpretation of atlas

Note: -
- Part- B- Case study based Atlas should be prepared (computer aided or Manual) on a specific theme with at least ten plates for any City/Block/District/state of India.
- Prior approval of Department/ College/ BOS should be taken

References:

1. Monkhouse, F. J. and Wilkinson, H. R.,(1973): *Maps and Diagrams*, Methuen, London.

2. Cuff, J. D. and Mattson, M. T., (1982): *Thematic Maps: Their Design and Production*, Methuen Young Books

3. Dent, B. D., Torguson, J. S., and Holder, T. W., (2008): *Cartography: Thematic Map Design* (6th Edition), McGraw Hill Higher Education

4. Kraak, M.J. and Ormeling, F., (2003): *Cartography: Visualization of Geo-Spatial Data*, Prentice-Hall.

SEMESTER VIII

I.   MAJOR COURSE- MJ 20:
GEOMORPHOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students about geomorphic environment, landform development
2. To make student learn and apply geomorphic ideas for water management and environmental degradation

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Learn the geomorphic/ physical environment of the area. It will help in the understanding of geomorphic analysis of landform development
2. Have sound knowledge of geomorphic features which will enable the students in application of geomorphic ideas for water management and environmental degradation
3. It will help the understanding of natural hazard management and various geomorphic applicability

Course Contents-

Unit 1- Defining the field, nature and scope of geomorphology, fundamental concepts, landform evolution, Slope Development and theory

Unit 2- Earth movements- epierogenic, orogenic and symatogenic, climatogentic, plate tectonic and anthropogenic evolution of landforms

Unit 3- Process of landform evolution – concept of gradation, drainage system analysis, morphometric analysis, drainage basin, and channel morphology,

Unit 4- Regional geomorphology of Chotanagpur plateau, Palamu upland, Rajmahal upland, Kolhan Region and denudation chronology

Unit 5- Applied Geomorphology- application of geomorphology to urbanization, agriculture, water resource management, watershed planning and development forestry, regional planning and development, Geomorphic hazard

Reference Books:
1. Ahmad, E (1985) Geomorphology, Kalyani Publishers, New Delhi
2. Bloom, A. L., (2003): Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, New Delhi.
3. Christopherson, R. W. and Birkeland, G. H., (2012) Geosystems: An Introduction to Physical Geography (8th edition), Pearson Education, New Jersey.
4. Das Gupta, A and Kapoor, A.N., (2001) Principles of Physical Geography, S.C. Chand & Company Ltd. New Delhi
5. Dayal, P., (1996) A Text book of Geomorphology. Shukla Book Depot, Patna.
6. Huggett, R.J. (2007) Fundamentals of Geomorphology, Routledge, New York.
7. Kale, V. S. and Gupta A., (2001): Introduction to Geomorphology, Orient Longman, Hyderabad.
8. Khullar, D.R., (2012) Physical Geography, Kalyani Publishers, New Delhi.
9. Singh Savindra(2015): Bhuakriti vigyan ka Swarup, Prayag Pustak Bhawan, Allahabad
10. Strahler, A. H. and Strahler, A N., (2001): Modern Physical Geography (4/E), John Wiley and Sons,

Inc., New York.
11. Summerfield M. A. (2013): Global Geomorphology, Routledge, New York
12. Thornbury, W. D., (2004): Principles of Geomorphology, Wiley, New York.
13. Shukla, J (2016) Geomorphology, Disha International Publishing House, Delhi

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II.   ADVANCED MAJOR COURSE- AMJ 1:
URBAN GEOGRAPHY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students about Urbanization, its patterns and theories
2. To make student learn about urban functions, urban sprawl, urban renewal-policies, Master plan

Course Learning Outcome:

After the completion of course, the students will have ability to:

1. Understand the fundamentals and patterns of urbanization process

2. Learn the functional classification of cities and Central Place Theory

3. Know about policies of urban development of India

Course Content:

Unit 1- Nature and scope of Urban Geography-Definition of Urban Settlements (Towns, Cities and Metro etc.), Attributes of urban places during ancient, medieval and modern period,

Unit 2- Classification of urban settlements on the basis of size and function, Urban growth and theories, Central Place theory of Christaller and Losch, Contribution of Indian scholars to the studies of urban settlements.

Unit 3- Urban Population Density and Land Value Curves- Urban Land Use – Vertical and Horizontal Growth of Cities, Concentric, Zonal and Multiple Nuclei Theories of Urban Structure.

Unit 4- Urban Functions- Basic and Non-Basic- Urban Hierarchy- Rank-Size Rule – Central Place Theory – Functional Classification of Towns by C.D. Harris and H.J. Nelson. Urban Issues & Challenges: Water supply, traffic congestion, solid waste, smog, sewage and drainage system; Slum and housing problems

Unit 5- Concept of City, Region and Urban Hinterland – Urban Sprawl- Urban Slums – Urban Crimes and their Trend s with reference to India- Concept and Issues of Peri-Urbanization. Elements of Urban Planning – Urban Renewal – Policies of Urban Development in India – Master Plans of Ranchi City.

References:

1. Bansal, S.C. (2011): Nagariya Bhogol. Meenakshi Publication, Meeruth.

2. Beanjen-Garnier J&G. Chabot (1967) Urban Geography, Jhonwiley, New York.

3. Johnson James H (1966) Urban Geography – An Introductory Analysis, Pergamon Press Oxford, London.

4. Karen Stromme Christensen (1999) Cities and Complexity, University of California, Berkely USA, Sage Publication, New Delhi.

5. Mandal R.B. (2002) Urban Geography – A Text Book, Concept Publishing Company, New Delhi.

6. Mayer H.M. & Kohn CF (1967) Urban Geography, Central Depot, Allahabad, India

7. Northham Ray M. (1975) Urban Geography, Jhon Wiley & Sons, Inc. New York

8.   Peter Roberts (2000) Urban Regeneration, University of Dundee, U.K., Sage Publication, New Delhi.

9.   Ranan Paddison (2001) Hand Book or Urban Studies, University of Glasgow, U.K., Sage Publications, N. Delhi.

10. Saskia Sassen (2000) Cities in a World Economy, University of Chicago, USA, Sage Publications, New Delhi.

11. Siddartha K & S. Mukherjee (1996). Cities, Urbanization and Urban Systems, Transworld Media and Communication Pvt. Ltd. New Delhi

12. Stephen Ward (2004) Planning and Urban Change, Sage Publications, New Delhi

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III.   ADVANCED MAJOR COURSE- AMJ 2:
SOIL AND HYDROLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students about nature, scope and significance of soil geography
2. To make student learn about soil development, hydrology, hydrological cycle, surface and ground water and its management

Course Learning Outcome:

After the completion of course, the students will have ability to:
1. Study the soil as a basic resource, focusing its distribution, problems and management.
2. Understand the basic components of hydrological cycle and comprehend practices of integrated watershed management.
3. Evaluate the water balancing and river basin and water disputes

Course Contents-

Unit 1- Nature, scope and significance of Soil Geography; its relationship with Pedology, Soil forming factors: parent material, organic, climatic, topographic, Spatio-temporal dimensions, Processes of soil formation and soil development: Physical, Biotic and Chemical. Soil profile.

Unit 2- Soil organism, macro-animals (earthworms, sowbugs, mites, centipedes, rodents and insects), Micro-animals and plants-Nematodes, Protozoa, Rotifers, Fungi, Bacteria, algae and Actinomyces

Unit 3- Physical properties of soils: Morphology, Texture, Structure, Water, Air, Temperature and other properties of soil, Chemical properties of soil and soil reaction, Soil erosion, Degradation and Conservation

Unit 4- Definition and scope of hydrology, importance of water, hydrological cycle, water storages – glaciers, river channels, lakes and reservoirs, soil moisture;

Unit 5- Ground water: characteristics of stream flow, Darcy's law, permeability, infiltration, ground water storage, ground water aquifers in different rock systems, movement and discharge. Water Crisis: a Case study- rural or urban, water management: ground water and surface water

References:

1. Miller, R. W. and Donahue, R. L. (1992): Soils: An Introduction to Soils and Plant Growth, Prentice-Hall of India, New Delhi
2. Brady, N. C., and Weil, R. R. (2008): The Nature and Properties of Soils, Prentice Hall, New Jersey
3. Pitty, A. F. (1978): Geography and Soil Properties, Methuen and Co., London
4. Bridges, E. M. and Davidson, D. A. (1982): Principles and Applications of Soil Geography, Longman Group, London
5. Birkeland, P. W (1999): Soils and Geomorphology, Oxford University Press, New York

6. Govinda Rajan, S.V. and Gopala Rao, H.G.: Studies on soils of India, Vikas, New Delhi, 1978.

7. Raychoudhuri, S.P.: Soils of India, ICAR, New Delhi, 1958.

8. Bunting, B.T.: The Geography of Soils, McGraw Hill, New York.

9. Timothy, Davie. 2003. Fundamentals of Hydrology. Routledge, Taylor and Francis Group, U.K.
10. Todd, D.K. 2009. Groundwater Hydrology. John Wiley & Sons Inc.
11. Mahajan, G. 1989. Evaluation and Development of Groundwater. Ashish Publishing House, New Delhi.
12. Karanth, K.R.C. 1988.Ground Water: Exploration, Assessment and Development. Tata-Mcgraw Hill, New Delhi.

13. Andrew D. Ward and Stanley Trimble. 2004(2nd edition). Environmental Hydrology. Lewis Publishers.

IV.   ADVANCED MAJOR COURSE- AMJ 3:
PRACTICALS-VII: (ADVANCE MAJOR PRACTICAL)

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students about drainage density, drainage texture and stream ordering
2. To make student learn and apply methods of soil testing, planning of satellite and garden town

Course Learning Outcome:

After the completion of course, the students will have ability to:
1. Estimate the soil quality such as soil pH, macro nutrients, identification of soil problems and management.
2. Understand stream ordering techniques, calculation of bifurcation ratio.
3. Evaluate the traffic flow through diagrams, water budget, rainfall dispersion

Course Content:
Unit 1- Stream Ordering (strahller's, Shrew, Horton, Shiedeger's,) Bifurcation ratio, Drainage Density, Drainage Texture, Thalweg, Channel Profiles, Hypsometric Curve, Area-height Diagram, Profiles, block
Unit 2- Study of Soil P_H Value, Nitrogen Content, Phosphorous and Construction of Soil Profiles.
Unit 3- Spherical Diagram, Isopleth, Volumetric or Sten de Geer's method, Traffic Flow Diagram. Regional Pattern of Urbanisation, Planning of Satellite and Garden Town
Unit 4- Water Budget, Rainfall Dispersion Diagram, Ergo graph, Climatograph

Practical Record- exercise on each topic above

References:
1. Andrew. D. ward, and Stanley, Trimble., (2004): *Environmental Hydrology*, 2nd edition, Lewis Publishers, CRC Press.
2. Fetter, C.W. (2005):*Applied Hydrogeology*, CBS Publishers & Distributors, New Delhi.
3. Reddy, K. Ramamohan, Venkateswara Rao,B, Sarala, C., (2014):*Hydrology and Watershed Management*, Allied Publishers.
4. Karanth, K.R., (1988): *Ground Water: Exploration, Assessment and Development,* Tata- McGraw Hill, New Delhi.
5. Lyon, J.G., (2003):*GIS for Water Resource and Watershed Management*, Taylor and Francis, New York.

COURSES OF STUDY FOR FYUGP IN **"GEOGRAPHY" MINOR**

MINOR COURSE-1A
    (SEM-I)

LVII. MINOR COURSE- MN 1A:
INTRODUCTORY GEOGRAPHY

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students about the Earth system, its origin, interior
2. To make student learn about evolution of landforms, structure and composition of atmosphere,
3. To aware about population distribution, human races, religion and languages

Learning Outcomes:
After the completion of the course, the students will have the ability to:
1. Appreciate the fundamental concepts of geography;
2. apply day to day issues in society and its relation with geography
3. to understand population growth, social diversity

Course Content:
Unit 1- Origin of the Earth, Interior structure of the earth, Earthquake and volcanoes
Unit 2- Evolution of landforms- Fluvial, glacial, Aeolian, coastal
Unit 3- Structure and composition of atmosphere, pressure belt and planetary winds and climatic regions
Unit 4- Distribution of human races, religion, language
Unit 5- Distribution, density, and growth of World population

Reference Books;
1. Bloom, A. L., (2003): Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, New Delhi.
2. Singh Savindra (2015): Bhuakriti vigyan ka Swarup, Prayag Pustak Bhawan, Allahabad
3. Christopherson, R. W. and Birkeland, G. H., (2012) Geosystems: An Introduction to Physical Geography (8th edition), Pearson Education, New Jersey.
4. Das Gupta, A and Kapoor, A.N., (2001) Principles of Physical Geography, S.C. Chand & Company Ltd. New Delhi.
5. Chandna, R.C., (2017): Population Geography, Kalyani Publishers, New Delhi.
6. Roy D (2022): Population Geography, 2nd Edition, Books & Allied, Kolkata
7. Daniel, P.A. and Hopkinson, M.F. (1989): The Geography of Settlement, Oliver & Boyd, London.
8. Hassan, M.I. (2005): Population Geography, Rawat Publications, Jaipur
9. Hussain, Majid., (2012): Manav Bhugol, Rawat Publications, Jaipur
10. Shukla, J (2016) Geomorphology, Disha International Publishing House, Delhi

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LVIII. MINOR COURSE- MN 1A PR:
MINOR PRACTICALS-1A PR

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:
Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students about the concept of scale, RF
2. To make student learn about topographical maps, conventional sign and interpretation

Learning Outcomes:
After the completion of the course, the students will have the ability to:
1. Appreciate the concepts of scale, RF;
2. apply information from topographical maps
3. to understand conventional signs and symbols

Course Content:
Unit 1- Scale- simple linear scale and RF
Unit 2- Study of Topographical Maps- Conventional signs and Interpretation (one each- hilly/plain area)

Practical Record:
A Project File comprising at least one exercise each, on scale and interpretation of topographic sheet

Reference Books;
1. Anson, R., and Ormelling F. J., (1994): International Cartographic Association: Basic Cartographic, Vol.Pregmen Press.
2. Singh, Gopal., (1998): Map Work and Practical Geography (4th Edition), Vikas Publishing House, Ahmedabad.
3. Gupta, K.K. and Tyagi V.C., (1992): Working with Map, Survey of India, DST, New Delhi.
4. Kraak, M.J., (2010): Cartography: Visualization of Geospatial Data (3rd edition), Pearson Education Ltd., London.

MINOR COURSE-1B
    (SEM-III)

LIX.   MINOR COURSE- MN 1B:
GEOGRAPHY OF INDIA AND JHARKHAND

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objective:
The Learning objective of this course are as follows-
1.   To familiarise students about the physical features, climate and vegetation of India and Jharkhand
2.   To make student learn about economic, and agricultural features of India and Jharkhand

Learning Outcomes:
After the completion of course, the students will have ability to:
1.   Understand the physical profile of the India and Jharkhand
2.   Study the resource endowment and its spatial distribution and utilization
3.   Synthesize and develop the idea of regional dimensions.

Course Content:
Unit 1- India: Physiographic Divisions, seasons, drainage, Soil and Natural vegetation
Distribution of Population by Race, and Language of India.
Unit 2- Economic features of India: Mineral and Power Resources: Distribution and Utilization of Iron Ore, Coal, Petroleum, Gas;
Unit 3- Agricultural Production of Rice, Wheat; Industrial Corridors and Industrial Regions of India
Unit 4 Regional Account of Jharkhand: Physiography, Drainage, Climate, natural vegetation, Population and tribes (Santhal, Oraon, Munda);
Unit 5- Economic features of Jharkhand: Agriculture, minerals and industry -iron and steel industry, silk; Tourism

Reference Books:
1.   Deshpande, C. D., (1992): India: A Regional Interpretation, ICSSR, New Delhi.
2.   Johnson, B. L. C., ed. (2001): Geographical Dictionary of India. Vision Books, New Delhi.
3.   Khullar, D.R. (2014): India: A Comprehensive Geography, Kalyani Publishers, New Delhi.
4.   Majid Husain (2009): Geography of India, Tata McGraw hill Education Private Ltd, New Delhi.
5.   Mandal, R. B. (ed.), (1990): Patterns of Regional Geography An International Per.. Vol. 3 Indian Perspective.
6.   Pathak, C. R. (2003): Spatial Structure and Processes of Development in India. Regional Science Ass., Kolkata.
7.   Sharma, T.C. (2013): Economic Geography of India. Rawat Publication, Jaipur.
8.   Singh R. L., (1971): India: A Regional Geography, National Geographical Society of India.
9.   Singh, Jagdish., (2003): India - A Comprehensive & Systematic Geography, Gyanodaya Praka, Gorakhpur.

LX.   MINOR COURSE- MN 1B PR:
MINOR PRACTICALS-1B PR

Marks: Pr (ESE: 3Hrs) = 25   **Pass Marks: Pr (ESE) = 10**

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:
Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students about methods, tools and techniques of mapping
2. To make student learn and apply thematic mapping techniques and preparation of maps

Learning Outcomes:

After the completion of course, the students will have ability to:

1. Have sound knowledge regarding elements of maps, methods to draw maps.

2. Have proper utilization of maps for the planning and development.

3. Appreciate the preparation of various thematic maps with the application of various techniques.

Course Content:
Unit 1- Thematic Mapping Techniques – Properties, Uses and Limitations; Areal Data -- Choropleth, Dot, Proportional Circles; Point Data – Isopleths.
Unit 2- Diagrammatic Data Presentation – Line, Bar and Circle; Cartographic Overlays – Point, Line and Areal Data. Thematic Maps – Preparation and interpretation

Practical Record: Practical record book- at least 5 plates/maps of any area- district/ state of India (computer aided or manual) based on secondary data should be prepared and interpreted using above techniques

Reference Books
1. Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books
2. Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), Mcgraw-Hill Higher Education
3. Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi. Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice- Hall.
4. Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi. Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers, Meerut.
5. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers. Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
6. Tyner J. A., 2010: Principles of Map Design, The Guilford Press

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MINOR COURSE-1C
(SEM-V)

LXI. MINOR COURSE- MN 1C:
ENVIRONMENTAL GEOGRAPHY & SUSTAINABLE DEVELOPMENT

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students about structure, function of ecosystem, environmental problems
2. To make student learn about sustainable development,

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Appreciate the structure and functions of ecosystems with examples
2. Understand the environmental problems and relevant management strategies
3. Understand the sustainable development, good governance, national environmental policy

Course Content:
Unit 1- Environmental Geography: Concepts and Approaches; Ecosystem – Concept and Structure; Ecosystem Functions.
Unit 2- Environmental Problems and Management: Air Pollution; Solid and Liquid Waste; Biodiversity Loss
Unit 3- Sustainable Resource Development: Definition, Components and Limitations
Unit 4- The Millennium Development Goals: National Strategies and International Experiences
Unit 5- Sustainable Development Policies and Programmes: The proposal for SDGs at Rio+20; SDGs; Principles of Good Governance; National Environmental Policy

Reference Books:
1. Anand, Subhash (2010) Solid Waste Management, Mittal Publication, New Delhi.
2. Casper, J.K. (2010) Changing Ecosystems: Effects of Global Warming. Info base Pub. New York.
3. Kumaraswamy K., Alagappa Moses A., and M. Vasanthy (2018) Glimpses of Environmental Sciences, Notion Press, Chennai.
4. Miller, G.T. (2007) Living in the Environment: Principles, Connections, and Solutions, Brooks/ Cole Cengage Learning, Belmont.
5. Agyeman, Julian, Robert D. Bullard and Bob, Evans., (Eds.) (2003): Just Sustainabilities: Development in an Unequal World. London: Earthscan. (Introduction and conclusion.).
6. Ayers, Jessica and David, Dodman., (2010): "Climate change adaptation and development I: the state of the debate". Progress in Development Studies 10(2): 161-168.
7. Baker, Susan., (2006): Sustainable Development. Milton Park, Abingdon, Oxon; New York, N.Y.: Routledge.
8. Lohman, Larry., (2003):Re-imagining the population debate, Corner House Briefing.

LXII. MINOR COURSE- MN 1C PR:
MINOR PRACTICALS-1C PR

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

Practicals:

Course Objective:
The Learning objective of this course are as follows-
1. To explain the concept of quantitative information in Geographical study.
2. To explain the importance and sources of data
3. To familiarise students about methods of graphic data representations

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Use statistical methods and techniques in geographical analysis
2. Understand quantitative data, graphical data representation.
3. Understand ways and sources of primary and secondary data

Course Content:
Unit 1- Sources of Data- primary, secondary; Measures of central tendency- Mean, median and mode
Unit 2- Graphic representation- histogram, Ogive, polygons

Reference Books:
1. Mahmood A., 1977: Statistical Methods in Geographical Studies, Concept. Pal S. K., 1998: Statistics for Geoscientists, Tata McGraw Hill, New Delhi.
2. Sarkar, A. (2013) Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi
3. Silk J., 1979: Statistical Concepts in Geography, Allen and Unwin, London. Spiegel M. R.: Statistics, Schaum's Outline Series.
4. Yeates M., 1974: An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.
5. Shinha, Indira (2007) Sankhyiki bhugol. Discovery Publishing House, New Delhi

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MINOR COURSE-1D   (SEM-VII)

LXIII. MINOR COURSE- MN 1D:
CLIMATE CHANGE VULNERABILITY AND ADAPTATION

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students about climate change, global warming
2. To make student learn about vulnerability, adaptation and mitigation to climate change

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Understand the foundational concepts of climate change and its impacts.
2. Assess the human and environmental vulnerability to climate change.
3. Learn the various adaptation and mitigation for reducing the impacts of climate change and national action plan.

Course Content:
Unit 1- Climate Change: Understanding Climate Change; Greenhouse Gases and Global Warming; Global Climatic Assessment- IPCC
Unit 2- Climate Change and Vulnerability: Physical Vulnerability; Economic Vulnerability; Social Vulnerability
Unit 3- Impact of Climate Change: Agriculture and Water; Flora and Fauna; Human Health
Unit 4- Adaptation and Mitigation: Global Initiatives with Particular Reference to South Asia.
Unit 5- National Action Plan on Climate Change; Local Institutions (Urban Local Bodies, Panchayats)

Reference Books:

1. IPCC (2014): Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
2. OECD (2008): Climate Change Mitigation: "What do we do?" (Organisation and Economic Co-operation and Development).
3. Sen, Roy, S., and Singh, R.B., (2002): Climate Variability, Extreme Events and Agricultural Productivity in Mountain Regions, Oxford & IBH Pub., New Delhi.
4. Singh, M., Singh, R.B., and Hassan, M.I., (Eds.) (2014): Climate change and biodiversity, Proceedings of IGU Rohtak Conference, Volume 1. Advances in Geographical and Environmental Studies, Springer
5. Singh, R.B., Mal, Suraj, and Huggel, Christian (2018): Climate Change, Extreme Events and Disaster Risk Reduction, Springer, Switzerland, pages 309.

LXIV. MINOR COURSE- MN 1D PR:
MINOR PRACTICALS-**1D PR**

Marks: Pr (ESE: 3Hrs) = 25   **Pass Marks: Pr (ESE) = 10**

(Credits: Practicals-01) **30 Hours**
Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:

Course Objective:
The Learning objective of this course are as follows-
1. To familiarise students to use satellite remote sensing imagery, data interpretation
2. To make students learn application of GIS, GPS technology

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Use and apply methods of remote sensing, GIS and GPS
2. Apply technology in solving many real time problems and issues

Course Content:
Unit 1- Remote sensing- Definition, types and its application; platform and sensor, TCC, FCC and satellite (Landsat and IRS) image interpretation, Land Use /Land Cover mapping

Unit 2- GIS: Definition, Components and its Application, Raster and Vector Data Structure,

creation of vector data- point, line, polygon; Global Positioning System (GPS) – Principles and Uses, waypoint collection using handheld GPS or mobile phone (geotagging)

Practical Record: A file of practical record should be prepared consisting exercises from each topic above

References-
1. Bhatta , B., (2008): *Remote Sensing and GIS*, Oxford University Press, New Delhi.
2. Campbell, J. B., (2007): *Introduction to Remote Sensing*, Guildford Press
3. Chauniyal, D., (2010): *Sudur Samvedana Avam Bhaugolik Suchna Pranali*, Sharda Pustak Bhawan, Allahabad.
4. Hord R.M.,(1989): *Digital Image Processing of Remotely Sensed Data*, Academic, New York.
5. Jensen, J. R., (2005): *Introductory Digital Image Processing: A Remote Sensing Perspective*, Pearson Prentice-Hall.
6. Jensen, J. R.,(2007): *Remote Sensing of the Environment: An Earth Resource Perspective*, Prentice-Hall Inc, New Jersey.
7. Joseph, G.,(2005): *Fundamentals of Remote Sensing,* United Press India.

FYUGP

SANSKRIT HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented from 3rd Semester of Academic Session 2022-26

& From 1st Semester of Session 2023-27 Onwards

स्नातकोत्तर संस्कृतविभागः, राँची विश्वविद्यालयः
राँची - 834008 (झारखण्ड)

Post-Graduate Department of Sanskrit
Ranchi University, Ranchi - 834008 (Jharkhand)

Ref. No. : ....

Date : 30.05.2023

Meeting of Board of Studies (Sanskrit)

Meeting of Board of Studies FYUGP (NEP) Under Graduate Syllabus as per guidelines of Ranchi University, Ranchi

1. Chairman

    Prof. Archana Kumari Dubey
    Head, University Department of
    Sanskrit, Ranchi University, Ranchi

2. Internal Members

    (i)   Dr. Madhulika Verma
           University Department of Sanskrit,
           Ranchi University, Ranchi

    (ii)   Dr. Usha Toppo
          University Department of Sanskrit,
          Ranchi University, Ranchi

    (iii)   Dr. Shreeprakash Singh
          University Department of Sanskrit,
          Ranchi University, Ranchi

    (iv)   Dr. Bharti Dwivedi
          University Department of Sanskrit,
          Ranchi University, Ranchi

    (v)   Dr. Savita Oraon, Department of Sanskrit, RWC, Ranchi

    (vi)   Dr. Himawati Binha Department of Sanskrit, J.N.College, Dhurwa

    (vi)   Mr. Rahul Kumar, Marwari College, Ranchi

3. External Members

    (i)   Prof. C.K. Shukla (Rtd.)
         Ex-Dean & Head, Department of Sanskrit, Ranchi University, Ranchi.

    (ii)   Dr. Mina Shukla (Rtd.)
         Ex-Head, Department of Sanskrit, Ranchi University, Ranchi

    (iii)   Dr. Shailesh Kumar Mishra
         Sanskrit Mahavidyalaya
         Vinoba Bhave University, Hazaribagh

DIRECTOR
IQAC, RANCHI UNIVERSITY
RANCHI-834 001

(Prof. Archana Kumari Dubey)
Head
Department of Sanskrit
Ranchi University, Ranchi

3.संस्कृत विभाग
राँची विश्वविद्यालय, राँची

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Table of Content

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Students are Instructed to

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Refer Syllabus of Allied/ Opted Subjects from R.U. Website

HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1st of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:
  - m) Odd Semester: **From first Monday of August to third Saturday of December**
  - n)Even Semester: **From first Monday of January to third Saturday of May**
- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.

Upgraded & Implemented for 3rd Semester of Session 2022-26 & Onwards

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
  - ➢ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
  - ➢ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
  - ➢ Bachelor's Degree after a 3-year (6 semesters) programme of study,
  - ➢ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
  - ➢ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

m) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.

One credit for Theory   = 15 Hours of Teaching i.e., 15 Credit Hours
One credit for Practicum   = 30 Hours of Practical work i.e., 30 Credit Hours

n) For credit determination, instruction is divided into three major components:

Hours (L) – Classroom Hours of one-hour duration.
Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.
- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester Universiy Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

lx.   The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

lxi.   No student will be detained in odd Semesters (I, III, V & VII).

lxii.   To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

lxiii. To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

lxiv.   To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

lxv.   However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

lxvi.   Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

lxvii. To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year.

lxviii. A student has to pass in minimum 3 papers out of the total 4 papers.

lxix.   It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result of the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)													
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)													
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree													
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4
Exit Point: Bachelor's Degree with Hons. /Hons. with Research												**160**	**224**

Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

Upgraded & Implemented for 3rd Semester of Session 2022-26 & Onwards

COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME   2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	AEC-1	Language and Communication Skills (MIL 1 - Sanskrit/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Sanskrit)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4
IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2
	VAC-2	Value Added Course-2	2

Upgraded & Implemented for 3rd Semester of Session 2022-26 & Onwards

	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4
	RC/	Research Internship/Field Work/Dissertation OR	12/
	AMJ-1 AMJ-2 AMJ-3	Advanced Major paper-1 (Disciplinary/Interdisciplinary Major) Advanced Major paper-2 (Disciplinary/Interdisciplinary Major) Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	4 4 4
		Total Credit	**160**

Upgraded & Implemented for 3rd Semester of Session 2022-26 & Onwards

NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	xiii. Discipline/ Interdisciplinary courses and xiv. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64
Minor	xiii. Discipline/ Interdisciplinary courses and xiv. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Upgraded & Implemented for 3rd Semester of Session 2022-26 & Onwards

Semester	Double Major Courses		Credits
	Code	Papers	
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:

AEC	Ability Enhancement Courses
SEC	Skill Enhancement Courses
IAP	Internship/Apprenticeship/ Project
MDC	Multidisciplinary Courses
MJ	Major Disciplinary/Interdisciplinary Courses
DMJ	Double Major Disciplinary/Interdisciplinary Courses
MN	Minor Disciplinary/Interdisciplinary Courses
AMJ	Advanced Major Disciplinary/Interdisciplinary Courses
RC	Research Courses

AIMS OF BACHELOR'S DEGREE PROGRAMME IN SANSKRIT

Broad objectives of the Curriculum for Sanskrit:

1. Introduction to Contents of Sanskrit: Offering learning opportunities to orient the students towards the scientific and humanistic study of the Sanskrit language.
2. Conversational Sanskrit: Creating a language environment for students to acquire the language skills assessed by their conversation and usage of the language.
3. Personality Development: Help shaping cognitive, affective and behavioral abilities of students for building responsible academic professionals and researchers.
4. Social relevance: Infusing the notion of Seva (service) in the students to be able to take part in social transformation.
5. Contextualization of Ancient Wisdom: knowing the application of ancient Indian wisdom in contemporary problem-solving situations.
6. Best of the Past: Imparting knowledge of basic living and concepts from ancient literature which is timeless and still applicable to the society.
7. Life Skills: Facilitating acquisition of basic skills in major areas of application e.g. leadership, communication, research aptitude, behavioral modification etc.
8. Inculcation of Ethics and Moral Values: Developing a strong sense of ethical and moral aptness in general and in the context of learning and its assessment in particular.
9. Intellectual Capacity Building: Helping students master the basic analytical & critical thinking and communicative competencies.
10. Multi-cultural living: Developing respect for social diversity and increasing social and cultural relevance learning.
11. Indigenous life style: Imparting knowledge of Indian calendar, cultural events, food culture, life style etc for practicing a more indigenous lifestyle.
12. ICT for Sanskrit: introducing ICT tools for learning and educating Sanskrit to other aspirants.

PROGRAM LEARNING OUTCOMES

The broad programme learning outcomes of Commerce:

1. The expectations society in general has from a person who has acknowledgedly studied Sanskrit even at the graduate level (or any further level for that matter) is different when compared to graduates of other disciplines is quite different and high. For example, among a group of lay persons, if persons of the group come to know that one of them has studied Sanskrit then, many a times, he is encountered with questions about various aspects of Indian culture, heritage the epics and Purana-s and so on.

2. Many a times such a person is expected to clear doubts persons have with regard to various dimensions of the stories of the epics like Ramayana, Mahabharata or the significance of events conducted as part of the festivals and auspicious days and even mundane practices like Adorning one's forehead with 'kum-kum' and such aspects not to mention people's obsession with astrology that people generally believe to fore-tell their future.

3. They are also expected to behave in a highly cultured manner with good manners and etiquette, for, otherwise, there is a high chance of people remarking 'despite studying Sanskrit, he / she does not behave in a benefiting manner'.

4. Thus the study of Sanskrit, in ideal conditions, greatly influences their persona, and instills a sense of confidence and poise, and also the capability to speak with confidence about a wide range of issues, with authority.

5. These issues include the aspects mentioned above like epics like Ramayana, Mahabharata, Indian philosophical systems, Yoga and Ayurveda and so on.

The learning outcome may be summarized as given in the diagram given below:

Learning Outcomes

- Capacity to appreciate the need to have alternative perspectives in Sanskrit
- Understand and explain the contemporary relevance and utility of the Indian knowledge systems.
- Capacity to validate the process of knowledge acquisition and dissemination and get rid of the errors therein.
- Assist in evolving strategies to address issues in traditional Indian educational paradigms
- Disseminate the utilities of indigenous Indian perspective with regard to imparting of education.
- Engage in Developing insights about the evolution of his personality into a well-rounded and complete one

Upgraded & Implemented for 3rd Semester of Session 2022-26 & Onwards

THE DIFFERENT KNOWLEDGE SYSTEMS OF SANSKRIT

ॐ

वेदाः

| ऋग्वेदः | यजुर्वेदः | सामवेदः | अथर्ववेदः |

उपवेदाः

| आयुर्वेदः | धनुर्वेदः | गान्धर्ववेदः | अर्थशास्त्रम् |

अङ्गानि

| शिक्षा | व्याकरणम् | छन्दः | निरुक्तम् | ज्यौतिषम् | कल्पः |

उपाङ्गानि

| मीमांसा | न्यायविस्तरः | पुराणम् | धर्मशास्त्रम् |
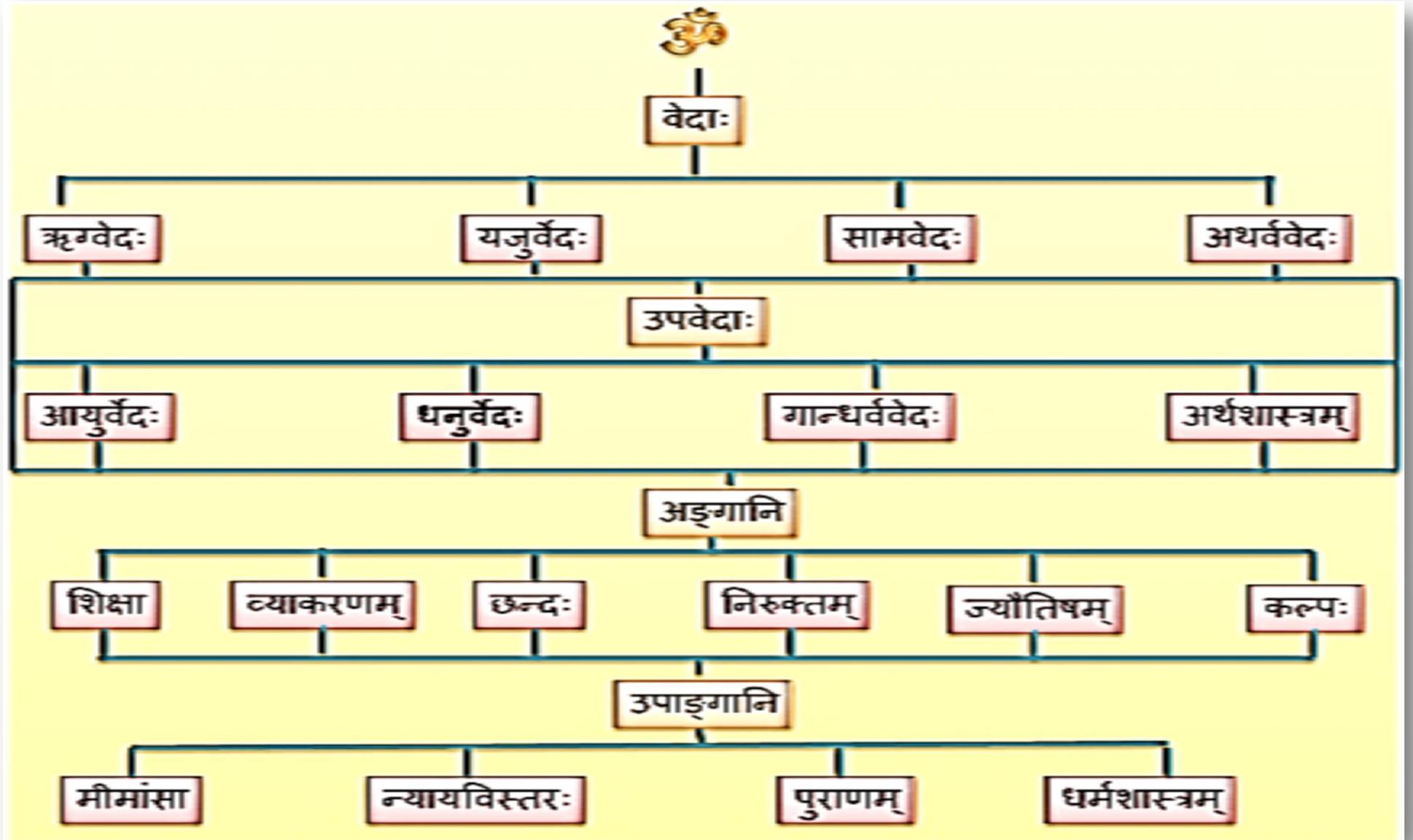
DIFFERENT CATEGORIES OF CLASSICAL SANSKRIT LITERATURE
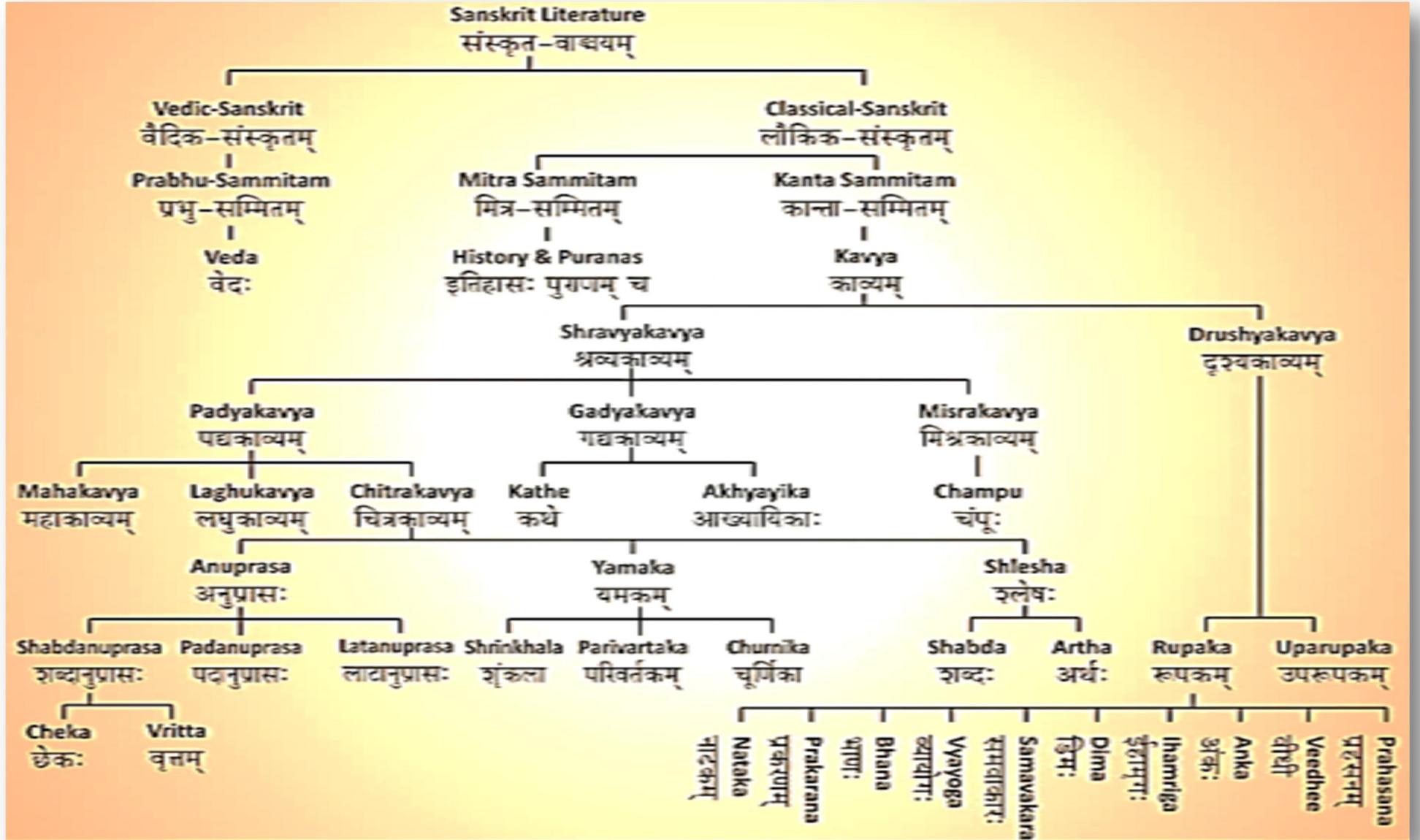
SEMESTER WISE COURSES IN SANSKRIT MAJOR-1 FOR FYUGP   **2022**
onwards

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Courses			Examination Structure		
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	l a—r i | l kfgR ,oaaO kdj.k ¼fUkçdj.k½ vuqoknkfn½	4	25	75	---
II	MJ-2	l a—r l kfgR dk bfrgkl ,oal a&çdj.k	4	25	75	---
	MJ-3	l a—r x|l kfgR ,oavuqokn	4	25	75	---
III	MJ-4	l a—r ukVîl kfgR ,oaaO kdj.k	4	25	75	---
	MJ-5	l a—r uhfrl kfgR ,oal ekl &çdj.k	4	25	75	---
IV	MJ-6	dkO'kkL= ,oaNUn'kkL=	4	25	75	---
	MJ-7	ofnd l kfgR dk bfrgkl ,oaofnd l äv]fucU/k	4	25	75	---
	MJ-8	Hkkjrh; ukfLrd n'kZu dk l ekU; ifjp;	4	25	75	---
V	MJ-9	Hkk"kk&foKku	4	25	75	---
	MJ-10	Hkkjrh; l a—fr ,oajktuhfr	4	25	75	---
	MJ-11	Jhen~Hkxonxhrk] dBksifu"kn~,oavuqokn	4	25	75	---
VI	MJ-12	l a—r Hkk"kk&foKku ,oaaO kdj.k	4	25	75	---
	MJ-13	dkO&'kkL=	4	25	75	---
	MJ-14	ofnd l äv]fu#ä ,oaikf.kuh; f'k{kk	4	25	75	---
	MJ-15	Hkkjrh; n'kZu dk l ekU; ifjp;	4	25	75	---
VII	MJ-16	vk/kfud Hkkjrh; n'kZu ijEijk	4	25	75	---
	MJ-17	Hkkjrh; /keZ'kkL=	4	25	75	---
	MJ-18	onkUrl kj ,oaardHkk"kk	4	25	75	---
	MJ-19	dkaVy ,oal a—r	4	25	75	---
VIII	MJ-20	egkHkk"; ,oaofndh çfØ; k	4	25	75	---
	AMJ-1	ikpkR dkO'kkL= dk bfrgkl ¼eqk çofUk.k k½,oa vjLrwdk dkO'kkL=	4	25	75	---
	AMJ-2	egkdkO	4	25	75	---
	AMJ-3	vk/kfud l a—r l kfgR	4	25	75	---
	or RC-1	Research Methodology	4	25	75	---

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

	RC-2	Project Dissertation/ Research Internship/ Field Work	8	---	---	200
		Total Credit	**92**			

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Skill Enhancement Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	vk¸oß]i;kÍj.,oa;kx	3	---	75	---
II	SEC-2	T;ksfr"kÍkkL= vkÍ§ okLrqÍkkL=	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	**9**			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Minor Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	uhfrlkfgR;	4	25	75	---
III	MN-1B	la—rlkfgR; dk bfrgkl	4	25	75	---
V	MN-1C	i|lkfgR;	4	25	75	---
VII	MN-1D	ukVîlkfgR;	4	25	75	---
		Total Credit	**16**			

Table 10: Semester wise Course Code and Credit Points for Elective Courses:

Semester	Language Elective Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
III	AEC-3	la—r dk lekU; Okdj.,oaHkk"kk y{ku	2	---	50	---
IV	AEC-4	Hkk"kk&dkSky]lfUkjfucUkkfn	2	---	50	---
		Total Credit	**6**			

INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There will be Only One Semester Internal Examination in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

M. (SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

N. (SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Conversion of Attendance into score may be as follows:

Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

S. (ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

T. (ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

U. (ESE 100 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

Subject/ Code

F.M. =10   **Time**=1Hr.   Exam Year

General Instructions:

xxxi. **Group A** carries very short answer type compulsory questions.

xxxii.   **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.

xxxiii.   Answer in your own words as far as practicable.

xxxiv.   Answer all sub parts of a question at one place.

xxxv.   Numbers in right indicate full marks of the question.

Group A

19.   [5x1=5]

xxxi.   ....
xxxii.   ....
xxxiii.   ....
xxxiv.   ....
xxxv.   ....

Group B

20. ....   [5]
21. ....   [5]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **20 Marks**:

Subject/ Code

F.M. =20   **Time**=1Hr.   Exam Year

General Instructions:
xxxi. **Group A** carries very short answer type compulsory questions.
xxxii.   **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
xxxiii.   Answer in your own words as far as practicable.
xxxiv.   Answer all sub parts of a question at one place.
xxxv.   Numbers in right indicate full marks of the question.

Group A

25.   [5x1=5]

xxxi.   ....
xxxii.   ....
xxxiii.   ....
xxxiv.   ....
xxxv.   ....

26. ....   [5]

Group B

27. ....   [10]
28. ....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION
Question format for **50 Marks**:

<table>
<tr><td colspan="3" align="center">Subject/ Code</td></tr>
<tr><td>F.M. =50</td><td align="center">Time=3Hrs.</td><td align="right"><u>Exam Year</u></td></tr>
</table>

General Instructions:

xi. **Group A** carries very short answer type **compulsory** questions.

xii. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.

xxi. Answer in your own words as far as practicable.

xxii. Answer all sub parts of a question at one place.

xxiii.Numbers in right indicate full marks of the question.

Group A

37.   [5x1=5]

       xxxi.   ....

       xxxii.   ....

       xxxiii.   ....

       xxxiv.   ....

       xxxv.   ....

Group B

38. ....   [15]

39. ....   [15]

40. ....   [15]

41. ....   [15]

42. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **60 Marks**:

<table>
<tr><td colspan="3" align="center">Subject/ Code</td></tr>
<tr><td>F.M. =60</td><td align="center">Time=3Hrs.</td><td align="right"><u>Exam Year</u></td></tr>
</table>

General Instructions:

xiii. **Group A** carries very short answer type **compulsory** questions.

xiv. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.

xxi. Answer in your own words as far as practicable.

xxii. Answer all sub parts of a question at one place.

xxiii.Numbers in right indicate full marks of the question.

Group A

49.   [5x1=5]

       xxxi.   ....

       xxxii.   ....

       xxxiii.   ....

       xxxiv.   ....

       xxxv.   ....

50. ....   [5]

51. ....   [5]

Group B

52. ....   [15]

53. ....   [15]

54. ....   [15]

55. ....   [15]

56. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **75 Marks**:

Subject/ Code

F.M. = 75   **Time**=3Hrs.   Exam Year

General Instructions:
xiii. **Group A** carries very short answer type **compulsory** questions.
xiv. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xxi. Answer in your own words as far as practicable.
xxii. Answer all sub parts of a question at one place.
xxiii. Numbers in right indicate full marks of the question.

Group A

55.   [5x1=5]

    xxxi.   ....
    xxxii.   ....
    xxxiii.   ....
    xxxiv.   ....
    xxxv.   ....

56. ....   [5]
57. ....   [5]

Group B

58. ....   [15]
59. ....   [15]
60. ....   [15]
61. ....   [15]
62. ....   [15]
63. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

Subject/ Code

F.M. = 100   **Time**=3Hrs.   Exam Year

General Instructions:
xiii. **Group A** carries very short answer type **compulsory** questions.
xiv. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xxi. Answer in your own words as far as practicable.
xxii. Answer all sub parts of a question at one place.
xxiii. Numbers in right indicate full marks of the question.

Group A

7.   [10x1=10]

    xxxi.   ....   vi.   ....
    xxxii.   ....   vii.   ....
    xxxiii.   ....   viii.   ....
    xxxiv.   ....   ix.   ....
14. ..xxxv..::...............   x   ....   [5]
15. ....   [5]

Group B

40. ....   [20]
41. ....   [20]
42. ....   [20]
43. ....   [20]
44. ....   [20]
45. ....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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SEMESTER I

XII. MAJOR COURSE –MJ 1:
संस्कृत पद्यसाहित्य एवं व्याकरण (सन्धिप्रकरण, अनुवादादि)

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) Theory: 60 Lectures

म्ís; &
1. y{; xÙÍÍkÙadh v/;u fof/k dk Kku nsukA
2. fo"k dsçLrqhdj.k dk Kku djukA
3. Ofä Ro eadr Ø fu"Bk dl fLuoOsk djukA
4. Okdj.k'kkL= dk lmekU ifjp; nsukA
5. l a—r Hkk"kk&y{kku dk vH;kl djukA

vodkÙk&
1. y{; xÙÍÍkÙadh v/;u fof/k lsNk= ifjfpr gksldaxs¼yÙyakj]Nuh]Okdjf.kd fVÍli.k]vuqkn]vÙb; vkfn dk Kku ½
2. l EHkk"k.k&dkSky ,oaay{ku dh{krk fodfl r gkxhA
3. Nk= dRØ fu"B cusaxsA
4. Nk= l fuUÍkfoPNu dj nh?kZÍokÙD;a dks ljy cuk l dxsA

bÙÍkbÙÍ å & 1 i| l kfgR; dk mmHÙko ,oafodkl
1. j?kquke]-f}rh; l xZ¼1 l s25 'ykd½   10
    Ok[; ku
2. fdjkrktqh; e]-çÍke l xZ¼1 l s25 'ykd½   10
    Ok[; ku
3. imÙeZÙknmme~¼1 l s25 'ykd½   10
    Ok[; ku
4. f'k'kqiky o/ke]-çÍke l xZ¼1 l s25 'ykd½   10
    Ok[; ku

   bÙÍkbÙÍ å & 2 l k&k çdj.k
1. Okdj.k'kkL= dk mmHÙko o fodkl   & l a{kkr&ifjp; A   2
           Ok[; ku
2. ekgs'oj l ¥v,oaçR;kgkjksadk ifjp; ek=   10
        Ok[; ku
3. ikfjHkkf"kd 'kCn &
4. çkfrikfnd] l Ecl kj.k] l afgrk] xqk] of)] unh] f?k] mi/kk] vä] xfr] in] fokHkk"kk] l o.kZ] fV] çx`ä]
       l oZuke LFkku] fu"Bk] ykskA
5. 'kCn : lk & jke] yrk] unh] xÙe] e/kq l kkW oksZ l f[kA   2
          Ok[; ku
6. /kkrq : i & HkÍw wLkÍ—A
7. vuqkn & l a—r l sfgUnh rÍkk fgUnh l s l a—r eaA   6
         Ok[; ku

vuqÙkfÙkr ipÙrda&
1. j?kquke egkdkÙ]] ekshyky cukjl hnkl] JhÙkjkÍÍuÙh feJ

2. j?kqak egkdkO] pkश्Ekck l a—r l aFkku] gjxksीuh 'kkL=h
3. fdjkrktqीh, e-¼Fke l xZ&, iर् ohर्, l र् eqyxkkodj vkxjk] foukस iqrd efUnj
4. fdjkrktqीh, e-¼Fke l xZ& vf[kyksk ikBd] y[kuऊ] çdk'ku dsUnज
5. f'k'kqikyo.kZEk-& cauukjk.k feJ] pkश्Eck l jHkjrhी çdk'ku
6. iqoZeस3knme-& 'ksskjkt jkVehी pkश्Eck fo|kHkou
7. cऀgn-vuqdn&pflaedk & pØ/kj ऀukश्V; ky^
8. Okdj.k'kkL= dk laf[krr bfrgkl & JhjkedkUr feJ] Okdj.k ¼gy-¾ oafol xZl fUk vuqdknkfn½
9. jpukuqokn dkऀश्qh & M्kॅ dfiyns f}osnh] fo'ofo|ky; çdk'ku
10. vekखेkोadkfynkl L; & vpZuk dqkjjh nqs

XIII.   SKILL ENHANCEMENT COURSE- SEC 1:
आयुर्वेद, पर्यावरण एवं योग

Marks: 75 (ESE: 3Hrs) = 75	**Pass Marks: Th (ESE) = 30**

(Credits: Theory-03) **45 Hours**

mís; &
1.   Nk=kadks;kx]vk,qõi ,oai;kõj.k foKku l sifjfpr djkuk ,oamudksjksxxrjijd f'k{kk nsukA

vocksk &
1.   Nk= vk,qõi ,oa;kx dk thou eaO;kogkfjd mi;kx djuk l h;k l dxs,oaHkfo"; dsfy,
2.   y{; fu/kkfjr dj l dxs,oai;kõj.k dsç;fr l ansu'kty gksl dxsA

bdkbZ&1 vk,qõi   15
O k[;ku
1.   vk,qõi dk vFkZ]ifjHkk"kk ,oaeywyHkwrvfl)kkrak dk l ekukU ifjp;A
2.   fnup;kZ_rqpk;kõl noÙk dk ekuo&LokLF; &l ja{k.k eaegÙùA
3.   LokLF; l a)ü grsqvkKfík ka dsfuekõ.k l l EcfU/kr Kku ,oavk,qõi eas'kY;&deZl EcfU/kr KkuA

bdkbZ&2 ;kx   15
O k[;ku
1.   ;kx dk l ekukU ifjp;]vFkZ]ifjHkk"kk];kx dsçdkj];kx dh mi;kfxrkA
2.   ;kx dsfofHkuu vklukadk ifjp;]egÙù ,oal ko/kkfu;kA
3.   çk.kk;ke dh ifjHkk"kk]v"Vkax ;kx dsvUrxZr ;e&fu; e dk Lo:i]vklu ,oaçk.kk;ke dh vo/kkj.kkA

bdkbZ&3 i;kõj.k   15
O k[;ku
1.   i;kõj.k dh ifjHkk"kk]i;kõj.k dh O ki drk]i¥pegkHkwrkadk ifjp;]i;kõj.k çn"k.k]l a—r ok³e; eas
    fufnZ"V i;kõj.k l ja{k.k dsl ekukU ,oafof'k"V mik;]tSl a{k.k]ty çcU/ku]jekek.k ,oadkfynkl ds
    l kfgR eaouLifr;kA

vupkfr iqrda&
    1-vk,qõi dk oSKkfud bfrgkl]vkpk;Zfç;or 'kekõ]pkSEck] okjk.klhA
    2-vk,qõi bfrgkl ,oaifjp;]fo|kkj 'kDy ,oafonUt f=iBh]pkSEck] okjk.klhA
    3-l a—r l kfgR eavk,qõi]vf=ns fo|kdkj]Hkkjrh; KkuihB]dk'khçFke l adj.k]1956A
    4-ikrat y;kx'k½lE=k&l jsDkplÙeJhoklro]pkSEck] jHkkjrhçdk'ku]okjk.klhA
    5-çk—frd vk,fqoKku]jkd'k feÙky]vkjkX l ok çdk'ku]okjk.klhA
    6-;kx ,oaLokLF;]ihNVh feJ]jkfÙMI cÙkyiqrd egyA
    7-v"Vkaân; e~&çãkjkfuklh f=onhA
    8-;kLddkyhu i;kõj.k &çãk jkek'k'kIk ikMs]çckskl l a—r çdk'ku]jkdphA
    9-l a—r l kfgR eai;kõj.k pruk&M/kå/ku¥t; oki qõs fj}onhJh~".k l a—r l nu]fnYyhA
    10-vk,qõõ'kkL=]T;kfr"k'kkL= vkS];kx'kkL= dk vUr%l EcU/k&M/kå Jhçdk'k fl ag]bLVuZcd fyad l½fnYyhA

SEMESTER II

LXV. MAJOR COURSE- MJ 2:

संस्कृत साहित्य का इतिहास एवं संधि प्रकरण

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) 60 Hours

mís; &
1. viuh çkphu lukru ijEjkl sifjfpr djkuk ,oa Nk=kea esa vkRexkSjo dk Hkko tkxr̀ djukA
2. egki#"kka ds thoupfjr ls Nk=ka ds Ofä Ro dk fodkl djuk ,oa lel; kvka ds lefpr funku ds smik; crkukA
3. la—r y{ku&dkSky ,oa Hk"k.k dh {kerk fodflr djukA

vocksk &
1. Nk=ka ea Lo; ao jk'V°dsçfr vkRexkSjo dk Hkko tkxr̀ gksxkA
2. Nk=k dk Ofä Ro çHkko'kkyh gksxkA
3. viuh Hk"kk ,oa la—fr eavkLFkk –<+ gksxhA
4. vuqokn dh {kerk fodflr gksxhA

bdkbZ&1
1. jkek.k & lkekU; ifjp;] dky&fu/kkZk.k] egRo] mi thO rk] jkek.kdkyhu lekt vkS la—frA   10

OkS[; ku

2. egkHkkjr & lkekU; ifjp;] dky&fu/kkZk.k] egRo] mi thO rk] egkHkkjr dk fodkl Øe

3. ,oa egkHkkjr dk ikSjk.; A   10

OkS[; ku

4. iqjk.k & iqjk.kka dk ifjp;] ifjHkk"kk] y{k.k] egkiqjk.k] mi iqjk.k] ikSfdd lf"V&foKkuA   10

OkS[; ku

5. dfri; iqjk.kka dk lkekU; ifjp; & Jhen Hkkxor}-vfXu] fo".kq x#M+,oa eRL; iqjk.kA

6. egkdkO;ka dk mnHko ,oa fodkl] ,oa dqekjl Hkko Ek}-u"k/k] pfjrEk}-l KHjkuUue}-c)qpfjrEk}-Hkfe dk O e-,oa tkudhgqj.ke~dk lkekU; ifjp; ek=A   10

OkS[; ku

bdkbZ&2 %lfUk çdj.k
1. Ûv PkS}-gy ~ ,oafol xZlfUk }-i?kqfl }kUr dkSqh ds vuq}kji½   20

OkS[; ku

vuq}kfir iqrda&
1. la—r lkfgR; dk bfrgkl & vkpk; Zcynso mikè; k;] 'kkjnkfudsru}okjk.klh
2. la—r lkfgR; dk bfrgkl & mek'kadj 'kekZ^_f"k}] pkSSKEck çdk'ku] okjk.klh
3. y?kfl)kUr dkSqh & JhojkjkuUn 'kkL=h] eksrhyky cukjlhnkl] okjk.klh

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LXVI. MAJOR COURSE- MJ 3:
संस्कृत गद्यसाहित्य एवं अनुवाद

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

mís; &
1. x| l kfgR dsçfr : fp mRlÙu djukA
2. ,frgkfl d miUlkl ksadsçfr vÙo"kkkRed –f"V mRlÙu djukA
3. Hkz.k dh egÙkk dksçfrikfnr djukA
4. Lonskkfhkeku ,oanlsk dsçfr l ei Zk dh Hkkouk dksfodfl r djukA
5. l a–r eay{ku&dkSky fodfl r djukA

vockÙk&
1. l a–r dsvUu x| l kfgR;kadksi<ìsdh: fp tkxìr gkxhA
2. Hkz.k dseglÙ¡o dksNk= le> l dxs�A
3. nskkfhÑä dh Hkkouk ççy gkxhA
4. Hkkjr dsxkSoiwoZbfrgkl l sifjfpr gksl dxsA
5. Lonsk dsçfr vkRel eiZk dk Hkko mRlÙu gkxkA

bdkbÖ&1 %x| l kfgR; dk mnHko ,oafodkl
    15 O[; ku

bdkbÖ&2 %
1. dknEcjh ¼dojukl isnsk½   10
    O[; ku
2. n'kdqekjpjre ~¼4"Ve mPNokl ½   10
    O[; ku
3. f'kojktfot; e~¼4Fke fu%okl ½   10
    O[; ku

bdkbÖ&3 %
1. vuqokn & l a–r l sfgUnh ,oafgUnh l sl a–r   15
    O[; ku
2. 'kCn: i & vLen]&; q\|en]&fdEkjrr~
3. /kkrqi & vn]&fnOk]&l Ok]&yHk~

vuq\Kkfr iqrda
1. dknEcjh ¼dojukl isnsk½&nostefJ] jkeukjkk .k oskh çl kn] bykgkcknA
2. dknEcjh ¼dojukl isnsk½& vkpk; jkeukFkk 'kek] ^^qu^l kfgR; HkI.MJj] eSBA
3. f'kojktfot; & M/;å jek'kadj feJ] pk\SEck l qjHkkjrh çokk kk lhA
4. n'kdqekjpjr & fo'oukFkk >kA
5. y?kfl) kUr dksSqh & egsk fl a\|d\okokgkA
6. l a–r l kfgR; dk bfrgkl & cynso mik/; k;A
7. vuqokn pfÙ¡edk & pØ/kj ^ukfV; ky^
8. jpukuqokndkSqh & M/;å dfiyns f)osnhA

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

LXVII.   SKILL ENHANCEMENT COURSE- SEC 2:
ज्योतिषशास्त्र और वास्तुशास्त्र

Marks: 75 (ESE: 3Hrs) = 75   **Pass Marks: Th (ESE) = 30**

(Credits: Theory-03) **45 Hours**

mís; &
1. T; ksfr"k'kkL= ,oa okLrq'kkL= dk çkjfEHkd Kku nsukA
2. bu fo"k;ka ea% fp mRÑ"Ul djuk ,oaNk=ka dks jkstxkjks'e[qkh cukukA

vocksk &
1. Nk= T; ksfr"k'kkL= ,oa okLrq'kkL= dk Hkfo"; esajkstxkj ds: i eap;u dj l dsxkA

bdkbZ&1 T; ksfr"k'kkL=   **25**

O k[; ku
1. i¥pk³x ifjp; &   frfFk] okj] u{k=] ;kx] dj.k] frfFk;ka ds sHknoA
2. egRoiZ Zxpkj   &   fookg egmZ] xg ç osk] O ki kj egmZ] ;k=k egmZ] fn'k'kw y] pkeklkS fopkj]
                          xg] , oa
                          jkf'k] xg xq.k] xgç HkkoA

bdkbZ&2 okLrq'kkL=   **20**

O k[; ku
1. okLrq'kkL= ifjp; &   Hkfe ijh{k.k] okLrq oi'k"k fopkj] 'k;u d{k] }kj LFkku] nsoky;] 'k;ky;]
                          ikd'kkyk vkfn dk LFkkuA

vukdkfr i qLrda&
1. T; ksfr"k'kkL= çfrf/kkd & M-fxfjt k'kadj 'kkL=h & mÙkj çns'k l a—r l aFkku] y[kuÅ
2. 'kh?kzcksk & jkeplUæ 'kekZ—".knkl vdkneh
3. çkP; Hkkjrh; e-~rrfp Kkue& M-/kqjhke f=ikBh & l a-vkÑ.z l a—r fo'ofo|ky; okjk.kl h
4. Hkkjrh; T; ksfr"k & unhçlkn 'kkL=h & Hkkjrh; Kku ihB çdk'ku] fnYYyh
5. Hkkjrh; T; ksfr"k dk bfrgkl & M-xkj[kç l kn & mÙkj çns'k l a—r l aFkku] y[kuÅ
6. egRoiuZ ekf.k & pf.Mdk çl kn voLFkh] rr $ dqekj cq| fMIks½lkà½fyfeVsM
7. fo'odekZçdk'k & x.kklknÙkiksBd

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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SEMESTER III

LXVIII.   MAJOR COURSE- MJ 4:

संस्कृत नाट्यसाहित्य एवं व्याकरण

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

mís; &
1. çkphu Hkkjrh; ukVî ijEijk lsi fjfpr djukA
2. dkfynkl] HkoHkfrv,oaHkkl dsthou&ifjp; ,oaukVdkadsv/;kiu l sy§ku 'k§h fodflr djukA
3. ukVdkaeavk;ss lkekfld inkslsi fjfpr djukA
4. vfHku; dsçfr#fp tkxr̀ djukA
5. vuqkn&dyk fodflr djukA

vockskk &
1. l a—r dsukVî l kfgR; dksi<usdh: fp tkxr̀ gkxshA
2. dkfynkl dslkfgR; dksi<dj l a—fr dsçfr lEeku dh Hkkouk tkxr̀ gkxshA
3. HkoHkfrv dsl kfgR; l sjilkRedrk dk vockskku gkxshA
4. Hkk"kk&dkSky fodflr gkxshA
5. vfHku;&dyk dh l¡erk lsNk= i fjfpr gksl dxsaA

bdkb 1
1. ukVî l kfgR; dk mnHko ,oafodkl   10
        Ok[;ku

bdkbZ 2
1. vfHkKku'kkdqUrye~%çrEK½vad½   10
        Ok[;ku
2. mÙkjjkepfjre~%¼prh; vad½   10
        Ok[;ku
3. LoçoklonÙke~%'kk'B vad½   10
        Ok[;ku

bdkbZ 3
1. dkjd çdj.k ¼y?kqfl)kUr dkSeqnh dsvuqlkj½   10
        Ok[;ku
2. —R çfØ; k ¼y?kqfl)kUr dkSeqnh dsvuqlkj½   10
        Ok[;ku

vuqkfr iqrdsa&
1. vfHkKku'kkdqUrye~& M/kå l ìjste'kkL=h] jkeukjkk;.k y ky ycsaçl kn] bykgkcknA
2. vfHkKku'kkdqUrye~& M/kå dfiynso f}osnh] jkeukjkk;.k y ky ycsaçl kn] bykgkcknA
3. l a—r l kfgR; dk bfrgkl & vkpk;Zcynso mikk/;k;A
4. y?kqfl)kUr dkSeqnh& JhkjkkuUnh 'kkL=h ekshyky cukjl h nkl] okjk.kklhA
5. mÙkjjkepfjre~& dfiynso f}osnhA

6.　Loluokl onÙe~& vkpk Z'kSjkt 'kekZ jn'ehA

LXIX. MAJOR COURSE- MJ 5:

संस्कृत नीतिसाहित्य एवं समास-प्रकरण

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

mís'; &

1. Nk=kadksuhfr l EcUkh Kku nrk ,oauhfr xbÍkkadh l koZdkfydrk l sifjfpr djkukA
2. i =y{ku }kjk Nk=kadh ckS)d {kerk rFkk l EÇ'kk {kerk dksfodfl r djukA

vocksk &

1. Nk=kadk pkfjf=d fuekZ.k gksxkA
2. mudk uSfrd fodkl gksxkA
3. fopkjkaeaifjiDork vk;xhA
4. l a—r Hkk"kk y{ku eal {ke gksl dsxAa

bdkbZ&1

1.	uhfr l kfgR; dk mnHko ,oafodkl	05
	¼vk[; ku	
2.	uhfr'krde-¼1 l s25 'yksd½	10
	¼vk[; ku	
3.	fgrksins'k ¼fe=ykHk½	10
	¼vk[; ku	
4.	i¥prU= ¼vijhf{kr dkjdEk½	10
	¼vk[; ku	

bdkbZ&2

1.	l ekl çdj.k & vO;;hHkko] rRi#"k] cgqozhfg ,oa}U} ¼4 dj) kUr dksghdsvuqlkj½	20
	¼vk[; ku	
2.	i =y{ku ,oavuqokn	05
	¼vk[; ku	

vuq'kal ir iqrda &

1. l a—r l kfgR; dk bfrgkl & cynso mik/; k; A
2. uhfr'krde]-xksoke]] ç°ykn fxfj] Hkjrh; çdk'ku]okjk.klhA
3. fgrksinsk] fo'oukFkk 'kekZA
4. i¥prU=]'; kepj.k i k Ms$A
5. y?kfl) kUr dkSeqnh egks flag dkokgkA
6. y?kfl) kUr dkSeqnh & Jh/kjkuUn 'kkL=hA
7. jpukuqokndkSeqdh & Mã dfiynso f}osnhA

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

LXX. SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

A Common Syllabus for FYUGP   (Credits: Theory-03)
45 Hours

Instruction to Question Setter for
End Semester Examination (ESE):
There will be **objective type test** consisting of **Seventy-five questions of 1 mark each**. *Students are required to mark their answer on **OMR Sheet** provided by the University.*

Course Objectives:
The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

M. INTRODUCTION TO COMPUTER SYSTEM

1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU)   **(3 Lecture)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer
          (4 Lecture)

3. Operating system: What is an Operating System, Operating System Examples, Functions of Operating System(Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting
          (6 Hours)

4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages
          (4 Hours)

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails.
          (6 Hours)

N. MICROSOFT OFFICE 2016 AND LATEST VERSIONS

6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents   **(7 Hours)**

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation, slide show, Master Slides, Creating photo album, Rehearse timing and record narration
          (5 Hours)

9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning
(4 Hours)

Reference Books

54.   Nishit Mathur, Fundamentals of Computer, APH publishing corporation (2010)
55.   Neeraj Singh, Computer Fundamentals (Basic Computer), T Balaji, (2021)
56.   Joan Preppernau, Microsoft Power Point 2016 step by step, Microsoft press (2015)
57.   Douglas E Corner, The Internet Book 4th Edition, prentice –Hall (2009)
58.   Steven Welkler, Office 2016 for beginners, Create Space Independent Publishing Platform (2016)
59.   Wallace Wang, Microsoft Office 2019, Wiley (January 2018)
60.   Noble Powell, Windows 11 User Guide For Beginners and Seniors, ASIN, (October 2021)

SEMESTER IV

LXXI. MAJOR COURSE- MJ 6:

काव्यशास्त्र एवं छन्दशास्त्र

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)60 Hours

mís;&
1. dkO;kadsvu(oy;ukisjkur mldseW;kdu dh f'k{kk nukA
2. dkO;kadk okLrfod jlkLoknu /ofu] jlkfn }kjk djkukA

vockskk &
1. Nk= dkO;kadk dkO;'kkL=h; foospu dj mldh mR¡"Vrk dkslee> ldxsA
2. /ofu, oajlkfn dk Kku gkstkuslsdkO;/;u eaNk=kadh: fp mRiUu gksxsA

bdkbZ&1
1. dkO; izkkstu] dkO;grq] 'kCn'kfä] dkO;&y{kk] dkO;Hksn] dkO; xqk] jhfr ¼dkO;nhfidk dsvuqlkj½ 20 O;k[;ku

bdkbZ&2
1. vydkj & vuqizkl] ;ed] 'y"k] miek] mRçs{kk] –"Vkur] :id] oØksfä] leklksfä] vFkkUrjU;kl] foHkkouk] fo'k"kksfä] LoHkkoksfä] fun'kZuk ¼dkO;nhfidk dsvuqlkj½ 20 O;k[;ku

bdkbZ&3
1. ÛNUn & vk.kk] vuq"Vqi-bUæoT k] mixsr k] amefoyfECr] ol Urfrydk] miktkfr] o'akLFk] 'kknyfoØhfMr] lXkjk] eUnkØkUrk] Hkqt ³x;rA

20 O;k[;ku

vuqkak r iqrda&
1. dkO;nhfidk & ijesojkuUn 'kekZ ekshyky cukjlh nklA
2. NUnJqcksk & Jh JhjkjkuUn 'kkL=hA

LXXII.   MAJOR COURSE- MJ 7:
वैदिक साहित्य का इतिहास एवं वैदिकसूक्त, निबन्ध

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)60 Hours

mís'; &

1. fo'o dsç,khure lkfgR dsv/;kiu }kjk Hkkjr dsrRdkyhu xSoiwZbfrgkl lsifjfpr djkukA
2. mifu"knkaeafufgr vk/;kfRed&Kku lsNk=kadksifjfpr djkukA

vocksk &

1. Nk= osfnd&lkfgR eafufgr Kku&foKku lsifjfpr gksldsxaA
2. onkak/;;u }kjk onkkFkZdksl E; d= i lsle> ldsaA

bdkbZ&1

1. onkadklekxU ifjp;] onkadk dky   05

    O)ki[; ku

2. czkã.k] vkj.;d] mifu"kn~dklekxU ifjp;   05

    O)ki[; ku

3. onkakadk ifjp;   05

    O)ki[; ku

bdkbZ&2

1. osfnd lawv & _Xosn & vfXu ¼1-1½bldae ¼2-12½m'lkl ~¼3-61½fgj.; xHkZ¼10-121½
2. lfor` ¼3-35½v{kkØ¼10-34½okd ~¼10-125½   25

    O)ki[; ku

3. 'kQy ; tqosZn & f'kolady¼31-1&6½   05

    O)ki[; ku

bdkbZ&3

1. fucaèk ,oavuqokn & lla—r lsfgunh ,oafgunh lsla—r   15

    O)ki[; ku

vukskfar iqrda&

1. U'vosfnd lyESdu] ekshyky cukjlhnkl
2. osfnd lkfgR dk bfrgkl &ikjlukFkFk f}osnh pkSEck lqjHkkjrh çdk'ku]okjkkl h A
3. _Xosn & xkslky çl kn
4. fucaèk 'krkde&&M,å dfiynso f}osnh fo'ofoky; çdk'ku
5. vuqokn&pfUæ dk&M,å dfiynso f}osnh
6. fucaèk dqeqfnfy & t; Ur feJ
7. osfnd lawv lawg & v; ks/;k çl kn fla g
8. osfnd fpUru dh ijEijk&M,å ubfyek ikBd
9. osfnd ok³e; çdk'k & çka' vpkZukns

LXXIII.   MAJOR COURSE- MJ 8:
भारतीय नास्तिक दर्शन का सामान्य परिचय

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

mís'; &

1. Hkkjrh; nk'kZud ijEijk lsifjfpr djukA
2. vk/;kfRed vfHk#fp mRiUu djukA

vocks/k &

1. Nk= Hkkifidrk ,oavk/;kfRedrk eavUrj le> ldsa,oav/;kRe dh vksj mUeq[k gksl ldsaA

bdkbZ&1 ukfLrd n'kZu ¼Ûobehekakl] Kkuehekak ,oaçekk ehekakl½

1. pkokZd n'kZu   20

                           OkR; ku

2. tSu n'kZu   20

                           OkR; ku

3. ckS) n'kZu   20

                           OkR; ku

vuq'kaflr iqLrds &

1. Hkkjrh; n'kZu & cynso mik/;k;
2. Hkkjrh; n'kZu &, eå fgfj;Uuk
3. Hkkjrh; n'kZu & eå eå meSk ffeJ
4. Hkkjrh; n'kZu & txnh'kpUæ feJ

SEMESTER V

LXXIV.   MAJOR COURSE- MJ 9:

भाषा-विज्ञान

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

mís; &

1. Hkk"kk dsfofHkUu : ikadls Nk=kadksvoxr djkukA
2. ofnd l a—r ,oaykSfld l a—r dh Hkk"kkvkadsHkn l siifjfpr djkukA
3. Hkk"kk dh l ajpuk l siifjfpr djkukA

vockske &

1. l a—r Hkk"kk dsfofHkUu Lo:ikadkstku l dxsA
2. Hkk"kk ifjorZu dsdkj.kadksle> l dxsA
3. l a—r Hkk"kk dh Hkkf"kd l ajpuk l sNk= ifjfpr gksl dxsA

Hkk"kkfoKku

1. Hkk"kk dh ifjHkk"kk] mí dsfofo/k: i ,oafo'k"krk,A   05
         O)k[;ku
2. Hkk"kkfoKku dk Lo: i ,oami;ksxrkA   05
         O)k[;ku
3. /ofu foKku & ifjHkk"kk] mi;ksxrk] ofnd /ofu;k] l a—r /ofu;k] /ofu   10
         O)k[;ku
4. ifjorZu dsdkkj.k]
5. /ofu ifjorZu dh fn'kk,] /ofu&fu;e
6. in foKku & in vk§okd]] in vk§l Ecu/k rRo] l agrk   10
         O)k[;ku
7. okD; foKku & Lo: i] in vk§okD;] okD; dsavfuok;Z rRo] okD§ inØe]
8. okD;kadsçdkj] okD; ifjorZu dh fn'kk,] okD; ifjorZu dsdkkj.k   10
         O)k[;ku
9. vFkZ foKku & ifjHkk"kk] vFkZ dk egRo] 'kCn vk§vFkZ dk l Ecu/k] vFkkZku dsl k/kku]
10. vFkZ ifjorZu dh fn'kk,] okD; ifjorZu dsdkkj.k   10
          O)k[;ku
11. ofnd ,oaykSfld l a—r dk rgyukRed v/;;u   10
          O)k[;ku

vuq)kfr iqLrda&

1. Hkk"kkfoKku & nsohnkuFk 'kekZ
2. Hkk"kkfoKku & HkksykukFk frokjh
3. Hkk"kkfoKku & M0 dfiynso f}osnh
4. l a—r dk Hkk"kk'kkL=h; v/;;u & M,å HksxŸk'kadj Okl

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

LXXV.　　　MAJOR COURSE- MJ 10:
भारतीय संस्कृति एवं राजनीति

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100　　　　　　**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)60 Hours

mís; &
1. vkJe&O;oLFkk] i¢"kkFkZ&pr¡&; vkfn dsv/;ku }kjk Nk=ksdksHkkjrh; laÑfr dk Kku djuk ,oamueasHkkjrh; laÑfr dsçfr lEeku Hkko tkxr̀ djukA
2. çkphu Hkkjrh; jktuhfrd O;oLFkk lsNk=ksdksifjfpr djukA

vockskk &
1. Nk=viusdÙkZO;dÙkZO; dkstku ldsxaA
2. Nk= lakdkfjr gksdj ifjokj]lekt ,oajk"Vªdh mUufr ea; ksxnku ns ldsxaA
3. ,oa d dÙkZO;fu"B ukxfjd dh Hkfedk fuHkk ldsxaA
4. çkphu Hkkjrh; jktuhfrd O;oLFkk dh xfjek lsNk= lifjfpr gks ldsxaA

bdkbZ&1 Hkkjrh; laÑfr dh fo'ks"krk,¡　　　　　　　　　　　　　　30
O;k[; ku
1. vkJe O;oLFkk dh vo/kkj.kk ,oavkJe pr¡&; A
2. i¢"kkFkkZ dh vo/kkj.kk ,oai¢"kkFkZ pr¡&; A
3. "kks/k'k laLdkjkadk lkekU; ifjp; A

bdkbZ&2 çkphu Hkkjrh; jktuhfr　　　　　　　　　　　　　　30
O;k[; ku
1. jkT; dh mRifÙk dsdkj.k rFkk mRifÙk dsfl)kUrA
2. jktk dh fnup;kZ]dRoZ]jktk dh laj{kkA
3. jkT; dk Lo:i]jkT; dk lIrr̀fRo fl)kUr]jkT; dk egÙ̀o ,oadk;ZA
4. "kk‌‌Vkq;uhfr

vupafr iqrda&
1. /keZ‌LkkL= dk bfrgkl &HkkjrjRu]iih ohå oHkå dk.ks
2. Hkkjrh; laLÑfr dseyorRo &M‌ãå lqkohj flag]lkfgR; HkkMkj]esjB
3. Hkkjrh; laLÑfr ,oadyk &okpLifr xkS‌Sky]mÙkj çn'k fgUnh lakFkku]y[kuÅ
4. fgUnwl‌aLÑfr &jktcfy ik.Ms
5. çkphu Hkkjr dk lekkftd bfrgkl &M‌ãå t; 'kdaj feJ
6. dkS‌‌VY; dsjktuhfrd ,oa lekekftd fopkj &M‌ãå ef.k dkj çlkn
7. Lefr xzUFkkeasof.kZ‌r lekt &M‌ãå ehuk 'kDya y‌k

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

LXXVI.   MAJOR COURSE- MJ 11:
श्रीमन्द्भगवद्गीता, कठोपनिषद् एवं अनुवाद

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

म́स्; &

3. Nk=kadksKku;kx]Hkfä;kx,oadeZ;ksdkKkunukA
4. mifu"kn~dsvk/;kfRed egÙo lsifjfpr djukA
5. oRrZeku ifj-'; eavFkkkÙkegÙkh lekt dks/kekÙkegÙkh,oaekÙkkkÙkegÙkh cukukA

vocksk &

6. Nk= viuh çkphu Kku&lEink lsifjfpr gksl dsáA
7. Nk=kaeavk/;kfRed #fp mRiUu gksl dsáh,oaosW,vijd thou dhegÙkk lsifjfpr gksl dsáA

bdkbZ&1

1. Û Jhen~Hkxonxhrk %f}rh; k/;k; ¼yksd la[;k 39 ls 72½   25
    Ok[;ku
2. Û dBksifu"kn~% çFke v/;k;   25
    Ok[;ku

bdkbZ&2

1. Û vuqokn & la—r lsfgUnh,oafgUnh lsla—r   10
    Ok[;ku

vukskkfir iqrdsa&

1. dBksifu"kn~& M,-ljgnhus'kkL=h] pkS[kEck] iqjHkkjrhçdk'ku] okjkkslh
2. dBksifu"kn~& xhrkçS] xksj[kiqj
3. Jhen~Hkxonxhrk & 'kkadjHkk";] fgUhvuqokn fgrxhrkçS] xksj[kiqj
4. Jhen~Hkxonxhrk & vkpk;Zkoçl knf}osnh pkSEck] iqjHkkjrhçdk'ku] okjkkslh
5. cÝgn~vuqokn&pfaknk & M/á dfiyns f}osnh
6. jpukvuqokn dkSqh & dfiyns f}osnh

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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SEMESTER VI

LXXVII.   MAJOR COURSE- MJ 12:

संस्कृत भाषा-विज्ञान एवं व्याकरण

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

mís; &
1. l a—r Hkk"kk foKku dsv/;kiu }kjk l a—r Hkk"kk dsLo: i dh tkudkjh nsuk ,oaHkk"kkoKkfud 'kksdksk dsfy, çsjr djukA
2. l a—r dsçR;ka dsKku }kjk 'kín&fuekZzk dk l keF;Z mRilu djukA

vocksk &
1. Hkk"kkoKkfud 'kksk esaçofUk mRilu gksl dxhA
2. l a—r Hkk"kk dh oKkfudrk dks le> l dxsA

bdkbZ&1   30 O.K[; ku
1. Hkk"kk dh ifjHkk"kk]
2. Hkk"kk dsrhu i{k& O.fä xr] l kekftd ,oal kekU;]
3. Hkk"kk dsfodkl l ksku& vkf³x d Hkk"kk] okfpd Hkk"kk] fyf[kr Hkk"kk] ;a=d Hkk"kk]
4. Hkk"kk dh fo'ks"krk,]
5. Hkk"kk dh ifjorZu'khyrk vkS ifjorZu dsdkj.k]
6. Hkk"kk vkadk oxhdj.k& vk—freyd ,oaikfjokfjd]
7. Hkk"kkfoKku dk K;u dh vU; Hkk"kkvkasl sEcUk]
8. Hkkjr esaHkk"kkoKkfud v/;;u dh çkphurk]
9. Hkkjrh; Hkk"kkvkadsl kFk l a—r dk vUrl EcUk]
10. l a—r /ofu;kadk /oU;kRed fo'y{k.k
11. l a—r /ofu;kadh l U;kRed fo'ks"krk,&l ehdj.k] ?kksk fdj.k] v?kksk fdj.k]
12. vuqukfl dhdj.k] vYicok.khdj.k] O.¥&tuhdj.k] fol xZff}Rohdj.k]
13. l a—r inijpuk]
14. l a—r okD; jpukA

bdkbZ&2
1. O.dkj.k& iwoZ&nU"] mÙkj—nU"] rf) r çR;;] L=hçR;;] f.ktUr çR;;A   30 O.K[; ku

vuqkfl r ipqrda&
1. rgyukRed Hkk"kkfoKku & ihjkeM+ xkSekshyky cukjl hnkl] fnYyhA
2. l a—r dk Hkk"kk'kkL=h; v/;;u & Hkkyk 'kadj O.kl] pkSKEck fo|kHkou] okjk.kl hA
3. Hkk"kkfoKku dh Hkfedk & noh unkukukFk 'kekZ jkÑ".k dadku
4. Hkk"kkfoKku vkS Hkk"kk'kkL= & M,dfiyno f}osnh fo'ofo|ky; çdk'ku] okjk.kl hA
5. l kekU; Hkk"kk foKku & M,ckcjke l Dl uk] fgUnh l kfgR; l Eesyu] bykgkcknA
6. l a—r Hkk"kk foKku & M,jktifr'kkjfl ag] fouksn iqrd vfHkÙky] vkxjkA
7. l a—rHkk"kkfoKkue-& Jhjke/kku prosdh pkSKEck fo|kHkou] okjk.kl hA
8. y?kfl) kUr dkSeqnh & egs"k fl ag d`okogksk] Hkkx & 1, oa2A

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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LXXVIII.   MAJOR COURSE- MJ 13:

काव्य-शास्त्र

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

m¡S; &

1. l kf(gR dsxgu v/;u dsfy, jkodrk dk lfLuo´sk djukA
2. l kf(gR vFkok i| lkf(gR dsl E;d~Kku dsfy, y{kk xÉFkkdk v/;uA
3. dkO fuekZk eavyadkjkdk mfpr lfLuo´sk djukA

vockskk &

1. dkO kadh l ekykpuk eal{ke gksl dxaA
2. fdl h Hkh dkO dk l E;d~Kku çkIr djuseal eFkZgksl dxaA

bdkbZ& 1

1. Û dkO;'kkL= dk mn~Hko ,oafodkl   05

Ok[;ku

bdkbZ& 2

1. Ûl a—r dkO;'kk=kadsçeqÜk vkpk;Zdk ifjp;   10

Ok[;ku

2. ÛHkjr] Hkkeg] n.Mh] okeu] vkuUno/kZu] vfHkuoxqIr] dqUrd]

3. {ksesÉ eeê] fo'oukFk vkSt xUukFk

bdkbZ& 3

1. Û dkO;çdk'k ¼çFke l spr%ZmYyklk ½   30

Ok[;ku

2. Ûvyadkj & vuqçkl] 'y"k]oØksfÙk] miek] :id] mRçs{kk] ;ed] l ekl ksfÙk] 15

Ok[;ku

3. viàfr] fun'kZuk] vFkkZUrjU;kl] –"VkUr] foHkkouk] fo'ks"kk s] ifjl a[;k]

4. l adj ¼dkO;çdk'kkuqlkj½

vulfÜk`r iqLrd&

1. dkO;çdk'k & okeu >ydhdj
2. dkO;çdk'k & M/å jkel kx jf=ikBh
3. eEeV—r dkO;çdk'k & vkpk;Zfo'os'oj Kkue.My fyfeVsM/ okjk.kl h
4. l a—r dkO;'kkL= ds vkpk;Z& ç¼ jk/kkoYyHk f=ikBh
5. Hkkjrh; vkykspuk 'kkL= & jktoak l gk; ghjk
6. Hkkjrh; dkO;'kkL= & jktoak l gk; ghjk

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

LXXIX.   MAJOR COURSE- MJ 14:
वैदिक सूक्त, निरुक्त एवं पाणिनीय शिक्षा

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)60 Hours

mís; &
1. fo'o dsçkphure lkfgR dsv/;kiu }kjk rRdkyhu xk§oiwvZbfrgkl lsifjfpr djkukA
2. o§nd 'kCnkadsfuoZpu }kjk onkFkZdk Kku djkukA
3. o§nd /ofu;kalsifjfpr djkukA

vocksk &
4. Nk= o§nd lwäv emfufgr Kku foKku lsifjfpr gksldsaxsA
5. 'kCn fuekZk çfØ;k lsNk= ifjfpr gksldsaxsA
6. o§nd o.kkZdsmPpkj.k çfØ;k lsifjfpr gksldsaxsA

bdkbZ&1 o§nd lwä   **20**
Ok[;ku
1. bU¼e ¼1&32½] l ;wZ ¼1&125½]i q#"k ¼10-90½]Kku ¼10-71½]vfXu ¼1-1-4½
2. i tZU; ¼5-83½]uklknh; ¼10-129½

bdkbZ&2 fu#ä   **25**
1. fu?k.Vqv kS] fu#ä] fu#ä dsv/;;u dsmís;] fu#ä dh fo"k;oLrq]
Ok[;ku
2. inkadk prqfoZ/k foHkktu] fØ;k dsN% i "kM~Hkkofodkj]] fuoZpu dsfl) kUr]
3. fu?k.Vqv kS] fu#ä dsOk[;kdkj] fu#ä vkS Ok"kdkj.k] fu#ä vkS Hkk"kk foKku]
4. fu#ä dkyhu Hkkjro"kZ%¼vkJe] O;oLFkkk] lekt] f'k{kk] dyk] vkpkjkjh½fu#ä ekfu: fir noRA fuEufyf[kr 'kCnkadh O;qRifRk k;& vkpk;Zohj]ân]-xk§lea]o=]vkfnR]m'kLkj-e3k]okd~mnd]unh] v'o] vfXu] tkrosnLkj-oSokuj] fu?k.Vq]

bdkbZ&3   **15**
1. ikf.kuh; f'k{kkA
Ok[;ku

vudkfl r i qrda&
1. U wo§nd lyÖ)ku]eksshyky cukjlhnkl
2. o§nd lkfgR dk bfrgkl &ikjluakFkZ f}osnh] pkS[kEck lqjHkkjrh çdk'ku]okjk.klh
3. _Xosn& xkslky çlkn
4. o§nd lwä&lax & v;ks/;k çlkn flag
5. fu#ä e-& M-å mek'kadj _f"k] pkS[kEck fo|kHkou]okjk.klh
6. Ok?fUk foKku vkS vkpk Z; kLd & M-å jkek'kh"k ikM~s]cksdkjks la—r çdk'ku]jkaph
7. o§nd fplfru dh ijEijk & M-å uhfyek ikBd
8. ikf.kuh; f'k{kk dk /ofu oSKkfud v/;;u & M-å Hkkjrh f}osnh

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

LXXX.   MAJOR COURSE- MJ 15:
भारतीय दर्शन का सामान्य परिचय

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

mís; &
1. Hkkjrh; nk'kZud ijEijkvksa si fjfpr djkukA
2. onslEer vkSHkkjrh; fpau dk Kku çklr djkukA

vockskk &
1. fpUru o n'kkZud dsoS/; dksl e>krsgq v/;kRe ,oaokLrfodthouds eeeZdksl e>uses aNk= le FkZgksxsA

bdkbZ&1 ofnd n'ku & "kM+n'ku ¼ukfLrd n'ku½
1. U;k   10
                     ¼k[;u
2. oSk'kfd   10
                     ¼k[;u
3. l k[a;   10
                     ¼k[;u
4. ;ksx   10
                     ¼k[;u
5. Ekhekakl k   10
                     ¼k[;u
6. onkUr   10
                     ¼k[;u

vuqkakflr iqrda&
1. "kM+n'ku l xxg & mek'kadj 'kekZ ^_f"k^
2. Hkkjrh; n'ku & jk/kk—".ku Hkkx 1 ,oa2
3. Hkkjrh; n'ku dk bfrgkl & Hkkx 1 ls4 & ,l å dsIVsl,oa,l å ,uå nkl xqIr
4. Hkkjrh; n'ku & cynso mik/;k;
5. Hkkjrh; n'ku & txnh'k plefeJ
6. Hkkjrh; n'ku dk bfrgkl
7. Hkkjrh; fpUru ijEijk j l k[; & ;ks& dk çHkko

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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SEMESTER VII

LXXXI.   MAJOR COURSE- MJ 16:
आधुनिक भारतीय दर्शन परम्परा

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)60 Hours

mí's; &
1.   n'kZu vFkkZ~fpUru LokHkkfod o uSfxZd çfrHkk gSA blh fn'kk grsqbl dsmnHko o fodkl dksl e>uk ,oav kkfqud fpUru ,oan'kZu dseW,ksI svoxr djukA

vockdsk &
1.   nk'kZfud fpUru ds}kjk vk;kfRed vfHk#fp mRiUu gksldxhA
2.   oSfod l 3k'kZdsfy, mi;ä; euksLFkfr fuekZk esal gk;d gksxkA

bdkbo&1   vk/kfqd nk'kZfud fpUru
1.   Û foosdkuUnh   15
                                          O)k[;ku
2.   Û egf'kZ vjfoUn   15
                                          O)k[;ku
3.   Û egkRek xk¡kh   15
                                          O)k[;ku
4.   Û foukssk Hkkos   15
                                          O)k[;ku

vuqkkfir iqrdsa&
1.   Hkkjrh; n'kZu & cyns o mik/;k;
2.   foosdkuUnh l kfgR; & jke—".k fe'ku
3.   egf'kZ vjfoUn & uothou
4.   xhrk çopu & foukskkl Hkkos

LXXXII.   MAJOR COURSE- MJ 17:
भारतीय धर्मशास्त्र

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

mís; &
1. Lefr xÙFkka}kjk Nk=kadks/keZ,oauhfr ijd Kku nsukA
2. lkekftd fodkl dh ijEijk dk Kku çklr djkukA

vocksk &
1. Nk= lackdkfjr gksdj jk'V^a,oal ekt dsfy, ;ksnnku dj ldsa,oaLo;aHkh dRÙ) fu"B cusaA

çLrkfor lapou
bdkbZ&1 eulefr & f}rh; vk/S llre v/;k A   30 O k[; ku
bdkbZ&2 ;kKoYD Lefr & xgLFk/keZçdj.k] nk;Hkkx çdj.kA   30 O k[; ku

vuq k f r i qrda &
1. eulefr
2. /keZkkL= dk bfrgkl & ihao ohå dk.ks
3. fgUnw/ kadkj & jktcyh ik.Ms
4. ;kKoYD Lefr & Mkå me'k pUæ ik.Ms
5. ;kKoYD Lefr & Mkå Jhukjk;.k feJ
6. ;kKoYD Lefr & Mkå xax klkxj jk;

LXXXIII.   MAJOR COURSE- MJ 18:
वेदान्तसार एवं तर्कभाषा

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) 60 Hours

mís; &
1. n'kU xÍkakadsv/;kiu }kjk Nk=kaeavk/;kfRed :>ku mRiUuu djukA
2. onkUrl kj vk§ rdÍkk"kk fo"k ij fofk"V : i l stkudkjh nsukA

vockskk &
1. txr]cÊ]vKku vk§ thouefä dsckjjseaNk= tku l dxsA
2. Nk=kadksvk/;kfRed Kku çkr gksl dxsA

¼d1½onkUrl kj   30
vd
1. vuqUkk prÖÖ/;] l k/kuprÖÖ/;] v/;kjkis vk§ vKku dk fu: i.k] l f"Vfu: i.k] fy³ x'kjhj] iahdj.k] LFkyw çi¥p] onkUr &f"V eavkReLo: i] viokn fu: i.k] v/;kjkis vi okn ds}kjk n̂Ûbefl ^egkokD] dk fo'y'kk] Í vgaczkÍkkfLe^ bl egkokD] ds vFkÍdk fo'y'kk] Jo.k&euu&fufn/;kl ukfn ,oa miØe vkfn rkRi;Zfu.kkZd fy³ ×kkdk fo'y'kk] l ekf/k] thou&eqä dk y{k.k

¼k½rdÍkk"kk   30
vd
1. dkj.k.ky{k.k] dkj.k fu: i.k] dkj.k ds Hkn] çek.k inkFkkZ] çeky{k.k] çR{k çek.k] ¼fodYid Kku vk§ fufoZdYid Kku] "kkÍk l fUud"kZ½Ê vuqeku çek.k] ¼fu: i.k] vuqeku çek.k ds Hkn] gsrq;] gsrq dh i¥p: ikÖkiÜrk] gËokÍkkl ½ mieku çek.k] 'kCn çek.kA

vuqØfl r iqrdsa&
1. dSkofeJÍr rdÍkk"kk & vkpk;ZfouoÜoj fl)kUrf"kjksef.k] pk§EckLkÊÍr vkfQl] okjk.kl h
2. dSkofeJÍr rdÍkk"kk & vkpk;Zcnjhukfk 'kqDy & eksrhyky cukjl hnkl] fnYyh
3. l nkubn⌒r onkUrl kj & vkpk;Zcnjhukfk 'kqDy & eksrhyky cukjl hnkl] fnYyh
4.   l nkubn⌒r onkUrl kj & vkpk;ZjkeefrÜ'kekÍ& bZVuUdj fyall Ídn̂Yyh

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LXXXIV.   MAJOR COURSE- MJ 19:
कंप्यूटर एवं संस्कृत

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

mís; &
1. vk/kfqud ;xq dsvuq]yv Nk=kadksl {ke cukukA
2. dla Vjy dh 0kogkfjd mi;ksxrk lsifjfpr djkukA

vocksk &
1. Nk= dla Vjy dksl la—r lstkksMuseasl {ke gksldsxaA
2. vk/kfqud ;xkuqi Nk=kadh dk /kerk fodflr gksldsxhA

çLrkfor lajpuk
bdkbZ 1 &
1. dEI;Vjy dk lekkkU ifjp;] la—r dh–f"V lodEI;Vjy dhmi;ksxrkA   15
Ok[;ku

bdkbZ 2 &
1. dEI;Vjy easl la—r&fglurh y{ku gsraqmi;ksxsh VMV & ;fudksMs]xxxy buiV(Vyy]xxxy vfl LVsV/ ,oa
o;l Vkbfl'x vkfnA

15 Ok[;ku

bdkbZ 3 &
1. la—r ,oablajjuV txRk]-bUljjuV dk ç;ksx ,oaos lp]bZ&VsLV] b&cql] b& fjlp]tuXl]]
bZ&essthu]fMfltVy ykbozskhA

15 Ok[;ku

bdkbZ 4 &
1. v,uykbou yfuxa ,oafjl pZlyySVQ,eZ& Lo;]jaeaV] bZ&ikB'kkyk] MsjuoS]buff}ycuoS & 'kksk&xxak]
'kksk&xxak-h]xxxy Ldyjyj] v,uykbou Vhfpxa yfuxa lyySVQ,eZ4jaeajehVj]cksa&,DI vkfn1/aA
15 Ok[;ku

vubkfl r iprds&
1. dEI;Vjy dk ifjp;]xkSro vxzoky]f'kokok çdk'ku]bnkjSA
2. dEI;Vjy Qk\ke, Aoy]ihdslfl Ugk]ch-ih-ch-ifJyd'ku]ubZfnYYhA
3. buQ ke'ku VSDuksky, thjljl]lqerk vjksk] /kuir jk; ifJyd'ku]ubZfnYYhA

SEMESTER VIII

LXXXV.   MAJOR COURSE- MJ 20:

महाभाष्य एवं वैदिकी प्रक्रिया

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

उद्देश्य &
1. वैदिक भाषा के समुचित अध्ययन हेतु छात्रों को योग्य बनाना।
2. व्याकरण ज्ञान कराना।

अवबोध &
1. छात्र वैदिक व्याकरण से सुपरिचित हो सकेंगे।
2. दार्शनिक तथ्यों को जानने में छात्र सक्षम हो सकेंगे।

इकाई& 1
1. महाभाष्य ¼पस्पशाह्निक½   25

व्याख्यान

इकाई& 2
1. वैदिकी प्रक्रिया ¼प्रथम अध्याय½   15

व्याख्यान

2. वैदिकी प्रक्रिया ¼द्वितीय अध्याय½   10

व्याख्यान

3. वैदिकी प्रक्रिया ¼तृतीय अध्याय½   10

व्याख्यान

अनुशंसित पुस्तकें&
1. व्याकरण महाभाष्य & डॉ. चारुदेव शास्त्री मोतीलाल बनारसीदास प्रकाशन मेरठ] प्रकाशक विद्याभवन
2. वैदिकी प्रक्रिया & मशकारि शर्मा_ फर्क] प्रकाशक विद्याभवन] वाराणसी

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

LXXXVI.   ADVANCE MAJOR COURSE- AMJ 1:
पाश्चात्य काव्यशास्त्र का इतिहास (प्रमुख प्रवृत्तियाँ) एवं अरस्तू का काव्यशास्त्र

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

mís; &
1.   ik'pkR; dkO;'kkL= l sNk=kadksifjfpr djkukA
2.   Hkkjrh; ,oaik'pkR; dkO;'kkL= dsrqyukRed foospu grq izsrkg cukukA

vockskk &
1.   ik'pkR; dkO;'kkL= dsv/;;ukisjkur Nk= ik'pkR; dkO;kadk foospu djusaHkh l{ke gksl dsxaA

bdkbZ&1 ik'pkR; dkO;'kkL=
1.   ik'pkR; dkO;'kkL= dk bfrgkl ¼izeq[k çofÙk k;½& lyV{ks; ykSVfckl] gksSs] dkps] fofy;e oM/oFk±] lS;uy Vsyj d,yfjt] eS; vkuoNM] LoPNUhrrkokn] vfHkO; atukokn] vfLrRookn] çrhdokn
       3O0O[;ku

bdkbZ&2 vjLrwdk dkO;'kkL=
1.   vjLrwdk dkO;'kkL= & dkO;fl(kkr]=kklnh dk foospu] dkenh dk foospu] egkdkO;] dkO;&Hkk"kk vkS'k;h] vjLrwdkjl foospu

       3O0O[;ku

vuq'kaflr izrda&
1.   Hkkjrh; ik'pkR; dkO;'kkL= dk lakf{kr foospu& lR; nso pkS/kjh 'kkfUrLo:i xqIr] ueu çdk'ku] ubZfnYyh
2.   vjLrwdk dkO;'kkL=]M/â ukxsUnz] fgnh vuqUkku ifj"kn]-fnYyh fo'ofo|ky;] fnYyh

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Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

LXXXVII.   ADVANCE MAJOR COURSE- AMJ 2:
महाकाव्य

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) 60 Hours

mís; &
1. la—r ok³e; dhjkpdrk lsNk=kadksifjfpr djkukA
2. dkO)kadsvubkhyu lsdkO)jpuk dsçfr : fp mRllu djukA
3. egkdkO)kadsdkO)'kkL=h; foospu djuesal{ke cukukA

vocksk &
1. egkdkO)kadsv/;;u lsNk=kaesal la—r ok³e; dsçfr : fp mRllu gksxhA
2. dkO)'kkL=h; –f"V lsdkO)kadsvubkhyu emçoÙkk gksl dxsA

bdkbZ& 1   15 O)k[; ku
1. egkdkO) dk mnHko ,oafodkl

bdkbZ& 2
1. u"k/kh; pfjr ¼4Fke lxZ½   15 O)k[; ku

2. f'k'kqikyo/ke~¼4Fke lxZ½   15 O)k[; ku

3. lkSanjkuUn ¼"k"B lxZ½   15 O)k[; ku

vubkfr ir irda&
1. u"k/kh; pfjre~& ekgquo ipa eksshyky cukjllkl] fnYyh
2. u"k/kh; pfjre~& lqjsuo 'kkL=hxksdynkl la—r xUFkekyk] okjki.klh
3. lkSanjkuUn dkO) & lwikjki.k k pk8jh
4. f'k'kqikyo/ke~& ¼4Fke lxZ½& vkpk;Z—".kdaqj voLFkh& çdk'ku dsUn1y[kuÅ
5. la—r lkfgR; dk bfrgkl & M/;a cyno mik/;k;

LXXXVIII. ADVANCED MAJOR COURSE- AMJ 3:
आधुनिक संस्कृत साहित्य

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

उद्देश्य &

1. vk/kfud dfo;ka oadKka lsifjp; djkukA

vockskk &

1. uohu 'kkksk dsfy, Nk= lekxznçkkr djldxaA
2. la—r Hkk"kk dsuohu lkfgR; lsifjfpr gkslddxaA

bdkbZ& 1

1. vk/kfud la—r lkfgR; ds çeq[k dfo ,oamudh —fr;kadk lekU;ifjp; & çHkkqùk Lokeh] okslqsf}oanh 'kkL=h] M;ä jekdkur 'kDy] M;ä x.kksnùk 'kekZ] Vfä x.kifr 'kkL=h] Hkê eftjukFkk 'kkL=h] çkå vfHkjkt jktsedefeJ]jk/kkoYYHkf=ikBh] ipå {kekjko] içjkk nhf(kr] dey ik.MA

35 O k[;ku

bdkbZ& 2

1. >kj[k.Mdsuohu dkO jpukdkjka,oamudh —fr;kadk lekU; ifjp; & çkå fnu"sk çlkn ik.M$] M;ä jkek'kk"kk ik.M$] M;ä cus̀oj ikBn] M;ä 'k;ksk deqkj feJA

25 O k[;ku

vuq'kalr iqrda &

1. vk/kfud la—r lkfgR; dk bfrgkl & çkå dyukFk 'kkL=h
2. vk/kfud la—r & çkå jk/kkoYYHkf=ikBh] jk'k'Vh; la—r laFkku]ubZfnYYh
3. vk/kfud la—r dkO dh ijØek & eatyrk 'kekZ]jk'k'Vh] la—r laFkku]ubZfnYYh
4. vk/kfud la—r lkfgR; dk bfrgkl & M;ä feFFkyk"sk ik.M$
5. dYioYYh]Hkkx&1] lEiknd & çkå vfHkjkt jktsedefeJ
6. dYioYYh]Hkkx&2] lEiknd & çkå puekdkur 'kDy
7. vk/kfud la—r dof; f=;kj & çkå vpk;k dekjhnqs
8. la—r lkfgR; dksk & jktoank lgk;]pkS/kEck la—r ljhj v,fQl
9. la—r xtly laxg & çkå vpk?kk dekjhnqs

COURSES OF STUDY FOR **MINOR ELECTIVE** FYUGP IN **"SANSKRIT"**

MINOR COURSE-1A
(SEM-I)

LXXXIX.   MINOR COURSE- MN 1A:
नीतिसाहित्य

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

mí's; &

1. NkbVs, oa jkp d dFkkvka dsek/;e lsdÙkZ ckSk djkukA
2. viuh ijEijk, oal a—fr dksjkek.k] egkHkkjr ipk.kkfn dsek/;e lsvoxr djkukA
3. l a—r Hkk'kk esafufgr Kku oSKo lsipfjfpr djkukA

vockxk &

1. Nk=kaeaykd dY;k.k dh Hkkouk tkxr gksxhA
2. i¥prU= vkS§ fgrksn'sk dsek/;e lsNk=ka dksuffrd f'k{kk nh tk ldsxhA
3. jkek.k egkHkkjr] ijk.k vkfn xUFkksa dk ifjp; çkIr dj muea vkRExksÙo dk Hkko tkxr gksxk, oav PNslllkidkjka dk oiu gksldsxkA

bdkbZlå 1   fgrksn'sk 1½e=ykHkk½   20
                               ⊙k[;ku

bdkbZlå 2   i¥prU= ¼vijhf{kr dkjdEk½   20
                               ⊙k[;ku

bdkbZlå 3   uhfr lkfgR; dk mnHko o fodkl   20
                               ⊙k[;ku

vuq(kafr iqrda &

1. fgrksn'sk fo'oukFkk'kekZ
2. i¥pra & '; kepj.k i k ik Ms
3. l a—r lkfgR; dk bfrgkl & vkpk.Zcynso mik/;k
4. l a—r lkfgR; dk bfrgkl & okpLifr xSkyx

MINOR COURSE-1B
(SEM-III)

XC.   MINOR COURSE- MN 1B:
संस्कृत साहित्य का इतिहास

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) 60 Hours

mís; &
1. lâ—r ok³e; dhl rr~çogeku ;k=kl sifjfpr djkukA
2. fofo/k dkOkål âgrkvkadsdkyØe o oSKV;~ lsifjfpr djkukA
3. oísd o ykfísld l kfgR dsvlrj dkslme>kukA

vockåk &
1. Nk=l â—r ok³e; dsçkekfïkd o;FkkFkZbfrgkl dkstku l dsxsA
2. oísd o ykfísld l kfgR dsdkyØe rFkk lEllUrk lsifjfpr gkstk;xsA
3. oísd o ykfísld l kfgR dh fofo/k fo/kkvkadk Kku çkir dj l dsxsA

bdkbZ û 1 oísd l kfgR; dk l kekU; ifjp;
1. onkadk l kekU; ifjp;] onkadk dky] ckã.k] vkj.;d ,oa mifu"knksadk l kekU; ifjp;   10
                 Ok{;ku
2. onkxkadk l kekU; ifjp;   05
                 Ok{;ku

bdkbZ û 2 ykfísd l kfgR; dk l kekU; ifjp;
1. jkek.k & l kekU; ifjp;] dky fu/kkZ.k] egRo] mith.krk] jkek.k dkyhu l ekt vkSl â—frA   10
                 Ok{;ku
2. egkHkkjr & l kekU; ifjp;] dky fu/kkZ.k] egRo] mith.krk] egkHkkjr dk fodkl Øe ,oa egkHkkjr dk ikSkZoA
                     10 Ok{;ku
3. ijk.k & ijk.kkadk ifjp; ifjHkk"kk] y{k.k] egkijk.k] mijk.k] iaSfïkd lf"V&foKkuA   10
                 Ok{;ku
4. dfri; ijk.kkadk l kekU; ifjp; & Jhen~Hkkxor~&vfXu] fo".kkxu#IM4, oaeRL;A   05
                 Ok{;ku
5. egkdkOkkadk mnHko ,oafodkl & dqkjl EHkoEk~uSk/kh; pfjrEk~lkfhjjurhEk~cyq pfjrEk~HkÍedkOe~,oa tkudhgj.keA   10
                 Ok{;ku

vuqökfir iqrda &
1. oísd l kfgR; dk bfrgkl & ijl ukFkf}osnh çkSÍEck lqjHkkjrhçdk'ku]okjk.kl h
2. lâ—r l kfgR; dk bfrgkl & vkpk.Zcynso mik/;k;
3. lâ—r l kfgR; dk bfrgkl & okpLifr xSsyk

MINOR COURSE-1C
(SEM-V)

XCI.   MINOR COURSE- MN 1C:
पद्य साहित्य

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) 60 Hours

mís; &
1. i|dkO dhmiknsrkl sifjfpr djkukA
2. uhfr'krde~}kjk eWvkadhf'k{kk nsukA
3. lEç'kk&dykdk fodkl djokuk rFkk çcU/ku dyk dhckjhfd;ksl sifjfpr djkukA

vockskk&
1. Nk=kaesai|xk.u dhdyk dk fodkl gksxkA
2. Nk= ekuoh; eWvkao mÙkjnkf;RokadkslsI> l daxsA
3. Nk= lEç'kk.k o çcU/ku dyk lsvoxr gksl daxsA

çLrkfor lापन
bdkbZl a1 i| l kfgR; dk mnHko ,oafodkl   10 O[; ku

bdkbZl a2
1. uhfr'krde~¼ls25 'yksl½   15 O[; ku
2. • iwoZ'knmve~¼ls25 'yksl½   15 O[; ku
3. • fdjkrktqih; e~¼}Fke l xZ¼¼ls15 'yksl½   10 O[; ku
4. • f'k'kqiky o/ke~¼}Fke l xZ¼¼ls15 'yksl½   10 O[; ku

vuqkfir iqrda&
1. iwoZ'knmve~& 'kkjkt j%eh] pk\$Eck fo|Hkou
2. uhfr'krde~& xksLokeh çºyknk fxfj] Hkkjrh; fo|k çdk'ku] okjk.klh
3. l a—r l kfgR; dk bfrgkl & vkpk.Zcynso mik/;k;
4. fdjkrktqih; e~& vf[ky s Sk ikBd
5. f'k'kqiky o/ke~& vkpk.Z—".kdeqkj voLFkh

MINOR COURSE-1D   (SEM-VII)

XCII. MINOR COURSE- MN 1D:
नाट्य साहित्य

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

mís; &
1. ukVî lkfgR; dsbfrgkl o oSfK'V;~ lsifjp; djkukA
2. ukVî 'kkL=h; Kku çnku djukA
3. la—r dsukVdkadsatv/;;u }kjk la—r fo"k; ea: fp mRlUu djukA

vockskk&
1. Nk= ukVî dh fofo/k çfof/k;ka lsifjfpr gksldsxaA
2. la—r ukVî lkfgR; dsçfr :fp tkxr gksxhA
3. ik=kadslkadn lsNk=kaeaslkkk'k.k&dkSky fodfl r gksxkA

bdkbZ la 1
1. ukVî lkfgR; dk mnHko ,oafodkl   15

O,k[; ku

bdkbZ la 2
2. vfHkKku'kkdqUrye~½ç.krkZfZ)vad½   15

O,k[; ku

3. Loluokl onÙke~½'k'B vad½   15

O,k[; ku

4. mÙkjjkepfjre~½4Fkh vad½   15

O,k[; ku

vulkSkfr iqrda
1. la—r lkfgR; dk bfrgkl & vkpk;Zcynso mik/;k;
2. la—r lkfgR; dk bfrgkl & okpLifr xSksyk
3. vfHkKku'kkdqUrye&& M,ãã dfiyns f}osnh
4. mÙkjjkepfjre&& M,ãã dfiyns f}osnh
5. LoçoklonÙke& t;iky fo|kydkj
6. ukVî fo/kkud rÙokaeavvFkkS{kisd & M,e/kqby dk oekZ

COURSES OF STUDY FOR **ABILITY ENHANCEMENT COURSE** IN **"SANSKRIT"**

ABILITY ENHANCEMENT COURSE-AEC 3
   (SEM-III)

XCIII. SANSKRIT ELECTIVE - 1:

संस्कृत का सामान्य व्याकरण एवं भाषा लेखन

Marks: 50 (ESE: 1.5 Hrs) = 50	Pass Marks: Th (SIE) = 20

(Credits: Theory-02) **30 Hours**

mís; &
1. Ia—r yɧku dkSky dk fodkl djukA
2. Ia—r Okdj.k dk lkekU;Kku djkukA

vocksk &
1. Ia—r çkFkfed Okdj.k dk Kku Nk=ksadksgksl ldxkA
2. Ia—r Hkk"kk yɧku Nk= dj ldxA

bdkbZ &1   20

Ok[; ku
1. ekg 'soj lﭯ,oaçR;kgkj A
2. ykbfdd Ia—r o.kkŒdk mPpkj.k LFkku ¼&,oaÝ}kjkkA
3. o.kZlaKku ,oao.kZfo;ksxsuA
4. 'kﭟn: i ¼uod] jekX Qy] vLen}-;en½A
5. /kkrq: i ¼unh] lk/kﮌ Hﭟwx Ek}-vLkA½
6. dkjd dsçe[k fu;ekdk lkagkj.k ifjp; A
7. Loj lfU/k dslkekU; fu;ekadk mnkgj.k lfgr ifjp; ¼h/dﮌ]xdﭟof)] ;.k}-v;kfn½A

bdkbZ &2

1. vukSpkfjd i=&yɧku   05

Ok[; ku
2. vuqokn ¼fgUnh l ss Ia—r½   05

Ok[; ku

vuqﭞkfr i qﭟrda &
1. çkS+& jpukuqokn dksﭟqh &,å dfiynso f}osnh
2. jpukuqokn dksﭟqh &,å dfiynso f}osnh
3. cﭟgn-vuqokn pfﮌadk & pØ/kj ﭞukﭟV; ky^

ABILITY ENHANCEMENT COURSE-AEC 4   (SEM-IV)

XCIV. SANSKRIT ELECTIVE - 2:
भाषा-कौशल, सन्धि, निबन्धादि

Marks: 50 (ESE: 1.5 Hrs) = 50	Pass Marks: Th (SIE) = 20

(Credits: Theory-02) **30 Hours**

mís; &
1. l a—r y§ku eaNk=kadksl {ke cukukA

vocksk &
1. Nk= l a—r Hkk"kk&y§ku ,oavocksku eal {ke gksl dsaA

bdkbZl å 1   20
Okf[; ku
1. l fU/k dse{q; fu; ekadk mngkj.k l fgr ifjp; ¼)¥±u l fU/k ,oafol xZl fUk½A
2. l oZuke 'kCn : i ¼n]-rn]-fde½A
3. vkReuisnh vkS mHkS. inh /kkrqkadk l kekU; Kku ¼8f}-fon]-—½A
4. vO;;kadk l kekU; Kku ¼Fkkuoipd vkS dky½A
5. çR;;kadk l kekU; Kku ¼dRokY; i]ä] dRor(rR; RÑ]-vuh, j]-'kr] 'kuPk]-Y;q½A
6. mi l xkZadk l kekU; KkuA

bdkbZl å 2
1. vuqokn   10
Okf[; ku
2. i =y§ku ¼4kSpkfjd i =½

3. fucU/k y§ku

vuqf}kr itjda&
1. çkS+& jpukuqokn dkSqh & Mkå dfi yns f}osnhA
2. jpukuqokn dkSqh & Mkå dfi yns f}osnhA
3. cgn~vuqokn&pfUdak dk & pØ/kj ~ukkS/; ky^A

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1st of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:
  - o)Odd Semester: **From first Monday of August to third Saturday of December**
  - p)Even Semester: **From first Monday of January to third Saturday of May**
- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
  - ➢ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
  - ➢ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
  - ➢ Bachelor's Degree after a 3-year (6 semesters) programme of study,
  - ➢ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
  - ➢ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

- o) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.
  One credit for Theory   = 15 Hours of Teaching i.e., 15 Credit Hours
  One credit for Practicum   = 30 Hours of Practical work i.e., 30 Credit Hours

  - p) For credit determination, instruction is divided into three major components:
    Hours (L) – Classroom Hours of one-hour duration.
    Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
    Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.
- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

lxx.   The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

lxxi.   No student will be detained in odd Semesters (I, III, V & VII).

lxxii.   To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

lxxiii.   To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

lxxiv.   To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

lxxv.   However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

lxxvi.   Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

lxxvii.   To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year.

lxxviii.   A student has to pass in minimum 3 papers out of the total 4 papers.

lxxix.   It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result of the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)													
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)													
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree													
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4
Exit Point: Bachelor's Degree with Hons. /Hons. with Research												**160**	**224**

Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME 2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	**Papers**	**Credits**
I	AEC-1	Language and Communication Skills (MIL 1 - Hindi/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Hindi)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4
IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2
	VAC-2	Value Added Course-2	2

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	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4
	RC/	Research Internship/Field Work/Dissertation OR	12/
	AMJ-1 AMJ-2 AMJ-3	Advanced Major paper-1 (Disciplinary/Interdisciplinary Major) Advanced Major paper-2 (Disciplinary/Interdisciplinary Major) Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	4 4 4
		Total Credit	**160**

Upgraded & Implemented for 3rd Semester of Session 2022-26 & Onwards

NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	xv. Discipline/ Interdisciplinary courses and xvi. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64
Minor	xv. Discipline/ Interdisciplinary courses and xvi. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Double Major Courses		Credits
	Code	Papers	
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:
AEC   Ability Enhancement Courses
SEC   Skill Enhancement Courses
IAP   Internship/Apprenticeship/ Project
MDC   Multidisciplinary Courses
MJ   Major Disciplinary/Interdisciplinary Courses
DMJ   Double Major Disciplinary/Interdisciplinary Courses
MN   Minor Disciplinary/Interdisciplinary Courses
AMJ   Advanced Major Disciplinary/Interdisciplinary Courses
RC   Research Courses

AIMS OF BACHELOR'S DEGREE PROGRAMME IN SOCIOLOGY

The broad aims of the LOCF for Sociology are:

(i)   The Honours/Research program in Sociology is premised on an axiom that a graduate is not the mere product of a system. On the contrary, the graduate attributes are the most concrete manifestation of the spirit of the entire program, its operationalization through institutions and collective and concerted efforts of all stake holders.

(ii)   Every other feature of the programme is fused into this. Hence graduate attributes, qualification descriptors and programme learning outcomes may not be described separately since they are innately interconnected.

(iii)   A Sociology graduate would be a person with a thorough grounding in the fundamentals of Sociology and infused with the *'Sociological Imagination'*. They can see the connections between biographies and history, personal problems and historical currents, pierce the seamless fabric of common sense that envelopes the everyday life of societies, draw connections between seemingly independent social factors, processes and institutions using observation and analysis.

(iv)   Being trained in a highly context-sensitive discipline, a Sociology graduate is alert to social, cultural and historical context of all issues. In the Indian context, that implies an ingrained post-colonial sensibility that critically engages constitutions of self and engagement with the other.

(v)   Sociology is a deeply self-reflexive discipline with an inter-disciplinary orientation. A graduate would be capable of describing and embodying the mandate and perspective of Sociology as a discipline, how it differs from cognate social sciences and be able to engage productively with them without losing disciplinary perspective.

(vi)   A Sociology graduate is exposed to a significant quantum of concepts, conceptual writing, theories and theoretical reasoning throughout the three years across all the courses. Hence she/ he has an ability to grasp and generate a conceptual conversation in general and within the discipline of Sociology in particular.

(vii)   She/he is also familiar with well-defined, critical and evolving multiplicity of theoretical perspectives. A Sociology graduate would be well versed with the basic tenets of these perspectives and capable of generating versions of social world from these perspectives.

(viii) Endowed with this awareness of multiple perspectives on any significant issue a Sociology graduate is able to reason it out and weigh the various operational options in any given context.

(ix)   Rigorous empirical investigation of the social being an inalienable aspect of graduate training, Sociology graduates are well trained to engage in research. They are familiar with the elementary techniques of social investigation via a thorough two semesters long training in sociological research methods.

(x)   A chief graduate attribute of Sociology students is a demonstrable ability to constitute a significant sociological problem to investigate, design research, choose appropriate techniques of social investigation, gather data from a scientifically determined sample, make sense of the data after due analysis, render the results in appropriate conceptual context and draw viable theoretical conclusions. Sociology graduates are an embodiment of highly desirable combination of keen observation, deep empathy, rigorous reason, hardnosed empiricism and scholarly detachment.

(xi)   They have abilities to read diverse kinds of material ranging from statistics, theoretical tracts, official reports, research reports, visual material, imaginative literature, cultural artefacts and social gestures and synthesise and generalize from them to draw viable conclusions. They are keenly aware of social context of knowledge production itself.

PROGRAM LEARNING OUTCOMES

The broad programme learning outcomes in Sociology are:

(i)   Substantively, Sociology graduates possess specialized knowledge of a range of social institutions and processes. Through courses on Indian society, polity, economy, religion, kinship and family, gender and social stratification they have a fine grasp of social structures, processes, institutions, cultural diversities and dynamics of social change along with attendant conceptual tool- kit of the discipline.

(ii)   The courses around these themes are constructed inter-textually and indexed to the courses on theories and methods. Hence a key graduate attribute in terms of disciplinary knowledge is an ability to access substantive stock of existing research on these areas of sociological knowledge and invoke it strategically to draw conclusions, throw light on emerging issues, and generate insights and research agendas.

(iii)   Sociology graduates are instinctually comparative across and within the cultures. They are trained to spot social patterns and trends and seek causation at the level of social and cultural collectives to explain the observed social regularities. They are averse to attaching undue causal weight to individual subjective understandings and are resistant to unfounded ethnocentric assumptions.

(iv)   They can seamlessly redefine and reconstitute a range of social issues at multiple scales from diverse perspectives simultaneously to produce optimal solutions. Most students find this new found ability not only transformative but almost therapeutic.

(v)   A Sociology graduate is likely to have a specialized understanding of sociological conversation around Sociology of Gender; Social Stratification; Urban Sociology; Agrarian Sociology; Environmental Sociology; Sociology of Work and Industry; Health and Medicine; Visual Cultures; Indian Sociological Traditions and Reading Ethnographic Monographs.

(vi)   Sociology is both precise and evocative in the representation of the results of its scholarly labours. It is also keenly aware of its role in educating the public and dispelling common misconceptions and prejudices.

(vii)   Hence good communication skills are imperative for a Sociology graduate. Sociological communication takes three principal forms: oral, written and visual.

(viii) Sociology is a worldly science that incessantly draws students beyond class rooms and harnesses the productive tension between library work, field work and a call to interventionist action.

(ix)   A Sociology graduate is ideal for employment needs where a graduate from liberal arts would fit in for this rare blend. They are a perfect fit for the areas (but not limited to them alone) such as law, development studies, development practice, social work, bureaucracy and public institutions, women's studies, gender studies, area studies, international relations, policy studies, policy implementation, advocacy, management, marketing, social psychology, industrial organization, election studies, data sciences, journalism, criminology, and careers in fine and performing arts.

(x)   Sociology is both a profession and a vocation. A lifelong commitment to learning, critical thinking and to the cause of the collective well-being rather than narcissistic self-indulgence.

(xi)   It is a cosmopolitan science that is positive and normative at once. A Sociology graduate would make an enlightened leader and an informed follower.

The chief attribute of a Sociology graduate is that she/he is well prepared in discharging her/his responsibilities as a conscious citizen while having a productive career and leading a meaningful life.

SEMESTER WISE COURSES IN SOCIOLOGY MAJOR-1 FOR FYUGP   **2022 onwards**

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	Principles of Sociology	4	25	75	---
II	MJ-2	Classical Sociological Thinkers	4	25	75	---
	MJ-3	Social Stratification	4	25	75	---
III	MJ-4	Indian Society – I	4	25	75	---
	MJ-5	Rural Sociology	4	25	75	---
IV	MJ-6	Urban Sociology	4	25	75	---
	MJ-7	Indian Sociological Thinkers	4	25	75	---
	MJ-8	Population and Society	4	25	75	---
V	MJ-9	Social Anthropology	4	25	75	---
	MJ-10	Family, Marriage and Kinship	4	25	75	---
	MJ-11	Indian Society – II	4	25	75	---
VI	MJ-12	Political Sociology	4	25	75	---
	MJ-13	Modern Sociological Thought	4	25	75	---
	MJ-14	Social Movements	4	25	75	---
	MJ-15	Crime And Society	4	25	75	---
VII	MJ-16	Research Methods And Statistics	4	25	75	---
	MJ-17	Social Change and Development	4	25	75	---
	MJ-18	Sociology of Globalization	4	25	75	---
	MJ-19	Sociology of Tribes	4	25	75	---
VIII	MJ-20	Sociology of Religion	4	25	75	---
	AMJ-1	Sociology of Gender	4	25	75	---
	AMJ-2	Environmental Sociology	4	25	75	---
	AMJ-3	Sociology of Education	4	25	75	---
	or RC-1	Research Methodology	4	25	75	---
	RC-2	Project Dissertation/ Research Internship/ Field Work	8	---	---	200
		Total Credit	**92**			

Upgraded & Implemented for 3rd Semester of Session 2022-26 & Onwards

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

| Semester | Skill Enhancement Courses | | Examination Structure | | | |
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	Reading, Writing and Reasoning for Sociology	3	---	75	---
II	SEC-2	Techniques of Social Research	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	**9**			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

| Semester | Minor Courses | | Examination Structure | | | |
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	Introductory Sociology	4	25	75	---
III	MN-1B	Modern Indian Social Thinkers	4	25	75	---
V	MN-1C	Culture and Society	4	25	75	---
VII	MN-1D	Rural Society in India	4	25	75	---
		Total Credit	**16**			

INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There will be <u>Only One Semester Internal Examination</u> in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

O. (SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

P. (SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.
Conversion of Attendance into score may be as follows:
Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

V. (ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

W. (ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

X. (ESE 100 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

Subject/ Code

F.M. =10   **Time**=1Hr.   Exam Year

General Instructions:

xxxvi.   **Group A** carries very short answer type compulsory questions.

xxxvii.   **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.

xxxviii.   Answer in your own words as far as practicable.

xxxix.   Answer all sub parts of a question at one place.

xl.   Numbers in right indicate full marks of the question.

Group A

22.   [5x1=5]

xxxvi.   ....

xxxvii.   ....

xxxviii.   ....

xxxix.   ....

xl.   ....

Group B

23. ....   [5]

24. ....   [5]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **20 Marks**:

Subject/ Code

F.M. =20   **Time**=1Hr.   Exam Year

General Instructions:

xxxvi.   **Group A** carries very short answer type compulsory questions.

xxxvii.   **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.

xxxviii.   Answer in your own words as far as practicable.

xxxix.   Answer all sub parts of a question at one place.

xl.   Numbers in right indicate full marks of the question.

Group A

29.   [5x1=5]

xxxvi.   ....

xxxvii.   ....

xxxviii.   ....

xxxix.   ....

xl.   ....

30. ....   [5]

Group B

31. ....   [10]

32. ....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

Upgraded & Implemented for 3rd Semester of Session 2022-26 & Onwards

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION
Question format for **50 Marks**:

Subject/ Code

F.M. =50   **Time**=3Hrs.   Exam Year

General Instructions:
xiii. **Group A** carries very short answer type **compulsory** questions.
xiv. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
xxiv. Answer in your own words as far as practicable.
xxv. Answer all sub parts of a question at one place.
xxvi. Numbers in right indicate full marks of the question.

Group A

43.   [5x1=5]

    xxxvi.   ....
    xxxvii.   ....
    xxxviii.   ....
    xxxix.   ....
    xl.   ....

Group B

44. ....   [15]
45. ....   [15]
46. ....   [15]
47. ....   [15]
48. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **60 Marks**:

Subject/ Code

F.M. =60   **Time**=3Hrs.   Exam Year

General Instructions:
xv. **Group A** carries very short answer type **compulsory** questions.
xvi. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
xxiv. Answer in your own words as far as practicable.
xxv. Answer all sub parts of a question at one place.
xxvi. Numbers in right indicate full marks of the question.

Group A

57.   [5x1=5]

    xxxvi.   ....
    xxxvii.   ....
    xxxviii.   ....
    xxxix.   ....
    xl.   ....

58. ....   [5]
59. ....   [5]

Group B

60. ....   [15]
61. ....   [15]
62. ....   [15]
63. ....   [15]
64. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Upgraded & Implemented for 3rd Semester of Session 2022-26 & Onwards

Question format for **75 Marks**:

Subject/ Code

F.M. = 75   **Time**=3Hrs.   Exam Year

General Instructions:
xv. **Group A** carries very short answer type **compulsory** questions.
xvi. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xxiv. Answer in your own words as far as practicable.
xxv. Answer all sub parts of a question at one place.
xxvi. Numbers in right indicate full marks of the question.

Group A

64.   [5x1=5]

            xxxvi.   ....
            xxxvii.   ....
            xxxviii.   ....
            xxxix.   ....
            xl.   ....

65. ....   [5]
66. ....   [5]

Group B

67. ....   [15]
68. ....   [15]
69. ....   [15]
70. ....   [15]
71. ....   [15]
72. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

Subject/ Code

F.M. = 100   **Time**=3Hrs.   Exam Year

General Instructions:
xv. **Group A** carries very short answer type **compulsory** questions.
xvi. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xxiv. Answer in your own words as far as practicable.
xxv. Answer all sub parts of a question at one place.
xxvi. Numbers in right indicate full marks of the question.

Group A

8.   [10x1=10]

       xxxvi. ....   vi.   ....
      xxxvii.   ....   vii.   ....
      xxxviii.   ....   viii.   ....
       xxxix. ....   ix.   ....
16. ...xl.......................   x   ....   [5]
17. ....   [5]

Group B

46. ....   [20]
47. ....   [20]
48. ....   [20]
49. ....   [20]
50. ....   [20]
51. ....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

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SEMESTER I

XIV.   MAJOR COURSE –MJ 1:
PRINCIPLES OF SOCIOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) Theory: 60 Lectures

Course Objectives:
1. To introduce students to the discipline of Sociology and orienting them to thinking sociologically.
2. To familiarise students with the relationship between Sociology and other Social Sciences
3. To introduce students to some of the basic concepts of Sociology.

Course Learning Outcomes:
1. Students will be able to orient themselves to ways of sociological thinking.
2. They will be able to explain and apply the key concepts in Sociology.

Course Content:

UNIT 1: Sociology: Discipline and Perspective
1.1 **Thinking Sociologically**
a. Johnson, Allan G. 2008*, The Forest and the Trees: Sociology as Life Practice and Promise*, Philadelphia: Temple University Press, Introduction and Chapter 1, 'The Forest, the Trees and One Thing', Pp. 1-36
b. Beteille, Andre, 2009, *Sociology: Essays in Approach and Method*, Delhi: Oxford University Press, Chapter 1, 'Sociology and Common Sense', Pp. 13-27
c. Garner, James Finn, 1994, *Politically Correct Bedtime Stories: Modern Tales for Our Life and Times*, New Jersey: John Wiley & Sons Inc., Chapters, *Introduction*, 'Little Red Riding Hood' & 'Rumpelstiltskin'

1.2 **Emergence of Sociology**
a. Ritzer, George, 1996*, Classical Sociological Theory,* New York: McGraw Hill, Chapter1, 'A Historical Sketch of Sociological Theory- The Early Years', Pp. 13-46

UNIT 2: Sociology and Other Social Sciences
a. Béteille, André, 1985, *Six Essays in Comparative Sociology*, New Delhi: Oxford University Press, Chapter 1, 'Sociology and Social Anthropology'
b. Bottomore, T. B. 1971, *Sociology: A Guide to Problems and Literature*, London: Allen and Unwin. Chapter 4, 'The Social Sciences, History and Philosophy', Pp. 65-80

UNIT 3: Basic Concepts
3.1   **Individual and Group**
a. Horton, Paul B., Chester L. Hunt. 2004, *Sociology*. New Delhi: Tata McGraw-Hill,
b. Chapter4.Pp83-94; Chapter 5. Pp104-115; Chapter 8, Pp.185-209.

3.2   **Associations and Institutions**
a. Horton, Paul B., Chester L. Hunt.2004, *Sociology*. New Delhi: Tata McGraw Hill. Chapter9, Pp. 210-229.

3.3**Society and Culture**
a. Macionis, John, J. (Adapted by Reema Bhatia). 2019. *Sociology,*17 Edition. Chapter3, Culture, Pp 70-95. Pearson. New Delhi.
b. Redfield, Robert1956, Chapter 16, 'How Human Society Operates', in Harry L Shapiro(ed.)
c. *Man, Culture and Society*. New York: Oxford University Press, Pp. 345-368. *approaches.*

UNIT 4: Major Perspectives in Sociology
4.1   **Functionalism**
a. Durkheim, Emile. 1982, *The Rules of Sociological Method*, New York: Free Press. Chapter1, What is a Social Fact? Pp. 50 – 59.

b. Radcliffe Brown, A. R., 1976, *Structure and Function in Primitive Society*, New York: Free Press Chapter 9 & 10, Pp. 178-204.

4.2 **Conflict Perspective**

a. Marx, Karland Fredrick Engels. 2008.*TheManifestoof the Communist Party*. London: Pluto Press. Pp. 31-66

Essential Reading:

1. fl g]tsih]lekt"kkL= %vo/kkj.kk¡,oafl)ka]ih·,p-vkbZyZux ikooV fyfeVsM

2. fl akh]ujbhz,oaxksokeh]ol økkdj]lekt'kkL= foopu]jktLFkku fgUnh xaBk vdkneh]t;iju

3. pk&kjh]ikjl dqkj]lekt"kkL= dsfl)ka]dYikt iwdk'ku]ubZfnYyh

4. Harlambos, M. 1998. Sociology: Themes and perspectives. New Delhi: Oxford University Press.

XV.   SKILL ENHANCEMENT COURSE- SEC 1:
READING, WRITING AND REASONING FOR SOCIOLOGY

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03)   **Theory: 45 Lectures**

Course Objective:

1. Reading:

(a) At the end of the course, students will be equipped to move from reading rudimentarily to advanced reading of texts extensively

(b) Read academic texts and identify the central argument(s) and grasp the content of the texts

(c) Read texts to identify the organization of ideas, structure of the arguments, style and tone of the author and author biases

(d) Identify general conclusions from specific details in texts

2. Writing:

(a) Identify standard elements of writing and different genres of writing from personal essay to academic writing.

(b) Be equipped to express in different genres of writing such as summaries, critical reviews and essays, using:
Multi-draft approach: pre-writing, outlining, drafting, revising, and editing. Formal academic style. Information from several sources and synthesizing into their own writing. Internationally accepted methods of citation and referencing

(c) Be able to treat reading and writing as complementary and synergistic

(d) Be able to conceptualize and plan a research paper

3. Reasoning:

(a) Students should be able to approach writing as a form of reasoning, with specific organization of ideas, style and perspective

(b) Be able to develop critical thinking through reflecting on various texts consciously and not take anything for granted in the analyses of the social world

(c) Be able to develop scientific reasoning by reading texts for consistency and logic

(d) As multicultural classrooms, students should be able to relate specific experiences with specific groups and generate multi-cultural competence in understanding social issues. By reading texts from cross-cultural contexts, students will be able to approach a creative synthesis in the classroom and grasp the various ways of sociological reasoning.

Course Contents

1. Introduction: The virtues of repetition [Week 1]

Academic reading and writing is really all about re-reading and rewriting – about repeatedly reworking a text until some provisional goal is achieved.

1.1 Assignment, Day 1: Read a short (1-2 page) academic text of moderate difficulty and summarize it in one paragraph (3-4 sentences). (This is without prior guidance by the instructor).

1.2 Assignment, Day 2: Re-read the same text and re-write the summary after a brief discussion of 'CONTENT' (does the summary contain most of the most important points made in the text?)

1.3 Assignment, Day 3: Re-read the same text and re-write the summary again after a brief discussion of 'FORM' (is the summary well structured, clear and effective?)

2. Techniques for reading academic texts [Weeks 2–4]
2.1 Grasping the whole: How to get an overview
2.1.1   Titles as the shortest summary of a text
2.1.2   Good and bad titles
2.1.3   Section headings (where present)
2.1.4   Introductions and Conclusions
2.1.5   Identifying important passages and sentences
2.2 Divide and conquer: Taking texts apart
2.2.1   Beginning, middle and conclusion – stages of argument
2.2.2   The architecture of arguments: main, subsidiary, minor
2.2.3   Everything is not equally important: Distribution of emphasis

2.3 Getting outside help: Recruiting extra resources
2.3.1   Isolating words & terms: Dictionaries, Encyclopedias
2.3.2   Contextualising texts with quick background research
2.3.3   Productive ways of asking for help from teachers/tutors

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3. Techniques for writing academic prose [Weeks 5–7]
3.1 Building a structure: What do you want to say?
3.1.1   Beginning, middle and conclusion – stages of argument
3.1.2   The architecture of arguments: main, subsidiary, minor
3.1.3   Everything is not equally important: Distribution of emphasis

3.2 Working with blocks: Sections, Paragraphs, Sentences
3.2.1   How many sections? Job descriptions for each section
3.2.2   Paragraphs as key building blocks of academic prose
3.2.3   Sentences and punctuation; length, balance, continuity

3.3 Borrowing material: Paraphrasing, Quoting, Citing
3.3.1   The difference between paraphrasing and plagiarism
3.3.2   Quotations: When? Why? How?
3.3.3   Citationstyles
3.3.4   Productive ways of asking for help from teachers/tutors

4. Final sessions: peer reviewing [Week 8]
The ability to judge and evaluate is a crucial skill, particularly when applied to oneself. Students will practice evaluating each other's work throughout the semester, but the last week can be formalized and stepped up into a more elaborate exercise.

1.1 Assignment, Day 1: The whole class does an individualized, two-part composite reading and writing exercise designed by the instructor based on semester long experience of student abilities and interests.
1.2 Assignment, Day 2: The reading part of the individual assignment is randomly distributed for students to evaluate and comment on their colleagues' work. The instructor moderates discussion of strengths and weaknesses, highlighting techniques for recognizing quality (or its lack).
1.3 Assignment, Day 3: The writing part of the assignment is similarly distributed and evaluated through interactive, moderated discussion.

References:
Through this course, students should learn how to recognize good or bad writing and should be equipped with the elementary techniques for 'repairing' bad or damaged prose. The course will be preceded by a workshop for teachers. Short extracts for class exercises will be culled from classic and contemporary social science texts of varying levels of difficulty and of different genres and styles. The actual set of texts will be decided at the preparatory workshop. Examples could include:

1. Bailey, S. (2005). Academic Writing. London: Routledge
2. Becker, Howard Saul and Pamela Richards. Writing For Social Scientists. Chicago: University of Chicago Press, 2007
3. Creme, P. and Lea, M. (2006). Writing at University. Berkshire: Open University Press
4. Dillard, A. (1995). The writing life. New York, NY: HarperPerennial Fairbairn, G. and Fairbairn, S. (2010). Reading at University. Buckingham: Open University Press
5. Douglas, Mary (1986) How institutions think, Syracuse University Press, Syracuse, New York.
6. Graff, Gerald, (2014) "They Say / I Say" – The Moves That Matter in Academic Writing 3e , New York: W. W. Norton & Company
7. Johnson, William A. Et. Al. The Sociology Student Writer's Manual. New Jersey: Prentice Hall, 2000
8. Keynes, John Maynard (1936) The general theory of employment, interest and money, Palgrave Macmillan, United Kingdom
9. Louis Dumont (1980) Homo Hierarchicus, University of Chicago Press.
10. Parsons, Talcott (1951): The social system, Glencoe III, Free Press
11. Romila Thapar (2004) Somanatha: The many voices of history, Penguin Books, India
12. Sunil Khilnani (1997) The idea of India, Penguin Books.
13. Thomson, A. Et. Al. Critical Reasoning. London: Routledge. 2001
14. Well-known guides to academic writing (such as Howard Becker's Writing for Social Scientists) will also be used where appropriate.

Additional Resources:
15. Axelrod Rise B. and Charles R. Cooper. The St. Martin's Guide to Writing. New York: St. Martin's Press. 1991.
16. Shrodes, Caroline. Et. Al (Eds.) The Conscious Reader. New York: Macmillan, 1988.

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SEMESTER II

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XCV. MAJOR COURSE- MJ 2:
CLASSICAL SOCIOLOGICAL THINKERS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
1. Objective of teaching sociological Thinkers to undergraduate students is to enable them to apply theory to their own everyday life experiences.
2. This requiresthatstudentsdeveloptheirsociologicalimaginationandthecapacitytoread each situation sociologically and then to think about it theoretically.
3. To this end, it is imperative that sociological theory courses demonstrate the applicability of theory to students.

Course Learning Outcome:
1. Understanding the grand foundational themes of sociology.
2. Applicationoftheoriesandconceptsfromclassicalsociologicaltheoriesto develop intellectual openness and curiosity.
3. Appreciation of the classical concepts and theories to develop awareness of the limits of current knowledge.

Course Content:
UNIT 1: Auguste Comte
1.1 Law of Three Stages
a. Comte, Auguste, 1830, *The Course of Positive Philosophy*

UNIT 2: Karl Marx
2.1 **Dialectics and Historical Materialism.**
2.2 **Class Struggle**
a. Marx, K. and F. Engels. 1969. *Selected Works Vol. 1*. Moscow: Progress Publishers. pp. 13- 15 (Theseson Feuerbach), pp.16-80 (A Critique of the German Ideology), pp. 98-137
b. (Manifesto of the Communist Party), pp.142-173 (Wage Labour and Capital),pp.502- 506 (Abstract of Preface from *A Contribution to the Critique of Political Economy*).

UNIT 3: Max Weber
3.1 **Social Action and Ideal Types**
3.2 **Religion and Economy**
a. Weber, Max.1947. *The Theory of Social and Economic Organization*. New York, The Free Press, pp.87-123
b. Weber, Max.2002. *The Protestant Ethic and the Spirit of Capitalism* (translated by Stephen Kalberg). London: Blackwell Publishers, pp. 3-54, 103-126, Chapters I, II, III, IV & V

UNIT 4: Emile Durkheim
4.1 **Social Fact**
4.2 **Suicide**
a. Durkheim, E. 1958. *The Rules of Sociological Method*. New York: The Free Press. pp. 48- 107, 119-144
b. Durkheim, E. 1951. *Suicide: A Study in Sociology*. New York: The Free Press, pp. 41-56,145- 151.
c. Durkheim, E. 1964.The Division of Labour in Society, New York, The Free Press. Ch2&3 pp.70-133.

Essential Reading:
1. fl g] t s i h] i k'pkR l kekftd fpUrd],d l ek:ksÑukiRed nf"Vdksk[j¡kor if(y¡ds'kU] t;iqj-
2. gq¡S],e-] l ekt ”kkL=h¡ fopkjd] vk§;é (y¡S LokÜ] fgek¡ r uxj]g¡Sjkckn-
3. nk±kkh],l -,y-],¡oat¡S] i h-l h¡ l kekftd fopkjd]jkor if(y¡ds'kU] t;iqj-

4. eq{ tI]johthnzkFk]lkekftd fopkj/kkjk]foosl idk'ku] fnYyh-

XCVI. MAJOR COURSE- MJ 3:
SOCIAL STRATIFICATION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. This course introduces students to Sociological Study of Social Inequalities.
2. It acquaints students with principal theoretical perspectives on and diverse forms of social inequality in articulation with each other.

Course Learning Outcomes:
1. Students will learn about the socio-historical context of stratification theoretical concerns and problems and contemporary issues related to inequalities s and its forms.
2. Understanding of stratification and theories would sensitize students to its various sociological aspects, providing ample scope for applied learning and application.
3. Examining forms of stratification, understanding the relevance of caste, race and ethnic identities in contemporary world.

Course Content:
UNIT 1: Introducing Stratification
a. Beteille, Andre Inequality among Men. London: Blackwell, 1977. Chapter 1. The Two Sources of Inequality. Pp. 1-22

UNIT 2: Theories of Stratification
2.1 Marx, Weber and Class
a. Bendix Reinhard 'Inequality and Social Structure: Comparison of Marx and Weber' American Sociological Review, Vol. 39, No. 2 (Apr., 1974), pp. 149-161

2.2 Functional theory of stratification
 Davis, Kingsley, and Wilbert E. Moore. 'Some Principles of Stratification'. American Sociological Review 10.2 (1945): pp. 242-249

UNIT 3: Identities and Inequalities
3.1 Caste and Race
a. Bailey F G 'Closed Social Stratification in India', European Journal of Sociology Vol. 4, No.1 (1963) pp. 107-124
b. Omi, Michael, and Howard Winant. Racial Formation in the United States. New York: Routledge & Kegan Paul, 1986. Chapters 1 & 4, pp. 14-24 and 57-69

3.2 Feminism and Gendered Stratification
a. Begum Rokeya, Sultana's Dream
b. Collins, Patrica Hill. 'Toward a New Vision: Race Class and Gender as Categories of analysis and Connection' Race, Sex & Class, Vol. 1, No. 1 (Fall 1993), pp. 25-45

UNIT 4: Social Mobility: Concept and types
a. Goldthorpe, J. H. The Constant Flux; A Study of Class Mobility in Industrial Societies, Oxford; Clarendon press.

Suggested Readings:
1. Bailey F G 'Closed Social Stratification in India', European Journal of Sociology Vol. 4, No. 1 (1963) pp. 107-124
2. Bendix Reinhard 'Inequality and Social Structure: Comparison of Marx and Weber' American Sociological Review, Vol. 39, No. 2 (Apr., 1974), pp. 149-161
3. Beteille, Andre, Inequality among Men. London: Blackwell, 1977. Chapter 1. The Two Sources of Inequality. Pp. 1-22

4. Davis Kingsley and Wilbert E Moore 'Some Principles of Stratification: Critical Analysis: Reply'. American Sociological Review Vol. 18, No. 4 (Aug., 1953), pp. 394-397

5. Davis, Kingsley, and Wilbert E. Moore. 'Some Principles of Stratification'. American Sociological Review 10.2 (1945): pp. 242-249

6. Goldthorpe, J. H. The Constant Flux; A Study of Class Mobility in Industrial Societies, Oxford; Clarendon press.

7. Stinchcombe, Arthur L 'Some Empirical Consequences of the Davis-Moore Theory of Stratification'. American Sociological Review 28.5 (1963), pp. 805-808

8. Weber, Max, Hans Heinrich Gerth, and C. Wright Mills. From Max Weber. New York: Oxford University Press, 1946. Chapter VII, Class, Status, Party. Pp. 180– 195

9. fl akh uj\h zdqkj , oaxksokeh] ol qkdj] l ekt "kL= foopu] jktLFkku fgUnh xzUFk vdkneh] t; ig]

10. "kek\ds, y-] l ekftd Lrjhdj.k] 2011] jkor ifQyd'ku

XCVII.   SKILL ENHANCEMENT COURSE- SEC 2:
TECHNIQUES OF SOCIAL RESEARCH

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03)   **Theory: 45 Lectures**

Course Objectives:

1. This course aims to enhance the skills of students to understand and use techniques employed by social scientists to investigate social phenomena.
2. 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.
3. A minimum of two hours each working day devoted for this course meet the objective.

Course Contents:
The course will be based on exercises to be done in groups.

1. Research Design (Week 1- 2)

1.1 Bryman, A.2008, Social Research Methods, Oxford: Oxford University Press, Chapter 2,3,4&5, pp. 29-136

1.2. Amir B. Marvasti,2004, Qualitative Research in Sociology, London: Sage, Chapter 2,3,4,5,6&7, pp.14-144

Suggested Assignments:

a) Design a survey on factors effecting marriage choices of young people.
b) Visit a shopping mall and observe the interaction between employees and customers/visitors. Identify themes based on your observation and prepare a questionnaire based on this experience.
c) Visit the college canteen/ administrative office/a bus stop/ area outside the metro station and observe all that happens for an hour or more and write a descriptive note on it. Discussions on these notes to follow.
d) Visit a police station/ hospital/court and spend a few hours observing the scene. Write a short essay on issues of access to the field, rapport building and your role as an ethnographer.

2. Data Collection (Weeks 3-5)

2.1 Lofland J. and Lofland L. 1984, Analysing Social Settings: A Guide to Qualitative Observation and Experiment, California: Wadsworth

2.2 Morgan, David L. 1996, "Focus Groups", Annual Review of Sociology 22, pp. 29-52

Suggested Assignments:

a) Conduct a structured Interview with close ended options and a relatively unstructured interview on the same topic (of your choice) with similar sets of people. Observe and note the differences.
b) Look at NSS/NFHS/Census Data and write notes on the themes of how you can interpret the data.
c) Look at a set of published letters of Gandhi, Nehru, C.F. Andrews, Tagore etc. and identify key social issues that are discussed in the contents of the letters.
d) Collect 3 oral testimonies/ life histories of people who have witnessed and experienced any traumatic event in their lives.

3. Data Analysis (Weeks 6-7)

(Students will be introduced to the use of Statistical Software Packages)

Suggested Assignments/Exercise:

a) Choose a theme of your interest- for e.g., crime, technology environmental concerns or any other and look through the Sunday editorials of any national daily of the last 3 months to locate related articles.
b) Do a content analysis of advertisements of any one consumer product/service, which have appeared over one year in a leading national daily.
c) Analyse the oral testimonies you have collected in Exercise 2(d). Discuss the issues and challenges in using testimony as evidence.
d) Students will be provided with data sets to run them in a software program.

4. Framing a Research Question (Week 8)

Choose a research question, identify statement(s), hypothesis and concepts.
Operationalize concepts and match the methods and tools for data collection.

SEMESTER III

I.   MAJOR COURSE- MJ 4:
INDIAN SOCIETY – I

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objective:
1. Understanding key concepts and institutions of Indian society.
2. To understand the modes of knowledge – construction of Indian history, society, Culture and politics
3. To examine how multiple social processes, forces and ideologies shaped the terrain of the nation.

Course Learning Outcome:
1. Through informed interrogation of concepts and institutions of India, the course contributes to the development of critical and analytical thinking. The course, supported by an inter-disciplinary approach, facilitates learning and reflecting about the multiple – and contextual – socio-cultural registers of Indian society.
2. The course adds to the sociological interpretation of Indian history and society. The India-specific themes of the course – discourse/knowledge-making, mobilization, transformation, ideology, identity and politics, for example– are treated, moreover, by drawing from sociological concepts and theories. The course connects the practical and conceptual in terms of both substance and relevance.
3.   The adoption of an inter-disciplinary framework, without losing sight of the sociological, makes the course wider in scope and scale. It broadens viewpoints and encourages students to reflect deeply on the multicultural reality which is the defining feature of India. Use of innovative teaching-learning methods, the course prepares students to successfully compete in global academia.

Course Content:
UNIT 1: Indian Society: Concepts and Institutions
1.1 **Varna System**, Ashram –Characteristics
1.2 **Caste:** Concept and Critique
a. Srinivas, M.N., 1969, "The Caste System in India", in A. Beteille (ed.) *Social Inequality: Selected Readings*. Harmondsworth: Penguin Books, Pp. 265-272.
1.3 **Village: Characteristics and Change**
a. Madan, V., 2002, "Introduction" in V. Madan (ed.), The Village in India. Delhi: Oxford University Press, Pp. 1-26.
1.4 **Kinship: Types and Usages**
a. Karve, I., 1994, "The Kinship Map of India", in P. Uberoi (ed.), *Family, Kinship and Marriage in India.* Delhi: Oxford University Press, Pp.50-73.

UNIT 2: Social Inequality and Exclusion
1.1 Caste Prejudice, Scheduled Castes, and Other Backward Classes
UNIT 3: Weaker Sections
3.1 Minorities 3.2 Women

UNIT 4: Social Problems in India
4.1 Social Problems: Meaning and Definition
4.2 Sociological Perspectives on Social Problems – Anomie and Suicide
4.3 Issues – Causes and remedies - Dowry, Domestic Violence, Communalism, Casteism
Essential Readings:
1. xqrdksekshyky]Hkkjrealekt]jktLFkku fgunh xzaFk vdkneh] t;iqj
2. J. P. Singh, Bharat Ka Adhunik Samaj (Society in Modern India), Jaipur: Rawat Publ. House, 2019.
3. J. P. Singh, Adhunik Bharat Men Samajik Parivartan: New Delhi: PHI Learning, 2016 (2nd Edition).
4. J. P. Singh, Badalte Bharat Ki Samshyaen, Patna: Janaki Prakashan, 2003.PHI learning, New Delhi
5. Sociology of change and development: G.R. Madan, Vivek Prakashan, New Delhi
6. Globalization and Society: Ravi Prakash Pandey, Shekhar Publication, Allahabad
II.   MAJOR COURSE- MJ 5:

RURAL SOCIOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

<u>Course Objectives:</u>
This course explores the traditions of enquiry and key substantive issues in rural sociology. It is comparative in nature, but pays attention to Indian themes. It also introduces emerging agrarian concerns.

<u>Course Learning Outcomes:</u>
On successful completion of this course the student should know:
1. Concepts of rural sociology
2. Issues of agrarian society and its transformation

<u>Course Content:</u>
UNIT 1: Introduction to Rural Sociology
1.1 **Nature, scope and importance**
a. Desai, AR, 1959, *Rural Sociology in India*, Popular Prakashan, Bombay
1.2 **Village- concept and features**
a. Madan, V., 2002, "Introduction" in V. Madan (ed.), *The Village in India*. Delhi: Oxford University Press, Pp. 1-26.
1.3 **Rural Polity** (Panchayati Raj System and its functions) and Economy (MNREGA)
a. Thorner, Daniel and Alice Thorner. 'The Agrarian Problem in India Today', from, *Land and Labour in India,* Bombay: Asia Publishing House. 1962. Pp. 3-13
1.4 **Family** – concept and types, changing family structure in India

UNIT 2: Migration
2.1 Types
2.2 Factors
a. Rao, M.S.A., 1981, *"Some aspects of the sociology of migration", Sociological Bulletin, Vol. 30, 1. Pp21-38*

UNIT 3: Agrarian structure and classes
3.1 Agrarian structure in Historical Perspective: Feudal, Colonial and Capitalist.
3.2 Agrarian Classes landlord, peasant, tenant, and labourer.

UNIT 4: Agrarian Reform
4.1 Principle and Practice

UNIT 5: Little Tradition – Great Tradition

UNIT 6: Innovation and Technology in Agricultural Practices

Essential Reading:
1. "kekZ ohj bhzi dk'k] xkeh.k lekt "kkL=] i p"khy i dk'ku] t; iqj-
2. xqrk] ,e-, y-, oa"kekZ Mh] Hkkjrh; xkeh.k lekt "kkL=] lkfgR; Hkou] vkxjk-
3. fl g] oh-, u-, oa fl g] tue$s;] xkeh.k lekt "kkL=] foosd i dk'ku] t; iqj-
4. Desai, A. R., 1969, Rural Sociology in India, Popular Prakashan, Bombay
5. Doshi, S. L. & P. C. Jain, 1999, Rural Sociology, Rawat Publishers, Jaipur
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III. SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	**Pass Marks: Th (ESE) = 30**

A Common Syllabus for FYUGP   (Credits: Theory-03) **45 Hours**

Instruction to Question Setter for
End Semester Examination (ESE):
*There will be **objective type test** consisting of **Seventy-five questions of 1 mark each**. Students are required to mark their answer on **OMR Sheet** provided by the University.*

Course Objectives:
   The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

O. INTRODUCTION TO COMPUTER SYSTEM
1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU)   **(3 Lecture)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer   **(4 Lecture)**

3. Operating system: What is an Operating System, Operating System Examples, Functions of Operating System (Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting   **(6 Hours)**

4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages   **(4 Hours)**

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails.   **(6 Hours)**

P. MICROSOFT OFFICE 2016 AND LATEST VERSIONS
6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents
        (7 Hours)

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation, slide show, Master Slides, Creating photo album, Rehearse timing and record narration   **(5 Hours)**

9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning   **(4 Hours)**

Reference Books
        61.   Nishit Mathur, Fundamentals of Computer, APH publishing corporation (2010)
        62.   Neeraj Singh, Computer Fundamentals (Basic Computer), T Balaji, (2021)
        63.   Joan Preppernau, Microsoft Power Point 2016 step by step, Microsoft press (2015)
        64.   Douglas E Corner, The Internet Book 4th Edition, prentice –Hall (2009)
        65.   Steven Welkler, Office 2016 for beginners, Create Space Independent Publishing Platform (2016)

66.   Wallace Wang, Microsoft Office 2019, Wiley (January 2018)
67.   Noble Powell, Windows 11 User Guide For Beginners and Seniors, ASIN, (October 2021)

SEMESTER IV

IV.   MAJOR COURSE- MJ 6:
URBAN SOCIOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objective:
1. Urbanisation is an important aspect of modern society. This course is will provide an exposure to key theoretical perspectives for understanding urban phenomena in historical and contemporary contexts.
2. It also reflects on vital concerns of urban living while narrating the subjective experiences of urban communities. With case studies from India and this course will help students understand and relate to the complexities of urban living.
3. The course seeks to evolve critical thinking and develop a policy perspective on the urban.

Course Learning Outcomes:
1. To appreciate the significance of the city and the process of urbanisation and its consequences across the globe, through cross disciplinary texts and ethnographic studies.
2. To understand the urban in the historical as well as modern contexts - the idea of urbanism and urban space and the intersections in these of institutions, processes and identities. This is to be achieved by exposing students to critical theoretical debates which help them to gain a deeper understanding of city life and urban environment which can also help them understand their own social environment better.
3. To learn about key urban processes such as migration, displacement and urban slums, as well as critical contemporary issues such as resettlement and rehabilitation and also engage in issues of public policy, urban transformation and change. Knowledge of such themes will help students pursue further studies in academic areas such as development and also engage in research on public policy, urban transformation and change.
4. To develop critical thinking and a reflective perspective through exposure to multicultural thought; to enhance disciplinary knowledge, research-related skills and develop a problem-solving competence.

Course Content:
UNIT 1: Introduction to Urban Sociology
1.1**Nature, Scope and Importance of Urban Sociology**
a. Mumford, Lewis 1961. *The City in History: its origins and transformations and its prospects*. Mariner Books: Pp 3-29, 94-118
1.2**Concepts** – Urban, Urbanism and the City (concept and types)
   City a. Weber, Max 1978. *The City*. The Free Press: New York. Pp 65-89

UNIT 2: Movements and Settlements
2.1**Town and its types, Slums**
a. Simmel, Georg, 1903, "Metropolis and the Mental Life" in Gary Bridge and Sophie Watson, eds. *The Blackwell City Reader*. Oxford and Malden, MA: Wiley-Blackwell, 2002.

UNIT 3: Community
3.1**Formation of urban communities**
3.2**Rise of New Middle Class** – Occupation, Culture
a) Deshpande, S., 2003, *Contemporary India: A Sociological View*. New Delhi: Penguin Books, Pp.125-150.

UNIT 4: Family 4.1 concept and types 4.2 changing family structure in India

UNIT 5: Rural and Urban differences, rural urban continuum

Essential Reading:
1. fl g] oh , u- , oafl g] tue$;] uxjh l ekt "kkL=] food i dK'ku] t ; ig-
2. Singh, Prabhat Kumar, Migration and Urbanization, Janaki Prakashan, Patna

3. Singh, Prabhat Kumar, Migration and Occupational Mobility, Janaki Prakashan, Patna
4. Patel, Sujata & K. Deb (eds.) 2009, Urban Studies, Oxford University Press India.
5. Park, Robert, E., Ernest W. Burgess, Robert J. Sampson, 2019, The City, The University of Chicago Press, London

V.   MAJOR COURSE- MJ 7:
INDIAN SOCIOLOGICAL THINKERS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
1.   Improve sociological understanding of Indian society.
2.   Examine how sociologists in India have primarily been engaged with issues of tradition and modernity, caste, tribe and gender.
3.   AcquaintthestudentstothecontinuitiesandcontradictionsinIndiansociety.
4.   Help understand the history of ideas related to the analysis of Indian society.

Course Learning Outcomes:
1.   Ensure that students have conceptual clarity and can articulate the main debates and arguments with regard to sociology in India. Acquaint the students to the continuities and contradictions in Indian society
2.   To ensure that students have understood the formation of the discipline in India and the challenges that it has faced.
3.   To help students understand the history of ideas related to the analysis of Indian society.

Course Content:
UNIT 1: G. S. Ghurye
1.1 **Caste and Race**
a. Upadhya, Carol 2010, The Idea of an Indian Society: G.S. Ghurye and the Making of Indian Sociology" in Patricia Uberoi, Satish Despande and Nandini Sundar (ed) *Anthropology in the East: Founders of Indian Sociology and Anthropology*, New Delhi: Permanent Black
b. Ghurye, G.S. 1969, *Caste and Race in India*, Delhi: Popular Prakashan Pp114-140, 404-460

UNIT 2: D. P. Mukerji
2.1 **Tradition and Modernity**
a. Madan, T.N. 2010, Search for Synthesis: The Sociology of D.P. Mukerji" in Patricia Uberoi, Satish Despande and Nandini Sundar (ed) *Anthropology in the East: Founders of Indian Sociology and Anthropology*, New Delhi: Permanent Black
b. Mukerji D.P. (1958 second edition 2002), *Diversities: Essays in Economics, Sociology and Other Social Problems*, Delhi: Manak Publications Pp. 177-225, 261-276
c. Das.Veena,.2006. *Oxford Handbook of Indian sociology*, OUP: New Delhi, pp1-18

UNIT 3: M. N. Srinivas
3.1 **Social Change**
a. Srinivas, M.N. 1996, Indian Anthropologists and the study of Indian Society, *Economic and Political Weekly*, 31(11) 656-657
b. Srinivas, M. N. 1971, *Social Change in Modern India*, University of California Press Berkeley Chp 4-5

UNIT 4: Irawati Karve
4.1 **Gender and Kinship**
a. Karve, Irawati 1965, *Kinship Organization in India*, Bombay and New York: Asia Publishing House

UNIT 5: R. K. Mukherjee 5.1 **Civilisation**

UNIT 6: Yogendra Singh 6.1 Modernizaton of Indian Tradition

Essential Readings:
1. nk{k],l-,y-]Hkjrh; lekftd fopkjd]jkor if¶ydsku]t;iqj
2. ukxyk}ch dsHkjrh; lekt"kkL= fplfu]jkor if¶ydsku]t;iqj
3. G.S. Ghurye, Caste and race in India, Popular Prakashan, Bombay

4. A.R. Desai, Social Background of Indian Nationalism, Popular Prakashan,
5. Bombay Gail Omvedt, Dalits and the Democratic Revolution, Sage Publication, New Delhi
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VI.   MAJOR COURSE- MJ 8:
POPULATION AND SOCIETY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:

1. This course provides a critical understanding of the interface between population and society. It analyses the role of fertility, mortality and migration on the composition, size, and structure of population.
2. The course addresses the issue of domestic and international population movements and their economic, political and social implications.

Course Learning Outcomes:

On successful completion of this course, students will be able to:

1. Demonstrate knowledge of key concepts in and different approaches to population studies.
2. Recognise the relations between population and social groups and processes by linking population size, composition, and growth with fertility, reproduction, and mortality.
3. Explain the dynamics between population, gender, and migration in terms of the role of institutions, policies and programmes, and social relations and groups.
4. Undertake a sociological analysis of international and national population dynamics and population policies.

Course Content:

UNIT 1: Demography
1.1 Meaning & Scope
1.2 Subject Matter
1.3 Importance
1.4 Demography and Sociology

a. Davis, Kingsley. 1951. 'Caste and Demography', Population of India and Pakistan, Princeton, NJ: Princeton University Press, pp. 52-60.
b. Durkheim, Emile. 1982 (1895). The Rules of Sociological Method. (trans. W. D. Halls). New York: The Free Press, pp. 136-137; 188, 203.

UNIT 2: Concept
2.1 Fertility – Concept, Determinants
2.2 Mortality – Concept, Determinants
2.3 Population Structure – Age, Sex
2.4 Demographic Dividend

a. Haq, Ehsanul. 2007. 'Sociology of Infant Mortality in India', Think India Quarterly, July-September, 10(3): 14-57.
b. Heer, David M. and Grigsby, Jill S. 1992. 'Fertility', Society and Population. New Delhi: Prentice-Hall, pp. 46-61.
c. Jeffrey, Roger and Jeffrey, Patricia. 1997. Population, Gender and Politics: Demographic Change in Rural North India. Cambridge: Cambridge University Press, pp. 117-164.
d. Patel, Tulsi. 2007. 'Female Foeticide: Family Planning and State Society Intersection in India'. In T. Patel (ed.). Sex-selective Abortion in India: Gender, Society and New Reproductive Technologies. New Delhi: Sage Publications, pp. 316-356.
e. Premi, Mahendra K. 2006. 'Population Composition (Age and Sex)', Population of India: In the New Millennium. New Delhi: National Book Trust, pp. 103-127.

UNIT 3: Theories
3.2 Mathusiam Neo Mathusiam
3.3 Theory of Optimum Population
3.4 Theory of Demographic Transition

a. Malthus, Thomas Robert. 1986. An Essay on the Principle of Population. London: William Pickering, Chapters 1-2, pp. 01-11.
b. Durkheim, Emile. 1982 (1895). The Rules of Sociological Method. (trans. W. D. Halls). New York: The Free Press, pp. 136-137; 188, 203.
c. Dudley, Kirk. 1996. 'Demographic Transition Theory', Population Studies, 50(3): 361-387.

UNIT 4: Social Structure and Demography
4.1 Migration – Concept, Types
4.2 Urbanisation
4.3 Population Explosion

a. Furedi, Frank. 1997. Population and Development: A Critical Introduction. Oxford: Polity Press, Chapters 4&5, pp. 40-55.
b. Visaria, P. 1976. 'Recent Trends in Indian Population Policy', Economic and Political Weekly, August, 2: 31-34.
c. Chopra, Radhika. 2011. Militant and Migrant: The Politics and Social History of Punjab. Routledge Publications, pp. 88-134.

UNIT 5 : Population and Society of India

a. Visaria, Pravin and Visaria, Leela. 2006. 'India's Population: Its Growth and Key Characteristics'. In Veena Das (ed.). Handbook of Indian Sociology, New Delhi: Oxford University Press, pp. 61-77.
b. Xaxa, Virginius. 2004. 'Women and Gender in the Study of Tribes in India', Indian Journal of Gender Studies, 11(3): 345-367.
c. Bose, A. et. al. 1974 (ed.). *Population in India: Development.* 1947-2000, Delhi: Vikas Publishing House. (Relevant Chapters).

Essential Readings

1- CkYq]Mh-,l-,oac?kq]fdj.k]tuka[fddh]food idk'ku]fnYyh
2- feJk]t; idk'k]tuka[fddh]lkfgR; Hou ifCydsku] vkxjk
3- flUgk]oh-lh-,oaflUgk]iqjk]tuka[fddh dsfl)ka]e;wj isjcSl]uksMk

4. Guilmoto, Christophe Z. 2011. 'Demography for Anthropologists: Populations, Castes, and Classes'. In Isabelle Clark-Decès (ed.). A Companion to the Anthropology of India, Blackwell Publishing Ltd. pp. 25-41.
5. Sen, Amartya, 2003. 'Population: Delusion and Reality', Asian Affairs Caldwell, John C. 2001. 'Demographers and the Study of Mortality: Scope, Perspectives and Theory', Annals of the New York Academy of Sciences, 954: 19-34.
6. Cassen, Robert 2016, India: Population, Economy, Society, Palgrave Macmillan UK
7. Kaur, Ravinder. 2004. 'Across Region Marriages: Poverty, Female Migration and the Sex Ratio', Economic & Political Weekly, XXXIX (25): 2595-2603.
8. Dyson, tim 2018 A Population History of India From the first modern people to the present day, Oxford University Press
9. Davis, K. 1961. *The Population of India and Pakistan*. New York: Russell & Russell.
10. Bose, Ashish. (ed.). 1974. Population in India's Development (1947-2000). Delhi: Vikas Publishing House.

SEMESTER V

I.   MAJOR COURSE- MJ 9:
SOCIAL ANTHROPOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. Introduction to Social Anthropology and its relation to Sociology.
2. To acquire familiarity with some of the concepts of Social Anthropology
3. To learn about Ethnography and important ethnographic studies in India

Course Learning Outcomes:
On completion of the course the student will be able to:
1. Understand the significance of social anthropology.
2. Carry out ethnographic research.
3. Explain important ethnographic works in Indian Sociology

Course Content:
UNIT 1: Concept of Social Anthropology
1.1 Scope
1.2 Subject Matter
 a. *Béteille, André, 1985, Six Essays in Comparative Sociology, New Delhi: Oxford University Press, Chapter 1, 'Sociology and Social Anthropology'*
 b. *Madan and Majumdar- Introduction to Social Anthropology*

UNIT 2: Race
2.1 Concept
2.2 Characteristics
2.3 Classification
 a. *Levi-Strauss, C. 1958. Race and History. Paris: UNESCO*
 b. *Wallerstein, I. M. and E. Balibar (ed.) 1991. Race, Nation, Class: Ambiguous Identities. Verso. London*

UNIT 3: Magic, Religion and Science
3.1 Totem – Concept, Characteristic, Theory of Origin
3.2 Taboo –Concept and Factor
3.3 Religion – Theory of Origin
3.4 Magic – Concept and Its Elements
3.5 Magic and Science
 a. *Malinowski, B. (1992). Magic, science, and religion, and other essays. United States: Waveland Press.*

UNIT 4: Ethnography
4.1 Concept and Types
 a. *Kwame Harrison, Anthony, Ethnography, Understanding Qualitative Research (New York, 2018; online edn, Oxford Academic, 24 May 2018)*
 b. *Srinivas, M. N. (1980). The Remembered Village. United Kingdom: University of California Press.*

Essential Readings
1- deqkj] fefFky‘sk] tutkrh; lekt ,af”k‘kk vkS vkfnqdhdj.k] Dykfld dy ifCyf”kax dEiuh] ubZ fnYyh
2- eqtqèkj]johu‘zkfFk] lekftd ekuo”kkL= dh#j‘kk] fooad idk‘ku]ubZ fnYyh
3- xqb]rk] ,e-, y-, oa“kekgⁿMh Mh] lekftd ekuo”kkL=]lkfgR; Hkou ifCydk‘kU] vkxjk
4- etqèkj]Mh,u-,oaenu]Vh,u-] lekftd ekuo”kkL= ifpp;]e; qw isj cⁿSl] uksMk
5- oekZ]me‘k deqkj] >kj[kMdk tutkrh; lekt] lqkkkxⁿkiekyk]jkph
6- Majumdar, D. N. & Madan, T. N., An Introduction to Social Anthropology, Mayur Paperbacks, Noida
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II.   MAJOR COURSE- MJ 10:
FAMILY, MARRIAGE AND KINSHIP

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
1. Impart a comprehensive study of the concepts relevant for understanding kinship, marriage and family.
2. Evolve a better understanding of family, marriage and kinship both in historical and evolutionary perspective.
3. Look beyond the surface of issues to discover the "why" and "how" of kinship.
4. Explores the new possibilities and critical insights offered by reproductive technologies in revisiting kinship.

Course Learning Outcomes:
1. Grasp the historical evolution of kinship theories from a biological deterministic approach to culture of relatedness
2. Develop an analytical perspective on concepts relevant for understanding kinship
3. Comprehend the coexistence of multiple perspectives in the study of family, marriage and kinship
4. Acknowledge the significance of the emergence of new reproductive technologies on recasting kinship

Course Content:
UNIT 1: Family
1.1 Concept
1.2 Feature
1.3 Functions
1.4 Types
1.5 Change
1.6 Joint Family – Concept, Characteristics, Meaning

a. Das Veena. 2004. Handbook of Indian Sociology. New Delhi: OUP

b. MN. Srinivas (1990) Social change in Modern India, New Delhi: Orient Longman.

c. Dumont Louis. 1970 Homo Hierachicus: The Caste System and its Implications. Delhi: OUP.

UNIT 2: Marriage
2.1 Concept
2.2 Types
2.3 Changes, Its factors
2.4 Rules of Marriage
2.5 Marriage Transaction – Dowry Bride Price

a. Ghurye G.S. 1990. Caste and Race in India. Bombay: Popular Prakasham

b. Guha, Ranajit, ed. (1992) Subaltern studies. Delhi: OUP.

c. Sharmila Rege Sociology of Gender-SAGE Publications Pvt. Ltd (2003).

UNIT 3: Kinship
3.1 Meaning and Type
3.2 Usages

a. Madan T.N. (ed.). 1992. Religion in India, New Delhi: OUP.

b. Kalpana Kannabiran (2009) Sociology of Caste and the Crooked Mirror: Recovering B R Ambedkar's Legacy. EPW-XLIV. 4-1-2009

UNIT 4: Approaches
4.1 Alfred Radcliffe-Brown
4.2 Claude Levi-Strauss

a. T N Madan (2006) Pathways: Approaches to the Study of Society in India. Oxford University Press.

b. T N Madan (2009) Modern Myths. Locked Minds Secularism and Fundamentalism in India. Oxford
    University Press.

UNIT 5: Kinship Organisation in India
– Regional Variations.

Essential readings:
1. fl g] xkstjh e.k iŒkn %ukruskjh] fookg vkŠ ifjokj] vxzoky ifCydsku]] njHkak Yfcgkj ½
2. egktu] /keŒh ,oa egktu] deysk] ukruskjh] fookg ,oa ifjokj] dk lekt”kkL=] fookd idk’ku] ubZ fnYyh
3. Radcliff Brown, A. R., and Daryll Forde (eds.) 1950. African Systems of Kinship and Marriage London: Oxford
    University Press. (Introduction)
4. Shah, A. M. 1998. The Family in India: Critical Essays, New Delhi: Orient Longman.
5. Uberoi, Patricia. 1993. Family, Kinship and Marriage in India. New Delhi, Oxford University Press.
6. Bose, N. K. 1975. *The Structure of Hindu Society*. Delhi: Orient Longman.

7. Patricia Oberioi. 1993. Family, Kinship and Marriage in India, New Delhi: OUP.

8. Srinivas, M.N. 1987. *The Cohesive Role of Sanskritization and other Essays*. Delhi:

9. Srinivas. M.N. 1987. The Dominant Caste and other Essays. New Delhi: OUP

10. Yogendar singh (1986) Modernization of Indian Traditions- A systematic study of Social Change, Jaipur: Rawat
    Publications. Chapters:1, 5&6.

11. Dumont Louis. 1970 Homo Hierachicus: The Caste System and its Implications. Delhi: OUP.

12. Uberoi Patricia 1994, Family Kinship and Marriage in India, Oxford University Press

13. Grover Shalini, 2017, Marriage, Love, Caste and Kinship Support Lived Experiences of the Urban Poor in India,
     Taylor & Francis
14. Eqbal Afroze 2023, Family Marriage and Kinship
15. Channa S.M. 2006, Family, Kinship And Marriage, Cosmo Publications
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III.   MAJOR COURSE- MJ 11:
INDIAN SOCIETY – II

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
1. Understanding key concepts and institutions of Indian society.
2. To understand the modes of knowledge – construction of Indian history, society, Culture and politics
3. To examine how multiple social processes, forces and ideologies shaped the terrain of the nation.

Course Learning Outcome:
1. Through informed interrogation of concepts and institutions of India, the course contributes to the development of critical and analytical thinking.
2. The course, supported by an inter-disciplinary approach, facilitates learning and reflecting about the multiple – and contextual – socio-cultural registers of Indian society.
3. The course adds to the sociological interpretation of Indian history and society. The India-specific themes of the course – discourse/knowledge-making, mobilization, transformation, ideology, identity and politics, for example– are treated, moreover, by drawing from sociological concepts and theories. The course connects the practical and conceptual in terms of both substance and relevance.
4. The adoption of an inter-disciplinary framework, without losing sight of the sociological, makes the course wider in scope and scale. It broadens viewpoints and encourages students to reflect deeply on the multicultural reality which is the defining feature of India.
5. Use of innovative teaching-learning methods, the course prepares students to successfully compete in global academia.

Course Content:
UNIT 1: Unity in Diversity
UNIT 2: Social Processes
2.1 Assimilation
2.2 Acculturation
2.3 Competition
UNIT 3: Perspectives on India
3.1 Nationalist Discourse
a. Srinivas, M.N., 2002, "Nation-Building in Independent India", in M.N. Srinivas, *Collected Works*. New Delhi: Oxford University Press. Pp. 388-413.
3.2 Subaltern Discourse
a. Arnold, David and David Hardinan, 1994, Writings on South Asian History and Society, OUP.
b. Guha, R., 1982, *Subaltern Studies*, Volume I. Delhi: Oxford University Press, Pp.1-8.
3.3 Indological Discourse
a. Dumont,L. and D.Pocock, 1957, "For a Sociology of India", *Contributions to Indian Sociology*, 1, Pp. 7-22.

UNIT 4: Social Change in India
4.1 Sanskritization
a. Srinivas, MN, 1963, *Social Change in Modern India*
4.2 Westernization
a. Srinivas, MN, 1963, *Social Change in Modern India*
4.3 Modernization
a. Singh, Yogendra, 1973, *Modernization of Indian Tradition,*
4.4 Secularization
a. Srinivas, MN, 1963, *Social Change in Modern India*

Essential Readings:
1- xqrk] eksguyky] Hkkjr esa lekt] jktLFkku fgUnh xzaFk vdkneh] t;iqj
2. J. P. Singh, Bharat Ka Adhunik Samaj (Society in Modern India), Jaipur: Rawat Publ. House, 2019.
3. J. P. Singh, Adhunik Bharat Men Samajik Parivartan: New Delhi: PHI Learning, 2016 (2nd Edition).
4. J. P. Singh, Badalte Bharat Ki Samshyaen, Patna: Janaki Prakashan, 2003.PHI learning, New Delhi
5. Sociology of change and development: G.R. Madan, Vivek Prakashan, New Delhi
6. Globalization and Society: Ravi Prakash Pandey, Shekhar Publication, Allahabad

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SEMESTER VI

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I.   MAJOR COURSE- MJ 12:
POLITICAL SOCIOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. Political Sociology is one of the core areas of sociology. One of the major objectives of this course is to familiarize students with the context, concepts and theories of political sociology.
2. To familiarize students with the basis of examines the bases of social power and the relationship between politics and society both analytically as well as in specific empirical contexts.
3. To make students familiar with the different political institutions, political processes and political change in the Indian context.

Course Learning Outcomes:
1. An ability to comprehend the relationship between the political and the social.
2. Familiarity with different theories and concepts issues in political sociology and a capacity to use them to grasp political phenomena in a cross-cultural and comparative perspective
3. Be able to understand and appreciate the diversity of ways in which politics operates historically and spatially.
4. Be able to understand the relationship between state and society in shaping politics in India both historically and analytically.
5. Be able to generate hypotheses and research questions within the theoretical perspectives and ethnographic contexts in political sociology.

Course Content:

UNIT 1: Political Sociology- Meaning, Nature, Scope and Importance
a. Eisenstadt, S. N. '1971, 'General Introduction: The Scope and Development of Political Sociology' in Political Sociology: A Reader Basic Books, New Your Publication, pp 3-24.

UNIT 2: Bureaucracy
2.1 Introduction
2.2 Definitions of Bureaucracy
2.3 Salient features of Bureaucracy
2.4 Types of Bureaucracy
2.5 Merits and Demerits
a. Weber, Max. 1978, Economy and Society: An Outline of Interpretative Sociology, Berkeley: University of California Press, pp. 53-54; 941-54; 212-30; 241-54.
b. Lukes, Steven. 2005, Power: A Radical View, 2nd Ed., Hampshire: Palgrave, pp. 14-49.

UNIT 3: Political Socialization
3.1 Meaning and Definition
3.2 Stages and Process
3.3 Agencies
3.4 Political Socialization in India
        a. Friedrich, P. 1968. 'The Legitimacy of Caciques', in M.J. Swartz (ed.): *Local Level Politics: Social and Cultural Perspectives* (243-269). University of London
        b. John T Guthrie 1981, 'political socialization. Journal of reading, Vol.25 pp 94-95.

UNIT 4: Political Culture
4.1 Meaning and Definitions
4.2 Nature and Characteristics of Political Culture

a. Swartz, M.J (Ed), 1968. Local Level Politics: Social and Cultural Perspectives, University of London Press, pp. 281-94

UNIT 5: Political Participation

5.1 Nature

5.2 Aspects of Political Participation

a.   Marshall, T. H. 1964. *Class, Citizenship and Social Development.* Chicago: University of Chicago Press. (Chapters 4, 13 and 14).

UNIT 6: Electoral Politics and Voting behaviour in India

6.1 Election – Meaning, Objectives, Importance

6.2 Factors Affecting Voting behaviours

a. Kumar Sanjay, *Election in India an overview*

UNIT 7: Pressure Group and Interest Group

7.1 Introduction

7.2 Meaning and Definitions

7.3 Nature of Pressure Groups

7.4 Characteristics of Pressure Group

a. Chakraborty, Sunil Ranjan,1974, Pressure Groups in West Bengal, in Indian journal of political   science, April – June, volume 35.

b. Das Harihara and Sasmita das, 1988 Indian government and politics, discovery publication house   Delhi.

UNIT 8: Democracy

8.1 Definition

8.2 Merits and Demerits

a. Andre beteille, 2012, Democracy and its Institutions, oxford university press.

Suggested Reading:

1. "kekj"kf"k] jktuhfrd lekt"kkL= dh#i j{kk]ih-,p-vkbZyfua]

2. ik.Ms]lfPponua]jktuhfrd lekt"kkL= vkS]bl dsvk-ke]okkh,tq"kuy cD]]fodkl ifYyf"ka gkml ik-fy-]ubZfnYyh

3. ohj]MkWke]jktuhfrd lekt"kkL=]jktLFkku fgUnh xUFk vdkneh] t;iqj

4. flgy]MkW/l-lh]jktuhfrd lekt"kkL=]y{ehukjk.k vxzoky]vkxjk

5. c?ks]MkWWh,l-,,cadpxjh]MkWWh-ih-flg]jktufrd lekt"kkL=]foodsizdk"ku uxj]fnYyh

6. Bottomore, T. B., Political Sociology, 1993, UMP

7. Kothari, R. (Ed): State and Nation Building: A Third World Perspective, Allied Publishers, Delhi, 1976

8. Kothari, R.: Democratic Polity and Social Change in India, Allied Publishers, Bombay

9. Gupta, Dipankar, Political Sociology in India: Contemporary Trends, 1996, Sangam Books Ltd.

10. Kumar, Anand, Political Sociology of India, 2013, Sage

II.   MAJOR COURSE- MJ 13:
MODERN SOCIOLOGICAL THOUGHT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. Objective of teaching Sociological Thinkers to undergraduate students is to enable them to apply theory to their own everyday life experiences.
2. It is requiring that students develop their sociological imagination and the capacity to read each situation sociologically and then to think about it theoretically.
3. To this end, it is imperative that sociological theory courses demonstrate the applicability of theory to students.

Course Learning Outcomes:
1. Understanding the characteristics and dynamics of the social world, and how post-classical sociologists attempt to understand the social world.
2. Appreciating the relevance and limits of the contemporary theories or theoretical approaches to make sense of social reality.
3. Understanding the basic methodological approaches of the thinkers, through some original texts and their role in building sociological knowledge.

Course Content:
UNIT 1: Talcott Parsons
1.1 **Action Systems and Pattern Variables**
a) Parsons, T. 1951.   (New edition first published 1991)   *The Social System*. London: Routledge. Ch. 1 & 2. Pp. 1-44.

UNIT 2: G. H. Mead
2.1 **Symbolic Interactionism**
a) Mead, G.H. 1934 (Fourteenth Impression 1967) *Mind Self and Society*. Chicago: University of Chicago Press. Part III, pp 135-226

UNIT 3: Harold Garfinkel
3.1 Ethnomethodology

UNIT 4: Jurgen Habermas
4.1 Public Sphere, Theory of Communication

UNIT 5: Pierre Bourdieu
5.1 Forms of Capital

UNIT 6: Michel Foucault
6.1 Madness and Civilisation, Archaeology of Knowledge

Essential Readings:
1. lkkM\$]jfo idk'k]lekt"kkL=h fl)ka %vfHkxe ,oaifjif\$;]fot; idk'ku efUnj ¼k½fy-]okjkkkh
2. Parsons, T. 1951. (New edition first published 1991) *The Social System*. London: Routledge. Ch. 1 & 2. Pp. 1-44.
3. Mead, G.H. 1934 (Fourteenth Impression 1967) *Mind Self and Society*. Chicago: University of Chicago Press. Part III, pp 135-226
4. Goffman, E. 1956. *The Presentation of Self in Everyday Life*. Edinburgh: University of Edinburgh (Monograph No. 2), pp. 1-9, 132-151, 152-162
5. Berger, P. L. and T. Luckmann. 1991. *The Social Construction of Reality*. London: Penguin Books, pp. 31-62
6. Horkheimar. M and Adorno. T.W. *The Dialectic of Enlightenment*. 2002. Stanford University Press. Stanford: California. pp 1-34. Chapter 1, The Concept of Enlightenment
7. Marcuse, H. 1964. *One Dimensional Man: Studies in the Ideology of Advanced Industrial Society*. Boston: Boston Press, pp. 7-92
8. Bourdieu, P. 1977. *Outline of a Theory of Practice*. Cambridge: Cambridge University Press, pp. 72-95.
9. Ritzer, G. 1996. *Sociological Theory*. New York: McGraw Hill Companies

10. Black, Max ed. 1961. *Parsons Sociological Theory* in The Social Theories of Talcott Parsons: A Critical Examination**.** Englewood Cliffs, NJ. Prentice Hall. pp. 1-63

III.   MAJOR COURSE- MJ 14:
SOCIAL MOVEMENTS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objective:
1. This course is designed to equip students with diverse disciplinary trainings to understand the conceptual, theoretical and methodological issues involved in the study of social movements, as well as the historical and descriptive analyses of collective action. It also draws attention to an important aspect of the analysis of social movements: their articulation with states, societies and cultures.
2. Through case studies drawn from comparative contexts, this course demonstrates the vital connectedness between collective action in social movements and other forms of institutional and cultural contexts. Particular case studies will be used as illustrations to understand more general patterns of social movements.
3. The course will also equip students to visualize the transition from traditional to contemporary social movements. The course envisages that studying social movements would ultimately foster an understanding of the dynamics of power, justice and human agency in transforming societies and cultures. To that extent it is a course that has a universal relevance and appeal.

Course Learning Outcomes:
1. At the end of the course, students should be able to distinguish the central principles of different theoretical perspectives in the sociology of social movements and relate them to specific historical and empirical contexts.
2. Learn to use sociological theories on social movements to identify a phenomenon as one. Further, students should be able to distinguish a phenomenon as social movement from other cognate political phenomena.
3. Understand the dynamics and motivations of individuals and groups participating in social movements and identify reasons for success (or failure) of social movements.

Course Content:
UNIT 1: Social Movements: Concepts and Types
a) Goodwin, J. & J. Jasper (eds.). 2015. *The Social Movements Reader: Cases and Concepts,* 3rd Edition, MA: Wiley Blackwell, p. 3-7
b) Tilly, Charles. 1978. 'Theories and Descriptions of Collective Action', in *From Mobilization to Revolution*, New York: Random House, p. 12-51

UNIT 2: Agrarian Movements in India
a) Tarrow, Sidney. 1996. "States and Opportunities: the Political Structuring of Social Movements". in Doug McAdam, John D. McCarthy and Mayer N. Zald, eds, *Comparative Perspectives on Social Movements,* MA: Cambridge University Press, p. 41-61.

UNIT 3: Dalit Movements – Jotiba Phule, Periyar, Ambedkar

UNIT 4: Tribal Movements –Birsa Movement, Santhal Movement

UNIT 5: Environmental Movements – Chipko, Water Conservation, Narmada Bachao Andolan

Essential Readings:
1. Shah, Ghanshyam, 1990, *Social Movements in India: A Review of Literature,* New Delhi: Sage Publications (English and Hindi versions)
2. Menon, Krishna and Ranjana Subberwal, 2019, *Social Movements in Contemporary India*
3. Gopal, Vishnu and Rajeev Nayan, 2004, *Sociology of Social Movement,* (Hindi), Varanasi: Academic Publication
4. Singh, VN, and Janmejay Singh, 2013, Social Movements in India, (Hindi), Rawat Publications
5. "kg]?ku";ke]Hkkjr ealekftd vkanksuula&Hkkr lkfgR; dh,d leh{kk] lst
6. fl g]oh-,u-,oaflg]tue$;]Hkkjr ealekftd vkanksujkor ifCl 'kku

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IV.   MAJOR COURSE- MJ 15:
CRIME AND SOCIETY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
On completion of this course, the students will be able to understand
1. This course situates crime in relation to a wide variety of social forces and institutions including neighborhoods, schools, the media, gender, and criminal justice.
2. Drawing upon criminological theory, students will deepen their understanding of how some of these institutions and forces contribute to crime.
3. Student will also examine crime and reactions to crime as part of the fabric of social and institutional life within contemporary Indian society.
4. In addition to these substantive considerations, they will also critically examine the links between theories and research designs and methods.

Course Learning Outcomes:
1. Acquire a broad understanding of the theoretical and empirical approaches taken to understand the relationship between criminal behavior and social, cultural, and institutional forces.
2. Learn about the current state of knowledge regarding social variation crime and reactions to crime and the social consequences of this variation.
3. Critically analyze the conceptual and empirical underpinning of crime and society.

Course Content:
UNIT 1 Concept of Crime and Criminology
1.1 Concept of Crime
1.2 Characteristics of Crime
1.3 Causes of Criminal Behaviors
a. Karan, Raj. (2002). Dictionary of Terrorism and Bio terrorism.IVY Publishing House, Delhi
b. Barnes, H. E., & Teeters, N. K. (1959). New horizons in criminology (2nd ed.). New York, Prentice-Hall.

UNIT 2 Theories of Criminal Behaviors
2.1 Classical and New Classical
2.2 Sociological
a. Ghosh, S. K. (1991), Indian Mafia. Ashish Publishing House.

UNIT 3 Crime Typologies
3.3 Crime of Politics
3.4 White Collar – Concept, Characteristics, Types
3.5 Organised Crime
3.6 Cyber Crime
a. Gandhirajan, C. K. (2004), Organized crime. A P H Publication Corporation.
b. Clinard, Marshall. (1983), Corporate crime. McMillan Publishing Co.
c. Nair, P. M. (2002), Combating Organized crime: Konark Publisher.

UNIT 4 Juvenile Delinquency
4.1 Concept, Cyber, Factors
4.2 Legislations
4.3 Rehabilitations
a. Amodh K. Kanth; Juvenile Justice: The Indian Context and Prayas Experiment 'Kumarappa Rockless Award Lecuture, Annyak Conference of the Indian Society of Criminology', Chennai-2002.
b. Shir Kumar Dogra: 'Criminal Justice Administration in India'. Deep and Deep Publications Pvt. Ltd., New Delhi, 2009.
c. Rakesh, M. (1994). Computer crimes: Concept, Control and Prevention. Goyal Sysman Computers Pvt. Ltd. Bombay.

UNIT 5 Criminal Justice System
5.1Process
5.2Role of Police in Crime prevention
5.3Courts
5.4Punishment and Correction

a. Paranjape, N. V. (2009). Criminology and Penology, Central Law Publications.
b. Situ, Yingyi. (2000). Environmental crime: The criminal justice system's role in protecting the environment. Sage Publications, New Delhi.

Essential Readings:

1- vkgqtk jke ,oa vkgqtk edslk foospuRed vijk/k'kkL=] jkor ifỹd'sklU] t;iqj
2- c?kys] Mk-,- vijk/k'kkL=] fose idk'ku] fnYyh
3. Caldwell, R. G., Criminology, Ronald Press Co., New York
    4.   Ahuja, Ram, Youth & Crime, Rawat Publishers, Jaipur
    5.   Ahuja, Ram. (2000), Criminology, Rawat Publication, Jaipur
    6.   Brien, Martin O. (2008), Criminology: Routledge Publishers.
    7.   Tappan, Paul w. (1960). Crime, Justice, and Correction: McGraw-Hill Book Company, Inc. New York, Toronto, London.
    8.   Shah, Giriraj. (2002). Encyclopedia of international terrorism. Anmol Publications, New Delhi.
    9.   Grover, V. (2002). Encyclopedia of international terrorism.Vol.1,2&3, Deep & Deep Publication, Delhi.

SEMESTER VII

I.   MAJOR COURSE- MJ 16:
RESEARCH METHODS AND STATISTICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
1.   The course provides an introductory, yet comprehensive engagement with social research.
2.   Through theoretical and practical knowledge students are acquainted with the different stages of the research process like creation of research design, methods of data collection and analysis.
3.   The imparted knowledge and training will enable students to develop a sound understanding of both quantitative and qualitative research.

Course Learning Outcomes:
1.   Students are introduced to the concept of conducting research, which is inclusive of formulating research designs, methods and analysis of data. Some knowledge of elementary statistics is also provided to the students to acquaint them with quantification of data.
2.   The thrust of the course is on empirical reasoning, understanding and analysis of social reality, which is integral to the concepts of quantitative research. Students learn to differentiate between qualitative and quantitative aspects of research in terms of collection and subsequent analysis of data.
3.   Through the competing theoretical perspectives and methodologies, students are able to understand that social reality is multi-faceted, heterogeneous and dynamic in nature.
4. By imparting the knowledge of theory and praxis of research, students are prepared to arrive at a critical understanding of the course. It also equips them with necessary skills for employment in any social research organisation.

Course Content:
UNIT 1: Methodological Perspectives
1.1 **Comparative Method**
a. Radcliffe-Brown, A.R. 1958, *Methods in Social Anthropology,* Delhi: Asia Publishing Corporation, Chapter 5 Pp. 91-108
1.2 **Feminist Method**
a. Hammersley, Martyn, "On Feminist Methodology" in *Sociology*, Vol.26, No.2 (May1992),
pp.187-206, Sage Publications, Ltd.
 1.3 **Historical Method**

UNIT 2: Doing Social Research
2.1 **Social Research** – Steps and Utility
a. Bailey, K. (1994). *The Research Process in Methods of Social Research.* Simon and Schuster, 4th Ed. The Free Press, New York NY 10020. Pp.3-19.
2.2 **Concepts and Hypothesis**
a. Goode, W. E. and P. K. Hatt. 1952.*Methods in Social Research*. New York: McGraw Hill. Chapters 5 and 6. Pp. 41-73.
2.3 **Field View and Text View**
a. Srinivas, M.N. etal2002(reprint*), The Fieldworker and the Field: Problems and Challenges in Sociological Investigation*, New Delhi: OUP, Introduction Pp. 1- 14.

UNIT 3: Methods of Data Collection
3.1   **Quantitative and Qualitative Methods** – Differences
3.2   **Sources of data** – primary and secondary
3.3   **Sampling** – Meaning, Types
3.4   **Questionnaire** – Meaning, Types
3.5   **Interview**–Meaning, Types
3.6   **Observation** – Meaning, Types

a. Bailey, K. (1994). Survey Sampling In *Methods of Social Research*. Simon and Schuster, 4th ed. The Free Press, New York NY 10020.Ch-5. Pp. 81- 104.
b. Bailey, K. (1994). Questionnaire Construction and the Mailed Questionnaire *in Methods of Social Research*. Simon and Schuster, 4th ed. The Free Press, New York NY 10020. Chs-6 and 7. Pp. 105-172.
c. Bailey, K. (1994). Interview Studies in *Methods of Social Research*. Simon and Schuster, 4th ed. The Free Press, New York NY 10020.Ch8. Pp.173-213.
d. Creswell, J.W. (2009). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*, 3rd ed. Sage Publications, California. Ch 8,9,10. Pp. 145-226.

UNIT 4: Statistical Methods
4.1 **Overview of Statistics in Sociology**
a. Raftery A. E. 'Statistics in Sociology, 1950-2000', *Journal of the American Statistical Association*, Vol. 95, No. 450, (June 2000), pp. 654-661.
4.2 Graphical and Diagrammatic presentation of data – Bar diagram, Pie-diagram, Histogram, Frequency Polygon, Smoothed frequency curve and Ogives
a. Gupta, S. P. (2007). *Elementary Statistical Methods*. Sultan Chand & Sons. Pp.101-108, 115- 118, 131-137.
4.3 **Measures of Central Tendency-**Simple Arithmetic Mean, Median and Mode
a. Gupta, S. P., (2007*), Elementary Statistical Methods*. Sultan Chand & Sons. Pp.155- 168, 173-180, 187-197.
4.4 **Measures of Dispersion -**Standard Deviation, Variance and Covariance.

Essential Readings:
1.   jkor] gfjÑ".k] l ekfftd 'kks/k dh fof/k;k¡ jkor ifCyd'ku] t;iqj
2. fl g] t s ih] l ekfftd vuq/kku dh fof/k;k¡ jkor ifCyd'ku] t;iqj
3. xkS"khkdj ,oa iksMS] jfo iodk'k] l ekfftd vuq/kku ,oa lka[; dh 'k{kj i/dk'ku] bykgkckn
4. jkor] gfjÑ".k] l ekfftd 'kks/k dh fof/k;k¡ jkor ifCyd'ku] t;iqj
5. eqt th] johUnzukFk] l ekfftd 'kks/k o lka[; dh fooosd i/dk'ku] fnYyh
6. Gupta, S. P. (2007), *Elementary Statistical Methods*, Sultan Chand & Sons, Pp.263-277.
7. Gupta, S. P. (2007) Elementary statistical Methods, Sullani Chand & Sons, New Delhi
8. Kothari, C. R. 1989, Research Methodology, Wiley Easlerin, Baglore.
9. Young, P.V. 1988 Scientific Social Surveys & Research Parentice Hall, New Delhi
10. Ahuja, Ram, 2001, Research Methods, Rawat Publications Jaipur
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II.   MAJOR COURSE- MJ 17:
SOCIAL CHANGE AND DEVELOPMENT

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. This course invites students to explore issues relating to development, one of the key ideas, concepts, and animating forces of our societies and lives. It offers sociological modes to investigate the bewildering, often contradictory, ways in which development comes to mean a promise or desire, an inevitable consequence or persuasive project, and how it is closely connected to notions of progress and modernity.
2. It introduces students from various disciplines to the scholarship on development from a sociological vantage point. It aims to familiarise students with ideas, theories, and practices of development. The course also acquaints them with the trajectory of development in post- colonial India.
3. Drawing from disciplines such as sociology, anthropology, economics, political studies, and development studies, it shall help students analyse different approaches to, and practices and experiences of, development. With its emphasis on the role and interplay of institutions, apparatus, policies, practices, and social relations, this course shall also aid in the critical analysis of development's diverse manifestations across locations and moments.

Course Learning Outcomes:
1.   Understand different ideas of, and approaches to, development.
2.   Explain the dynamics between developmental institutions, actors, policies, theories, approaches, and ideas and the implementation, consequences, and experiences of development.
3.   Critically analyse the key features of developmental processes in post-colonial India.
4. Undertake a sociological examination of developmental practices in different locations, moments, and fields, and to interpret different outcomes and experiences of development.

Course Content:
UNIT 1: Concepts
1.1 Development Concepts and characteristics
a. Hann, Chris. And Keith Hart. *Economic Anthropology*. Cambridge, U K: Polity Press, 2011. Pp. 100-119
1.2 Evolution
1.3 Progress
a. Sen, Amartya. 1999. *Development as Freedom*. New Delhi: Oxford University Press, pp. 3-11, 35-54.
b. Redclift, Michael. 1984. *Development and the Environmental Crisis: Red or Green Alternatives?* New York: Methuen & Co., chapters 1 & 7, pp 5-19, 122-130.
c. Visvanathan, Nalini, Lynn Duggan, Laura Nison off & Nan Wiegersma (eds). 1997. *The Women, Gender and Development Reader*. Delhi: Zubaan, pp 33-54.
d. Escobar, Arturo. 1995. *Encountering Development: The Making and Unmaking of the Third World*. Princeton: Princeton University Press, pp. 3-54.

UNIT 2. Theories of Change
2.1 Evolutionary
2.2 Conflict
2.3 Cyclical Theory
2.4 Underdevelopment
2.5 World System
a. Gupta, Akhil and Sharma, Aradhana. 2006. 'Globalization and Postcolonial States,' *Current Anthropology* 47 (2), pp. 277-293.
b. Escobar, Arturo. 1995. *Encountering Development: The Making and Unmaking of the Third World*. Princeton: Princeton University Press, pp. 3-54.
c. Sassen, Saskia. 2007. *A Sociology of Globalization*. W.W. Norton & Co. NY. London

UNIT 3: Contemporaries themes in Development
3.1 Sustainable Development
3.2   Environment and Development

Essential Readings:
1. fl g] t s i h] v k/kqd Hkkj esa lkekftd ifjorZ]ih ,p-vkbZ ,ikoS fyfeVsM] fnYyh

2. ikMs] jfo iदk'k] oScoहdj.k ,oa lekt] fot; iदk'ku efjhj ¼k½ fyfeVsM] okjk.klh-

3. enu] th- vkj-] ifjorZu ,oafodkl dk lekt"kkL=] fooस idk'ku] fnYyh-

4. /kेbfhj] ifjorZu ,oafodkl dk lekt"kkL=] jktLFkku fgUnh xUlk vdkneh] t;iqj-

5. Dreze Jean, And Amrtya Sen (1996)- Indian Economic Development & Social opportunity, New Delhi. Desai A. R. 1985, India's path of development, A Marxist approach, Popular Prakashan Bombay.

6. Giddens Anthony 1996 Global Problems and Ecological Crisis, In Introduction to Sociology, 2nd Ed, New York, W. W. Nortons Co.

7. Sharma, S. L. 1986, Development: Socio-Cultural Dimensions, Rawat Jaipur.

8. Srinivas, M. N. 1966, Social Change in Modern India, Barkley University, London

9. Sharma, S. L. 1994, Perspective on sustainable in South Asia, Kualalumpur ADIPAUNDP 1997- Human Development Report, Oxford University Press, New York UNDP-Sustainable Development, New York

10. World Bank, 1995, World Development Report, New York

11. Harrison. D. 1989 – The Sociology of Modernization and development, Sage Publication, New Delhi

12. Singh Y.: Culture Change in India: Identity and Globalization, Rawat Publication, Jaipur

13. Appadurai, Arjun 1997, Modernity at large: Cultural Dimensions of Globalization, Oxford, N. Delhi

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III.   MAJOR COURSE- MJ 18:
SOCIOLOGY OF GLOBALIZATION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. The course intends the students to understand globalization in its historical context and have theoretical understanding of globalization from sociological perspectives.
2. It aims to develop a critical understanding of issues that are related to socio- cultural, economic and political implications of globalization in the contemporary world.

Course Learning Outcomes:
On successful completion of this course the student should know:
1. The meaning of globalization, and its associated concepts and agencies
2. The impact of globalization on society
3. Importance of studying globalization in sociology

Course Content:
UNIT 1: Globalisation – Concept, Characteristics, Historical Context of Globalisation
Bauman, Z. 1998. Globalization. The Human Consequences. UK: Polity Press.
Ritzer, G. 2010. Globalization, A basic text. UK: Wiley Blackwell.

UNIT 2: Agents of Globalisation
2.1 Media, Market, - Global Village
2.2 Government Agencies
2.3 Multinational Corporations
2.4 National - International Agencies – International Monetary Fund, World Bank, World Trade Organization
McLuhan, M., Powers, B. R. (1992). The Global Village. United Kingdom: Oxford University Press.

UNIT 3: Mass Culture Globalisation,
3.1 Role of Information Technology and Mass Communication
3.2 McDonalization
3.3 Risk Society
3.4 Cultural Homogenization and Hybridization
Appadurai, Arjun. 1997. Modernity at large: Cultural dimensions of globalization. New Delhi: Oxford University Press.
Ritzer, G. 2015 : The McDonaldization of Society, New Delhi : Sage
Beck, U. (1992). Risk Society: Towards a New Modernity. India: SAGE Publications.

UNIT 4: Globalisation and Localisation

UNIT 5: Globalisation and Indian Experience

Somayaji, S (eds.) 2006. Sociology of Globalisation: Perspectives from India. Jaipur: Rawat.
Palanithurai and Ramesh. R. 2008.Globalisation Issues at the Grassroots. New Delhi: Rawat

Essential Readings:
1. Appadurai, Arjun. 1997. Modernity at large: Cultural dimensions of globalization. New Delhi: Oxford University Press.
2. Kiely, Ray and Phil Marfleet (eds.). 1998. Globalization and the third world. London: Routledge. Waters, Malcolm. 1996. Globalization. London: Routledge.
3. Singh, Y., Cultural Change in India: Identity and Globalization, Rawat Publication
4. ik Ms] jfo idÙ`k] oS³Ohdj.k ,oa lekt] fot; idÙ`ku] efnj ¼k4CÌ½fyfeVsM] okjk.klh
5. Hkk*kÊ] ujsÊ] oSÜohdj.k] lekt'kL=h, ifji§s} jkor ifCÝÝdÜkU] t;iqj
6. JhokLro] jkthol] oSÜohdj.k vkSÝ lekt] oSSo y{eh idÙ`ku] okjk.klh
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<center>IV.   MAJOR COURSE- MJ 19:</center>
<center>## SOCIOLOGY OF TRIBES</center>

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

<div align="right">(Credits: Theory-04) Theory: 60 Lectures</div>

Course Objective:
1. To introduce the concept of tribe and its different aspects.
2. To familiarise students with the economic, cultural and social life of tribes in India with a special focus on Jharkhand.
3. To familiarise students with the issues concerning tribes in India.
4. To familiarise students with the transformations in tribal society.

Course Learning Outcome:
1. The student will be able to understand the concept of tribe and different aspects of tribal societies.
2. The student will be able to understand issues both historical and contemporary concerning tribes in India

Course Content:

UNIT 1: Concept
1.1 **Definition of Tribe** – different perspectives
a. Xaxa, Virginius, 1999, 'Tribes as Indigenous People of India', *Economic and Political Weekly,* Vol. 34, Issue No. 51
b. Madan and Majumdar Introduction to Social Anthropology
c. Roy Burman, B.K., 1970, *Tribes in Perspective*, Delhi: Mittal Publications

UNIT 2: Features of Tribal Society
2.1 **Family - Types**
2.2 **Marriage and Kinship, Kinship Terminology**
2.3 **Economy**
a. Sinha, S. 1958. Tribal Culture of Peninsular India as a Dimension of Little Tradition in the Study of Indian Civilization A Preliminary Statement, Journal of American Folklore 71(7)
b. --------------(ed.). 1987. Tribal Politics and State System in Pre-Colonial Eastern and North Eastern India. Calcutta: Centre for Studies in Social Sciences.
c. Bose, P.K., 1984, *Classes and Class Relations among Tribes of Bengal*, Delhi: Ajanta Books International
d. Mehrotra, N., 1992, 'Angami Naga Women: Some Reflection on their Status, in S.M. Channa (ed.) *Nagaland: A Contemporary Ethnography,* pp. 147-80, New Delhi: Cosmo Publications

UNIT 3: Tribes and Politics in India
3.1 **Tribal Movements in India with special reference to Jharkhand**
– Birsa, Santhal and Tana Bhagat
3.2 **Indian Constitution and Tribes –** Schedule V, Schedule VI
3.3 **Issues –** Displacement, Migration, Poverty

UNIT 4: Change and Transformation in Tribal Society
4.1 Integration and Assimilation
4.2 Impact of Economic Liberalization and Globalization
a) Nongbri, t. 1998, 'Gender Issues and Tribal Development', in RGICS Paper No. 47: Problems in Tribal Society – Some Aspects.
b) Menon, G. 1992, 'Socio-Economic Transition and the Tribal Women', in B. Chaudhuri (ed.) *Tribal Transformation in India,* Vol. 1: 88- 109

Essential Readings:
1. dqekj]fefFkys'k] tutkrh; lekt eaf"k(kk vkS/vk(fudhdj.k] Dykfl dy ifjŸf"kz dEuh]ubZfnYyh
2. eqtqehTonhunzFk] lkekftd ekuo"kkL= dh#ijs{kk] foosl iadk'ku]ubZfnYyh
3. xqIrk] ,e-, y-] oa"kekxZMh Mh] lkekftd ekuo"kkL=]lkfgR; Hkou ifYydsKU] vkxjk
4. etqnkj]Mh, u-, oaenu]Mh, u-] lkekftd ekuo"kkL= ifjp;] e; wviSjcSl] uksMk
5. oekZ]meslk dqkj]>kj[kMdk tutkrh; lekt] lqokxxEekyk] jkph
6. Vidyarthi, L.P. 1970. Socio-Cultural Implications of Industrialization in India: A Case Study of Tribal Bihar. Delhi: Planning Commission.

7. Vidyarthi, L.P. and B.K. Rai. 1977. The Tribal Culture of India. Delhi: Concept Publishing Company.
8. Dube S.C. 1977, Tribal Heritage of India, Vikas Publications New Delhi,
9. Haimendrof, C.V.1982- Tribes of India The struggle for survival, Oxford University Press.
10. Singh K.S. 1972, Tribal Situation in India, Indian Institute of Advance Study
11. Singh K.S. 1985-TribalSociety, Manohar, Delhi
12. Singh K.S. 1982 – Tribal Movements in India, vol. – 18II (Manohar, New Delhi)
13. Nadeem Hass Land and tribes of Bihar. Dr. Prasad

SEMESTER VIII

I.   MAJOR COURSE- MJ 20:

SOCIOLOGY OF RELIGION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course objective:
1. This course exposes students to the distinctiveness of the sociological approach to the study of religion.
2. The individual and the group encounter religion and/or religious phenomenon in myriad ways be it through custom, ritual, belief so other practices. Students will be familiarized with the basic theoretical and methodological perspectives on the study of religion and also exposed to ethnographic texts on various aspects of religious phenomenon.
3. The last section of the course touches upon some aspects of religion in contemporary times such as secularization and multiculturalism.

Course Learning Outcomes:
1. Students will be acquainted with representative texts that symbolize the development of knowledge in the field of Sociology of Religion. They will be able to identify different theories, approaches and concepts that make up the study of religion, distinguish between them and also use terms specific to the field in specific context.
2. Students will be able to make a link between texts and paraphrase their arguments and use these to communicate their ideas in research papers, projects and presentations.
3. By encompassing contemporary developments, the course enables students to think about linkages between religion and society at various levels.

Course Content:

UNIT 1: Theorising Religion and Society
1.1 Religion and Sociology
a. Beteille, Andre. 2002 "Religion as a Subject for Sociology", in *Sociology Essays on Approach and Method*. New Delhi: Oxford University Press. pp 184-200.

UNIT 2: Magic, Religion and Rationality
a. Durkheim, Emile. 1995. *The Elementary Forms of Religious Life*. Translated by Karen
b. E. Fields. New York: The Free Press. Book one and Conclusion, pp.21-44, 418-448.
c. Weber, Max. 2001. *The Protestant Ethic and the Spirit of Capitalism*. Translated by Stephen Kalberg. England: Roxbury Publishing Press, pp. 103-126.
d. Malinowski, Bronislaw. 1948. *Magic, Science and Religion and Other Essays*. Selected, and with an introduction by Robert Redfield. Boston: The Free Press, pp. 37-50.
e. Tambiah, Stanley Jeyaraja. 1990. *Magic, Science, Religion and the Scope of Rationality*. Cambridge: Cambridge University Press, pp. 1-41.

UNIT 3: Elements of religion
3.1 Ritual
3.2 Myth
3.3 Belief
3.4 Organisation
a. Emile Durkheim. 1995. *The Elementary Forms of Religious Life*. Translated by Karen E. Fields. New York: The Free Press. Book three, pp. 303-412.
b. Malinowski, Bronislaw. 1948. *Magic, Science and Religion and Other Essays*. Selected, and with an introduction by Robert Redfield. Boston: The Free Press, pp. 119-124.
c. Hertz, Robert. 1973 (1909). "The Pre-eminence of the Right Hand." In *Right and Left: Essays on Dual Symbolic Classification*, edited by R. Needham. Chicago: University of Chicago Press, pp. 3-10, 13-14, 16-17, 19-21.
d. Evans-Pritchard, E.E. 1963 (1940). "Time and Space." In *The Nuer*. Oxford: Clarendon Press, pp. 94-98,

100-108.

UNIT 4: Theories of Origin of Religion
            4.1   Animism
            4.2   Animatism
            4.3   Naturalism

UNIT 5: Sociological interpretation of Religion
                                   5.1Emile Durkheim
                                   5.2Max Weber
a. Durkheim, Emile. 1995. *The Elementary Forms of Religious Life*. Translated by Karen
b. E. Fields. New York: The Free Press. Book one and Conclusion, pp.21-44,418-448.
c. Weber, Max. 2001. *The Protestant Ethic and the Spirit of Capitalism*. Translated by Stephen Kalberg. England: Roxbury Publishing Press, pp. 103-126.

UNIT 6: Religious Sect
5.1Brahma Samaj
5.2Arya Samaj
5.3Ramkrishna Mission
5.4Sree Sree Anukulchandra – Dharma

Essential Reading:
1. fl g ";ke/kj ,oafHkg]v"kkd deÑj]/keZdk lekt "kkL=]lliukidk'ku]okjk.klh
2. Mukhopadhyay, Rajatsubhra, Society and Religion, Pearson.
3. Robinson, Rowena, 2004, Sociology of Religion in India, Sage Publication.
4. Madan, T., 1991, Religion in India, Oxford University Press
5. Mukherjee, Sri kumar, Relevance of the Ideology of Sree Sree Anukulchandra in Modern Society: A Sociological Analysis, ISHRD

II.   ADVANCED MAJOR COURSE- AMJ 1:
SOCIOLOGY OF GENDER

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objective:
1. The course introduces gender as a critical sociological lens of enquiry in relation to various social fields. It also interrogates the categories of gender, sex and sexuality.

Course Learning Outcomes:
1. An understanding of concepts such as sex and gender by problem as rising common-sensical notions of gender. Raising key issues of power and subordination within the purview of gender and the need for and solutions resorted to as measure stoinitiate change through gender – based movements.
2. Understanding issues relating to gender both at national and global level.
3. Places gender in juxta position with other forms of stratification and identity such as caste, class, family and work.

Course Content:
UNIT 1: Gender in Sociology:
1.1 Concept and Types
1.2 Gender and Socialisation
1.3 Gender and Equality
a. Ortner, Sherry. 1974. "Is male to female as nature is to culture?" M.Z. Rosaldo and L. Lamphere (eds.) *Women, Culture and Society*. Stanford: Stanford University Press (pp. 67- 87).
b. Beauvoir, Simone de, 1949, *The Second Sex,* London, England: Vintage Classics
c. Butler, Judith, 1990, *Gender Trouble: Feminism and the Subversion of Identity*, Routledge

UNIT 2: Sociological Approaches to Gender
2.1 Functional
2.2 Liberal
2.3 Marxist
a. S.Jackson and S.Scott (eds.)2002 *Gender:A Sociological Reader*, London: Routledge. Introduction, pp.1-26.

UNIT 3: Feminism
3.1   What is feminism?
3.2 Three Waves of Feminism
3.3 Major Feminist Movements
a. Walters, Margaret, 2006, *Feminism: A Vert Short Introduction*, OUP
b. Chaudhuri, Maitrayee, 2005, *Feminism in India,* Zed Books
c. Hill-Collins, Patricia. 2002. "Learning from the outsider within" in S. Jackson and S. Scott (eds.) *Gender: A Sociological Reader*. London: Routledge [pp 69-78].
d. Judith Bulter Simon de Beavouir

UNIT 4: Changing Status of Women in India
a. CSWI 1984. Towards Equality. Report of the Committee on the Status of Women in India. Ministry of Education and Social Welfare, Government of India: New Delhi
b. Neera Desai and Maithreyi Krishna Raj 1987. Women and Society in India. Ajanta Books: New Delhi

UNIT 5: Gender based Violence, Women and Human Rights
a. Thapar-Björkert, Suruchi, Lotta Samelius, and Gurchathen S. Sanghera. *"Exploring Symbolic Violence in the Everyday: Misrecognition, Condescension, Consent and Complicity."* Feminist Review 112, no. 1 (February 2016): 144–62.

Essential Reading:
1. fl a] vferkj fyax ,oa lekt] foosl idk'ku] fnYyh
2. ukVk.kh jidk'k ukjkk .k, ,oaxksSe] T;kfr] fyax ,oa lekt] fjl pz?a fCyd'kU] t;iqj

3. Rege, Sharmila, 2003, Sociology of Gender: The Challenge of Feminist Sociological Thought, Sage India.

III.   ADVANCED MAJOR COURSE- AMJ 2:
ENVIRONMENTAL SCOIOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. The course will introduce students to environmental sociology and its subject matter
2. It will emphasize on the significance of studying the relation between society and environment
3. It will familiarise students with the major theories and debates in environmental sociology
4. It will introduce students to environmental movements, legislations in India and concept of environmental justice.

Course Learning Outcomes:
At the end of the course students will be able to:
1. Explain the impact of environmental degradation on human society
2. Describe the unequal impact of environmental degradation on different people and the need for environmental justice.
3. Discuss recent environmental issues in the light of sociological theories.

Course Content:
UNIT 1: Environmental Issues
1.1 Environmental Sociology – Subject Matter
1.2 Sustainable Development
1.3 Global Warming
1.4 Climate Change and its Social impact
a. *Gadgil, M. and Ramachandra Guha (1995) Ecology and Equity: Use and Abuse of Nature. Harmondsworth: Penguin Books.*
b. *Guha, Ramachandra (2000). Environmentalism: A Global History New Delhi: Oxford University Press.*
c. *Bell, MM. (2008). An Invitation to Environmental Sociology.*

UNIT 2: Theoretical Approaches to Environment
2.1 Deep Ecology   2.2 Ecocentricism   2.3 Feminist   2.4 World Systems Theory
a. *Sessions, G., Devall, B. (1985). Deep Ecology: Living as If Nature Mattered. United States: Gibbs Smith.*
b. *Shiva, V., Mies, M. (2023). Ecofeminism. United Kingdom: Bloomsbury Academic.*
c. *Dunlap, R., & Catton, W. (1979). Enviromental Sociology. Annual Review of Sociology, 5, 243-273.*
d. *Shiva, V. (1988). Women in Nature. In Staying Alive: Women, Ecology and Development. Zed Books. Ch 3. (pp.38-54).*
e. *Agarwal, Bina, 2007. The Gender and Environment Debate: Lessons from India. In Mahesh Rangarajan. (ed.) 2007. Environmental Issues in India: A Reader. New Delhi: Pearson, Longman, Ch 19. (pp. 316-324, 342- 352).*

UNIT 3: Environmental Movements
3.1 Narmada Bachao Andalon
3.2 Chipko Movement
3.3 Recent Movement
a. *Guha, R. Chipko: Social history of an environmental movement. In Ghanshyam Shah ed. (2002). Social Movements and the State*
b. *Baviskar, A. (1999). In the Belly of the River: Tribal Conflicts over Development in the Narmada Valley. Oxford University Press.*

UNIT 4: Environmental Justice
4.1 Concept of Environmental Justice
a. *Schlosberg, David, Defining Environmental Justice: Theories, Movements, and Nature (Oxford, 2007; online edn, Oxford Academic, 1 Sept. 2007)*

UNIT 5: Legal and Regulatory Framework for Environmental Protection in India
5.1 Environmental laws in India - The Wildlife (Protection) Act, 1972, Environment Protection Act, 1986 (EPA)
a. *Ministry of Environment, Forest and Climate Change,*

https://moef.gov.in/wp-content/uploads/wssd/doc2/ch2.html

Essential Readings:

1. Bell, Michael Mayerfeld. 2004. An Invitation to Environmental Sociology. Thousand Oaks, California: Pine Forge Press.
2. Gould, Kenneth Alan and Tammy L Lewis. 2009. Twenty Lessons in Environmental Sociology. New York: Oxford University Press.
3. Dunlap, R.; Frederick H. Buttel, Peter Dickens and August Gijswijt. (Ed.) 2002. Sociological Theory and the Environment: Classical Foundations, Contemporary Insights. Boston: Rowman& Littlefield.
4. Hanningan, John. 1996. Environmental Sociology. Oxan: Routledge.
5. ;kno]n;'kadj fl g]2018]lk.k0j.k dk lekt "kkL=]fot Me cD| -
6. uxh]ih ,l -]ikfjfLFkfrdh ,oai;k0j.k Hkxksy]jLrksh ifCyd's kU] ejsB-
7. iKBd] vpu0k] 2022]lk.k0j.k dk lekt "kkL=]fot ; idks'ku efnj cD| -
8. IGNOU, BSOE 143, lk.k0j.k lekt "kkL=]https://egyankosh.ac.in/handle/123456789/79826

IV.   ADVANCED MAJOR COURSE- AMJ 3:
SOCIOLOGY OF EDUCATION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. Sociology of Education is one of the core areas of sociology. One of the major objectives of this course is to familiarize students with the context, concepts and theories of sociology of Education.
2. To familiarize students with the basis of examines the bases of Education and the relationship between Education and society both analytically as well as in specific empirical contexts.
3. To make students familiar with the educational system, educational processes and educational change in the Indian context.

Course Learning Outcomes:
1. An ability to comprehend the relationship between the education and society.
2. Familiarity with different theories and concepts in sociology of education and a capacity to use them to grasp educational phenomena in a cross-cultural and comparative perspective
3. Be able to understand and appreciate the diversity of ways in which education system operates historically and spatially.
4. Be able to generate hypotheses and research questions within the theoretical perspectives and ethnographic contexts in sociology of education.

Course Content:

UNIT 1: Concept of Education
1.1 Types of Education
1.2 Importance of Education

UNIT 2: Education and Socialisation
2.1 Agencies of Socialisation – Family, School, Peer Group, Religion, Media

UNIT 3: Sociological Theories of Education
3.4 Emile Durkheim
3.5 Herbelt Spencer
3.6 Paulo Friere

UNIT 4: Modernisation and Education
4.1 Role of Education in Modernisation
4.2 Impact of Modernisation on Indian Education System

UNIT 5: Social Change and Education
3.1 Concept of Social Change
3.2 Importance of Schooling and Education in Social Change

UNIT 6: Education and Social Mobility
6.1 Education and Social Stratification
6.2 Mobility and Equality of Educational Opportunity

Essential Readings:
1. Durkhiem, Emile. (1956). Education and sociology translated with an introduction, by Sherwood D. Fox, The free press: New York.
2. Saxena, N. R. Swaroop, Philosophical & Sociological Foundation of Education, R. Lall Book Depot, Meerut. Geetha B. Nambissan and S. Srinivasa Rao (2013) Sociology of Education in India: Changing Contours and Emerging Concerns. Delhi: OUP
3. Halsey et al (1996) Education, Culture Economy Society. Oxford: OUP
4. Pathak Avijit (2004) Social Implications of Schooling – Knowledge, Pedagogy and Consciousness New Delhi, Rainbow Publications
5. Paulo Freire; Pedagogy of the Oppressed (30th Anniversary Edition).

6.   Mathur S.S. A sociological Approach to education.

7.   Marker N.S Educational Sociology

8.   Singh, Y.M (1992) Sociological foundation of education, sheth publishers, Bombay

9.   Agrawal J.C. Theory and principles of education.

10. Gandhi, M.K. 1977. Basic Education, in *The Collected Works.* Ahmedabad: Navajivan.

11. Dewey, J. (1916). *Democracy and Education. An Introduction to the Philosophy of Education.* New York: Free Press.

12. Durkheim, E. 1956. *Education and Society.* New York: Teachers College Press.

13. Jairam, N., Sociology of Education in India, Rawat Publication, Jaipur

14. lDnk],u-vkj-Lo:i]f"k{kk dsl ekt"kkL=h;vk/kkj]vkj-yky cq] fMlkstseUB

15. "ekXMh,y-]f"k{kk rFkkHkkjrh; l ekt]vkj-yky cq] fMlkstseUB

16. :gsyk]lRiky ,oaukud]jktdejh]mnh;eku Hkjrh; l ekt eaf"k{kk] vxzoky ifYydskUU] vkxjk

17. oek]jkeiky flg ,oalyw t]tsdslj]mnh;eku l ekt eaf"k{kk foukn iqrd efUnj] vkxjk

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COURSES OF STUDY FOR FYUGP IN **"SOCIOLOGY" MINOR**

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MINOR COURSE-1A   **(SEM-I)**

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I.   MINOR COURSE- MN 1A:
                      INTRODUCTORY SOCIOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:

The idea behind this course is to introduce the discipline of Sociology to students from diverse academic and social backgrounds, trainings and capabilities. The course is intended to introduce the students to sociological ways of thinking. They learn how to apply sociological concepts to the everyday life. To familiarise students with the different concepts in Sociology and also to highlight the distinction between common sense knowledge and Sociological knowledge. To make the students familiar with the different institutions and aspects of Indian society and make them view the same through a sociological lens. To introduce students to the different prominent schools of thought within the discipline of Sociology.

Course Learning Outcomes:
Familiarity with Sociology and its different concepts. Knowledge of Indian society and its institutions, features. Knowledge of different sociological perspectives.

Course Content:
UNIT 1: Emergence of Sociology
1.1 Origin and Scope of Sociology
Origin and scope of Sociology, and the history and development of sociology as a discipline, scope and classification of sociology, development of sociology as a subject in India.
a. Andre Beteille, *Sociology: Essays on Approach and Methodi,* 2002, New Delhi, OUP Haralambos and Holborn: Sociology, Collins
b. T.K. Oomen and P. N. Mukherji (eds.) Indian Sociology: Reflections and Interpretations: 1988, Bombay: Popular Prakashan

UNIT 2: Sociological Concepts:
Concept of society, Indian society, culture, social group, social institution, community and association, social organization, social change, social mobility, and social network.
a. Andre Beteille, *Sociology: Essays on Approach and Methodi,* 2002, New Delhi, OUP
b. Dictionary of Sociology, Oxford

UNIT 3: Indian Society:
Caste system in India, social stratification, class and power, nature and features of caste system, gender.
a. Dipankar Gupta, *Social Stratification*, 1991, Oxford India Paperbacks
b. Veena Das, *Handbook of Indian Sociology,* Oxford, 2004

UNIT 4: Sociological approaches:
Functionalist theory; Structural and structural functional theories; Conflict Theory- theory of alienation, dialectical materialism, the structures of capitalist society; Marx's critical theory of social order; Contemporary theories – Postmodernism, Feminism.
a. George Ritzer, *Sociological Theory*, 2011, Tata McGraw Hill

Reference Books:
1. fl g]tsih] l ekt"kkL= %vo/kkj.kk¸¡oafl)kar]ih-¸p-vkbZyfux]ikbo/fyfeVsM
2. fl akh]ujbhz¸oaxksokeh]ol dkkdj]l ekt'kkL= foopu]jktLFkku fgUhh xza vdkeh]t;ig
3. nkskh¸oatSU]l ekt"kkL= %ubZfn"kk]jkor if¥dsku]t;iguubZfnYyh
4. Vh-ch-ckWeksj] ¼uqdn xksly izkku½l ekt"kkL= leL;kvkavksSl kfgR;dk v/;u]ubZfnYyh
5. Inkels A–What is Sociology, Printice-Hall of India, New Delhi
6. H. M. Jhonshan - An Introduction to Sociology, Allied Publishers, Delhi
7. Bottomore, T. B. 1972. Sociology: A guide to problems and literature. Bombay: George Allen and Unwin (India)

MINOR COURSE-1B   (SEM-III)

II.   MINOR COURSE- MN 1B:
MODERN INDIAN SOCIAL THINKERS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
1. To introduce the key ideas of makers of modern India.
2. To familiarize students with key Indian social thinkers.
3. To introduce important issues in contemporary Indian society.

Course Outcomes:
1. Students should be able to understand the socio-political and historical context in which aspects of modern Indian thought emerged.
2. Students should be able to understand the contribution of modern Indian thinkers.
3. They should be able to use the theories/ideas in the contemporary context.

Course Content:
1. **M. K. Gandhi –** Ahimsa, Satyagrah
Gandhi, M. K., 1938, *Hind Swaraj*. Ahmedabad: Navjivan Publishing House.

2. **Dr. B. R. Ambedkar –** Untouchability
Ambedkar, B. R., 1971 [1936], Annihilation of Caste. Jullender: BheemPatrika.

3. **Swami Vivekananda,**
Philosophy of Universal Religion, *Speech at the World Parliament of Religions, Chicago,* 1893

4. **Raja Ram Mohan Roy -**Samaj Sudhar

5. **J. P. Narayan**- Total Revolution

6. **Swami Dayanand Saraswati** – Education and Women

7. **Vinoba Bhave** – Bhoodan

Essential Readings:
1. fl g] oh-, u-] Hkkjrh; l ekftd fpUru] food idk'ku] fnYYkh-
2. ikM]Sj fo idk'k] Hkkjrh; l ekftd fopkj] fot; idk'ku efUnj ¼k½fyfeVsM] okjkkl h

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MINOR COURSE-1C   **(SEM-V)**

III.   MINOR COURSE- MN 1C:
CULTURE AND SOCIETY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
1. Sociology of is one of the core areas of sociology. One of the major objectives of this course is to familiarize students with the context, concepts and theories of sociology of culture.
2. To familiarize students with the basis of examines the bases of culture and the relationship between culture and society both analytically as well as in specific empirical contexts.
3. To make students familiar with the different cultures, social processes and cultural change in the Indian context.

Course Learning Outcomes:
1. An ability to comprehend the relationship between the culture and the society.
2. Familiarity with different theories and concepts in sociology of culture and a capacity to use them to grasp cultural phenomena in a cross-cultural and comparative perspective
3. Be able to understand and appreciate the diversity of ways in which culture operates historically and spatially.
4. Be able to generate hypotheses and research questions within the theoretical perspectives and ethnographic contexts in sociology.

UNIT 1: Culture
1.1 Definition
1.2 Elements
1.3 Characteristics
1.4 Culture and Civilisation
a. Les Back, Andy Bennett Laura Destor Edles,2012, Cultural Sociology: An Introduction, pp 3-31, 47-91
b. Chris Jenks, 2006, Culture: Routledge Publication

UNIT 2: Culture and Personality
1.1 Relationship between Culture and Personality
a. Anthony FC Wallace,1970, Culture and Personality.
b. Ralph Linton,1973, The cultural background of personality.

UNIT 3: Theoretical Approach
3.1 Public Sphere – Habermas
a. Jurgen Habermas, 2015, The structural transformation of the public sphere: *An inquiry into a category of bourgeois society.*
b. Craig Calhoun,1993, Habermas and the public sphere the; MIT Press, Massachuetts and London.

UNIT 4: Media and Society
1.1 Types of Media – Old and New
1.2 Media and Globalisation
a. James Curran, 2010, Media and Society; Bloomsbury Publication.
b. Nicholas Carah, 2021, Media and Society: *power platform and participation;* Sage Publication.
c. Terhi Rantanen, 2005. The media and globalization; Sage Publication.

Essential Readings:
1. Bhushan, Vidya & Sachdeva, D. R., An Introduction to Sociology, Kitab Mahal, New Delhi
2- fl g] t s i h] l ekt"kkL= %vo/kj.kk, ¡ ,oaffl)ka] i &Vl gkW/vkV/bfM/k i kboS/ fyfeVSM] ubZ fnYyh
3- fl akfj uj bhzd qkj ,oaxk&Lokeh] l qfkdj] l ekt"kkL= foopu] jkt LFkku fgUnhxax Bk vdkneh] t; ig
4- i k Ms] jfo i akd'k]oSohgj.k, oal ekt] fot; i akd'ku efUnj ¼ &½fyfeVSM
5- pk&jhj i h- d\] l ekt"kkL= ds fl)ka] koka] fooki i akd'ku]jfnYyh
6- xhqrk], e-,y-, oa"kekkl] Mh-Mh] l ekt"kkL=]l kfgR; Hkou i fCydk'ku] vkxjk

7. Milner, Andrew. Browitt, Jeff (2003) *Contemporary Cultural Theory.* Rawat Publications. Jaipur

8. Miller, Toby (2006 ed.) *A Companion to Cultural Studies.* USA: Blackwell Publishing. (Page 1-18, 79-100)

9. Goffman, Erving. (1972) *The Presentation of Self in Everyday Life*. Penguin Books

10. Mead, George H. (1972) *Mind, Self and Society*. (18th Ed.). Chicago and London: The   University of Chicago Press.

11. Guha, Ranajit. (1998) *Dominance without Hegemony: History and Power in Colonial India.* Delhi:

12. Geerts Clifford 1973. The interpretation of cultures

MINOR COURSE-1D   **(SEM-VII)**

IV.   MINOR COURSE- MN 1D:
RURAL SOCIETY IN INDIA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objective:
1. To familiarise students with the concept, features and institutions of rural society in India
2. To familiarise students with the contemporary issues and key government policies aimed at rural population in India

Course Learning Outcome:
1. Students will be able to understand the context, themes and issues of rural society in India
2. They will be familiar with key government programmes aimed at the rural population

Course Content:
UNIT 1: Rural Society –
1.1 Concepts
1.2 Characteristics and
1.3 Change

UNIT 2: Social Institutions of Rural Society
2.1 Family, Kinship and Marriage
2.2 Rural Community
2.3 Caste and Casteism in Rural India
2.4 Dominant Caste

UNIT 3: Rural Development
3.2 Issues in rural development
3.3 Rural Development Programmes in India
3.4 Pradhan Mantri Gram Sadak Yojna,
3.5 MNREGA
3.6 Swachh Bharat Mission

UNIT 4: Little Tradition and Great Tradition

Essential Readings:
1. सिंह] बी- एन- एंव सिंह] जन्मिंजय] ग्रामीण समाज] विवेक प्रकाशन] दिल्ली

2. मुख़र्जी] रबीन्द्र नाथ] ग्रामीण समाजशास्त्र] साहित्य भवन] न्यू दिल्ली

3. ए॰ एल॰ दोषी एंव पी॰ सी॰ जैन] भारतीय ग्रामीण समाजशास्त्र] रावत] न्यू दिल्ली

4. Singh Prabhat Kumar - Migration and Urbanization, Janki Prakashan, Patna, New Delhi
5. Singh Prabhat Kumar - Migration and Occupational Mobility, Janki Prakashan, Patna, New Delhi
6. Rural Sociology in India, A.R. Desai, Macmillan Co. of India, New Delhi
7. S.L. Doshi and P.C. Jain, Rural Sociology, Rawat Publications, Jaipur

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FYUGP

PSYCHOLOGY HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented for 3rd Semester of Session 2022-26 & Onwards

UNIVERSITY DEPARTMENT OF PSYCHOLOGY
RANCHI UNIVERSITY, RANCHI
Art Block 'C', Morabadi, Ranchi-834008
Jharkhand

Ref.-.......................   Date:................

Meeting of Board of Studies (Psychology)

Meeting of Board of Studies FYUGP (NEP) Under Graduate Syllabus as per guidelines of
Ranchi University, Ranchi

1. **Chairman**

    Dr. Zeba
    Head, University Department of Psychology,
    Ranchi University Ranchi

2. **Internal Members**

    (i)   Dr. Perweiz Hassan
            University Department of Psychology,
            Ranchi University Ranchi

    (ii)   Dr. Renu Kumari
            University Department of Psychology,
            Ranchi University Ranchi

    (iii)   Dr. Roselina Singh
            University Department of Psychology,
            Ranchi University Ranchi

3. **External Members**

    (i)   Dr. Shriti Chaudhry
            Rtd. Professor, Department of Psychology,
            R.L.S.Y. College, Ranchi University, Ranchi.

    (ii)   Dr. Masroor Jahan
            Head, RINPAS, Dept. of Clinical Psychology.
            Ranchi University, Ranchi

DIRECTOR
IQAC, RANCHI UNIVERSITY
RANCHI-834 001

Head,
University Dept. of Psychology
Ranchi University, Ranchi

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Students are Instructed to

Refer Syllabus of Allied/ Opted Subjects from R.U. Website

HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1st of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:
  - q)Odd Semester: **From first Monday of August to third Saturday of December**
  - r) Even Semester: **From first Monday of January to third Saturday of May**
- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
  - ➢ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
  - ➢ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
  - ➢ Bachelor's Degree after a 3-year (6 semesters) programme of study,
  - ➢ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
  - ➢ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

- q) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.
  One credit for Theory   = 15 Hours of Teaching i.e., 15 Credit Hours
  One credit for Practicum   = 30 Hours of Practical work i.e., 30 Credit Hours

  - r) For credit determination, instruction is divided into three major components:
    Hours (L) – Classroom Hours of one-hour duration.
    Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
    Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.
- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

lxxx.   The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

lxxxi.   No student will be detained in odd Semesters (I, III, V & VII).

lxxxii.   To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

lxxxiii.   To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

lxxxiv.   To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

lxxxv.   However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

lxxxvi.   Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

lxxxvii.   To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year.

lxxxviii.   A student has to pass in minimum 3 papers out of the total 4 papers.

lxxxix.   It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result of the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)													
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)													
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree													
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4
Exit Point: Bachelor's Degree with Hons. /Hons. with Research												**160**	**224**

Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

Upgraded & Implemented for 3rd Semester of Session 2022-26 & Onwards

COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME 2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	AEC-1	Language and Communication Skills (MIL 1 - Hindi/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Hindi)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4

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IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2
	VAC-2	Value Added Course-2	2
	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4

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RC/		Research Internship/Field Work/Dissertation OR	12/
AMJ-1		Advanced Major paper-1 (Disciplinary/Interdisciplinary Major)	4
AMJ-2		Advanced Major paper-2 (Disciplinary/Interdisciplinary Major)	4
AMJ-3		Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**160**

NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	xvii. Discipline/ Interdisciplinary courses and xviii. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64
Minor	xvii. Discipline/ Interdisciplinary courses and xviii. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9

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Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

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Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Double Major Courses		Credits
	Code	Papers	
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:
AEC   Ability Enhancement Courses
SEC   Skill Enhancement Courses
IAP   Internship/Apprenticeship/ Project
MDC   Multidisciplinary Courses
MJ   Major Disciplinary/Interdisciplinary Courses
DMJ   Double Major Disciplinary/Interdisciplinary Courses
MN   Minor Disciplinary/Interdisciplinary Courses
AMJ   Advanced Major Disciplinary/Interdisciplinary Courses
RC   Research Courses

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AIMS OF BACHELOR'S DEGREE PROGRAMME IN PSYCHOLOGY

The undergraduate psychology programme aims at the following goals:

12. Offering learning opportunities to orient the students towards scientific and humanistic study of the complexities of human mind and behaviour.

13. Imparting knowledge of basic psychological concepts and methods, and developing ability to appreciate the challenges in field settings.

14. Help shaping cognitive, affective and behavioural abilities of students for building responsible psychology professionals and researchers.

15. Facilitating acquisition of basic skills in major areas of application (e.g. psychological testing, experimentation, counselling, interviewing, developing psychological tools, behaviour modification, data analysis, report writing).

16. Promoting self-understanding, reflexivity and personal growth. Helping students understand the complexities of self and human relationships and how the two make each other up.

17. Developing a strong sense of ethical and moral aptness in general and in the context of learning and its assessment in particular.

18. Helping students master the basic reflective, analytical, scientific writing, computational and communicative competencies.

19. Developing respect for social diversity and increasing social and cultural relevance of learning.

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PROGRAM LEARNING OUTCOMES

The learners who complete FYUGP of full-time undergraduate programme in psychology would earn a Bachelor's degree Honours/research. The learning outcomes that a student should be able to demonstrate on completion of a degree level programme may involve academic, behavioural and social competencies as described below:

Academic Competence
1. Disciplinary knowledge and methods including data analysis and computer literacy.
2. Basic professional skills pertaining to psychological testing, assessment and counselling.
3. Ability to use skills in specific areas related to chosen specialization (e.g. cognitive, industrial-organizational, clinical, counselling, health, educational, social, community).
4. Ability to relate and connect concepts with personal experiences and using critical thinking.
5. Curiosity and ability to formulate psychology related problems and using appropriate concepts and methods to solve them.
6. Ability to use various e-resources and social media and negotiating with technological challenges.
7. Articulation of ideas, scientific writing and authentic reporting, effective presentation skills.
8. Dealing with conflicting theories and approaches, learning to withstand ambiguities and understanding the limitations of the discipline.

Personal & Behavioural Competence
1. Self-development, health and hygiene, self-regulation skills.
2. Developing positive attributes such as empathy, compassion, social participation, and accountability.
3. Developing cultural and historical sensibility particularly indigenous traditions, socio-cultural context and diversity.
4. Having conversational competence including communication and effective interaction with others, listening, speaking, and observational skills.
5. Appreciating and tolerating different perspectives.
6. Ability to work both independently and in group and dealing effectively with clients and stakeholders, learning the art of negotiation.

Social Competence
1. Collaboration, cooperation and realizing the power of groups and community.
2. Analysing social problems and understanding social dynamics.
3. Gender sensitization including gender respect, respect for one's own gender, dealing with gender confusion and gender identity issues.
4. Ethical, social and ecological responsibility including acknowledging the dignity and presence of others, awareness of social order, learning of values and social concern reflected through activation of social participates (e.g. village surveys, visiting old age homes and spending time with elderly, orphanage community service etc).
5. Moral and ethical awareness and reasoning involving objective and unbiased work attitude, avoiding unethical behaviours such as data fabrication and plagiarism, observing code of conduct, respecting intellectual property rights and being aware of the implications and ethical concerns of research studies.
6. Commitment to health and wellbeing at different levels (e.g. individual, organization, community, society).

SEMESTER WISE COURSES IN PSYCHOLOGY MAJOR-1 FOR FYUGP   2022 onwards

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	Introduction to Psychology	4	25	75	---
II	MJ-2	Psychology and its Application	4	25	75	---
	MJ-3	Practical-I	4	---	---	100
III	MJ-4	Foundation of Social Psychology	4	25	75	---
	MJ-5	Practical-II	4	---	---	100
IV	MJ-6	Foundation of Developmental Psychology	4	25	75	---
	MJ-7	Emergence of Environmental Psychology	4	25	75	---
	MJ-8	Practical-III	4	---	---	100
V	MJ-9	Introduction to Personality	4	25	75	---
	MJ-10	Positive Psychology	4	25	75	---
	MJ-11	Practical-IV	4	---	---	100
VI	MJ-12	Basics of Clinical Psychology	4	25	75	---
	MJ-13	Foundation of Organizational Behaviour	4	25	75	---
	MJ-14	Counselling Skills	4	25	75	---
	MJ-15	Practical-V	4	---	---	100
VII	MJ-16	Quantitative Data Analysis	4	25	75	---
	MJ-17	Educational Psychology	4	25	75	---
	MJ-18	Schools of Psychology	4	25	75	---
	MJ-19	Practical-VI	4	---	---	100
VIII	MJ-20	Applied Psychology	4	25	75	---
	AMJ-1	Social Cognition and Group Processes	4	25	75	---
	AMJ-2	Life Skills	4	25	75	---
	AMJ-3	Practical-VII	4	---	---	100
	or RC-1	Research Methodology	4	25	75	---
	RC-2	Project Dissertation/ Research Internship/ Field	8	---	---	200

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		Work				
		Total Credit	**92**			

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Skill Enhancement Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	Fundamentals of Clinical Psychology	3	---	75	---
II	SEC-2	Psychological Assessment	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	**9**			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Minor Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	Introductory Psychology	4	15	60	25
III	MN-1B	Psychology and Mental Health	4	15	60	25
V	MN-1C	Community Psychology	4	15	60	25
VII	MN-1D	Psychology at Work	4	15	60	25
		Total Credit	**16**			

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INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There will be <u>Only One Semester Internal Examination</u> in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

Q. (SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

    The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

R. (SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

    The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Conversion of Attendance into score may be as follows:

Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

Y. (ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

Z. (ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

AA.   (ESE 100 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark

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each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

Subject/ Code		
F.M. =10	**Time**=1Hr.	Exam Year

General Instructions:
xli. **Group A** carries very short answer type compulsory questions.
xlii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
xliii. Answer in your own words as far as practicable.
xliv. Answer all sub parts of a question at one place.
xlv. Numbers in right indicate full marks of the question.

Group A

25.   [5x1=5]

      xli.   ....
      xlii.   ....
      xliii.   ....
      xliv.   ....
      xlv.   ....

Group B

26. ....   [5]
27. ....   [5]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **20 Marks**:

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Subject/ Code

F.M. =20   **Time**=1Hr.   Exam Year

General Instructions:
xli. **Group A** carries very short answer type compulsory questions.
xlii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
xliii. Answer in your own words as far as practicable.
xliv. Answer all sub parts of a question at one place.
xlv. Numbers in right indicate full marks of the question.

Group A

33.   [5x1=5]

    xli.   ....
    xlii.   ....
    xliii.   ....
    xliv.   ....
    xlv.   ....

34. ....   [5]

Group B

35. ....   [10]
36. ....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION
Question format for **50 Marks**:

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AK SINGH COLLEGE ,JAPLA, PALAMU

Subject/ Code

F.M. =50   **Time**=3Hrs.   Exam Year

General Instructions:
xv. **Group A** carries very short answer type **compulsory** questions.
xvi. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
xxvii.   Answer in your own words as far as practicable.
xxviii.   Answer all sub parts of a question at one place.
xxix. Numbers in right indicate full marks of the question.

Group A

49.   [5x1=5]

xli.   ....
xlii.   ....
xliii.   ....
xliv.   ....
xlv.   ....

Group B

50. ....   [15]
51. ....   [15]
52. ....   [15]
53. ....   [15]
54. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **60 Marks**:

Subject/ Code

F.M. =60   **Time**=3Hrs.   Exam Year

General Instructions:
xvii. **Group A** carries very short answer type **compulsory** questions.
xviii.   **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
xxvii.   Answer in your own words as far as practicable.
xxviii.   Answer all sub parts of a question at one place.
xxix. Numbers in right indicate full marks of the question.

Group A

65.   [5x1=5]

xli.   ....
xlii.   ....
xliii.   ....
xliv.   ....
xlv.   ....

66. ....   [5]
67. ....   [5]

Group B

68. ....   [15]
69. ....   [15]
70. ....   [15]
71. ....   [15]
72. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

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Question format for **75 Marks**:

	Subject/ Code	
F.M. = 75	**Time**=3Hrs.	Exam Year

General Instructions:
xvii. **Group A** carries very short answer type **compulsory** questions.
xviii.   **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xxvii.   Answer in your own words as far as practicable.
xxviii.   Answer all sub parts of a question at one place.
xxix. Numbers in right indicate full marks of the question.

Group A

73.   [5x1=5]

xli.   ....
xlii.   ....
xliii.   ....
xliv.   ....
xlv.   ....

74. ....   [5]
75. ....   [5]

Group B

76. ....   [15]
77. ....   [15]
78. ....   [15]
79. ....   [15]
80. ....   [15]
81. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

AK SINGH COLLEGE ,JAPLA, PALAMU

Subject/ Code

F.M. = 100   **Time**=3Hrs.   Exam Year

General Instructions:
xvii. **Group A** carries very short answer type **compulsory** questions.
xviii.   **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xxvii.   Answer in your own words as far as practicable.
xxviii.   Answer all sub parts of a question at one place.
xxix. Numbers in right indicate full marks of the question.

Group A

9.   [10x1=10]

xli.	....	vi.	....
xlii.	....	vii.	....
xliii.	....	viii.	....
xliv.	....	ix.	....

18. xlv.   x   ....   [5]
19. ....   [5]

Group B

52. ....   [20]
53. ....   [20]
54. ....   [20]
55. ....   [20]
56. ....   [20]
57. ....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

SEMESTER I

XVI.   MAJOR COURSE –MJ 1:
INTRODUCTION TO PSYCHOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100   **Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
After the completion of course, the students will have ability to:
1. Understanding what Psychology is all about.
2. Appreciation of the scope and the field of Psychology.
3. Developing familiarity with basic concepts related to some foundational themes of study in Psychology such as learning, memory, perception, thinking, emotion, motivation and human biological system including brain.
4. Developing familiarity with individual level phenomenon such as intelligence and personality.

Course Content:
Unit-I: Introduction:
1. Nature of Psychology: Definition, Subject matter and Branches of Psychology
2. Psychology in India: History and current status
3. Methods of Psychology (with special emphasis on Experimentation: Variables and types of experimentation.
4. Biological basis of human behaviour (with emphasis on central nervous system)

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Unit-II: Learning, Memory and Perception
1. Learning: Classical conditioning, Instrumental learning
2. Memory: Models of memory: Information processing model (sensory register, STM, LTM and concept of working memory), Reconstructive, nature of memory; Forgetting, Improving memory
3. Perception: Process and Gestalt view point of perception.

Unit-III: Motivation and Emotion-
1. Approaches to understanding motivation and Types of motives
2. Elements of Emotions (Components, James Lange and Hypothalamus Theories of Emotion

Unit-IV: Individual differences: Personality and Intelligence
1. Personality: Nature and Theories: Trait and Type approach
2. Intelligence: Nature and Theories: Two factor theory

Reference Books:
1. Banyard, P., Davies, M. N. O., Norman, C. & Winder, B. (Eds.) (2010). Essential psychology. New Delhi: SAGE Publicatons.
2. Baron, R. & Misra. G. (2014). Psychology. New Delhi: Pearson.
3. Ciccarelli, S. K. & White, J. N. & Misra, G. (2018). Psychology. New Delhi: Pearson Education.
4. Morgan, C. T., King, R., Weise, J. & Schopler, J. (2017). Introduction to Psychology (7th Ed.) McGraw Hills.
5. Holt, N., Brener, A., Sutherland, E., Vliek, M. and Passer, M., & Smith, R. (2015).
6. Psychology: The Science of Mind and Behaviour. London: Tata McGraw-Hill.

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XVII. SKILL ENHANCEMENT COURSE- SEC 1:
FUNDAMENTALS OF CLINICAL PSYCHOLOGY

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objectives:
1. To provide knowledge about major psychological disorders (Bipolar, Depressive Disorders, Schizophrenia and Neurodevelopmental Disorders) and to provide knowledge about various treatments for abnormal behaviour.

Course Learning Outcomes:
1. Having working knowledge and understanding of the major psychological disorders and critically review their signs and symptoms (Bipolar, Depressive Disorders, Schizophrenia and Neurodevelopmental Disorders).
2. Developing a basic knowledge of the various treatments for abnormal Behaviour.

Course Content:

Unit-I: Bipolar, and Depressive Disorders: Clinical Picture and Etiology
1. Bipolar-I and Bipolar-II Disorders
2. Major Depressive Disorder

Unit-II: Schizophrenia: Clinical Picture and Etiology

Unit-III: Neurodevelopmental Disorders: Clinical Picture and Etiology
1. Intellectual Disability
2. Attention Deficit/Hyperactivity Disorder

Unit-IV: Treatment of Abnormal Behaviour:
1. Psychological Approaches: Behavioural, Cognitive and Humanistic
2. Indian Approaches: Guru-Chela relationship and Logotherapy: Vedantic Approach

----
Project Work:
1. Making use of YouTube videos to help understand various disorders and their symptoms
2. Interview of cases from the list of disorders (Mental Status Examination and Case History)

Practical Work:
1. General Health Questionnaire
2. Beck's Depression Inventory
3. Mental Depression Scale- L.N. Dubey
4. Positive Mental Health Inventory- C.D. Agashe & R.D. Helode

Reference Books:
1. Butcher, J.N., Hooly, J. M. Mineka, S. & Dwivedi, C.B (2017). Abnormal Psychology. New Delhi: Pearson.
2. Comer, R. J. (2015). Abnormal psychology. New York: Worth publishers.
3. Diagnostic and Statistical Manual of Mental Disorders. (2013). Washington, D.C.
4. Nevid, J., Rathus, S., & Greene, B. (2014). Abnormal psychology in a changing world. Upper Saddle River, NJ: Pearson Prentice Hall.
5. The ICD-10 Classification of Mental and Behavioural Disorders. (1992). Geneva.
6. आधुनिक नैदानिक मनोविज्ञान - मो॰ सुलेमान।
7. मनोरोग विज्ञान - मो॰ सुलेमान।
8. मनोरोग विज्ञान - डॉ॰ मशरुर जहाँ।

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SEMESTER II

V.   MAJOR COURSE- MJ 2:
PSYCHOLOGY AND ITS APPLICATION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
   To provide knowledge about health, religion, child development, assess the intelligence, personality and role of psychology for the better social development of the community

Learning Outcomes:
1. Demonstrating the ability to apply psychological knowledge to prevent and solve human problems existing at individual, group and societal level and develop related skills that promote human welfare and optimal human functioning. Knowing the career opportunities that exist within the discipline and profession of psychology and through self-reflection develop insights into appropriate career choices
2. Having knowledge about the ethics and proficiencies required for practitioner psychologists
3. Acquiring knowledge about Indian psychological concepts and their applications
4. To understand the close relation of applied psychology with research
5. To be able to communicate effectively to persuade and educate others about solutions to their problems.

Course Content:
Unit-I Nature of applied psychology
1. Psychology in everyday life: Health, religion and child development
2. Introduction to professional ethics

Unit-II Application of individual level
1. psychometric and assessment of intelligence, personality and their application
2. Positive psychology: Definition, nature, perspective and Stress management: Nature, Symptoms of stress and its management
3. Issues related to gender and addiction (drug, cell phones)
4. Application of Yoga in Psychology

Unit-III Application at individual/group/organizational level
1. Educational Psychology
2. Organizational behaviour

Unit-IV Psychology and its application at societal level
1. Role of psychology in social development
2. Community Psychology

Reference Books:
1. American Psychological Association (2010). Publication manual of the American Psychological Association. Washington, DC: American Psychological Association.
2. Cornelissen, R. M. M.., Misra, G., & Varma, S. (Eds.) (2014). Foundations and applications of Indian psychology. New Delhi, Pearson Education.
3. Donaldson, S. I. Donaldson, D. E. Berger, D. E. (2006). The rise and promise of applied psychology in the 21st Century. In S. I. Donaldson, D. E. Berger, & K.
4. http://www.psychologydiscussion.net/branch/branches-of-psychology-different-branches-of-psychology/544
5. Misra, G., & Mohanty, A. K. (2002). Perspectives on indigenous psychology. New Delhi, India: Concept.
6. Misra, G., & Pandey, J. (2011). Psychology and societal development. In P. R. Martin, F. M. Cheung, M. C. Knowles, M. Kyrios, J. B. Overmier and J. M. Prieto (Eds.), IAAP handbook of applied psychology. Oxford: Wiley-Blackwell.

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7. Pezdek (Eds.), Applied psychology: New frontiers and rewarding careers. Mahwah, NJ: Erlbaum. Retrieved from http://www.apa.org/ Branches of Psychology.
8. Weathington, B. L., Christopher, J. L., Cunningham, B. J., O'Leary, & Biderman, M. D.

VI. MAJOR COURSE- MJ 3:
PRACTICALS-I:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	*= 60 marks (2 Practicals: 25+25 & Record notebook:10)*
Project	*= 15 marks*
Viva-voce	*= 25 marks (Practical: 15 & Project: 10)*

Group A: Project work (Anyone)
1. Psychology applied to self: making a report on how studying psychology has benefitted the student's health.
2. Analyzing social problems from psychological perspectives

Group B: Practical work: (Any two)
1. Measurement of verbal Intelligence by using Battery of performance Intelligence test.
2. Measurement of Emotional Intelligence by using Mangal Emotional Intelligence Scale.
3. Assessment of Stress by using Academic Stress Inventory for School Students- S. Rani and B.B. Singh or any Stress Scale.
4. Measurement of Personality by using Cattell's 16 PF.

Book Recommendations
1. M.R.D' Amato (2006): Experimental Psychology: Methodology Psychophysics and Learning TMH Edition – Fifteenth Reprint (2006)
2. Stephen F Davis (2005): Handbook of Research methods in Experimental Psychology, edited by Stephen F Davis, Blackwell publishing 35, Main Street Maldon, NA 02148-5020 U.S.A.
3. Barry and Morton (1985): Experimental methods in psychology, Mc Graw Hill
4. Broota K.D. (1992): Experimental Designs in Behavioural research New Delhi, Wiley Estern
5. Robert L. Solso (2002 M. Kimberly Maclin): Experimental Psychology, Pearson Education P. Ltd. Indian Branch
6. C.B. Dave and others (1998): Experimental Psychology Theory and Statistics Viral Prakashan – Allahabad
7. Mohsin, S.M. (1982): Experiments in Psychology. Patna: Motilal Banarsidas.
8. Suleman, M. (1996). *Manovagyanik Prayog aur Parikshan.*
9. Singh, A. K. Uchhatar Manovaiganic Prayog evam Parikshan. Bharti Bhawan.
10. Jhoxlro] vkj- vkf/qud iz k 6xd euksoKku
11. 'kekZxks vkf/qud iz k 6xd euksoKku
12. fl g] v- vkf/qud iz k 6xd euksoKku
13. Jhoxlro] ch- vkf/qud iz kfxd euksoKku
14. Cukjl hmkl] eksvkf/qud iz kfxd euksoKku
15. rjUuq] vk-euksoKku eaiz kx vkSijh{kk
16. Cukjl hmkl] ekseuksoKku eaiz kx vkSijh{kk

VII. SKILL ENHANCEMENT COURSE- SEC 2:
PSYCHOLOGICAL ASSESSMENT

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objectives:
1. To provide knowledge about different issues of psychology by using different psychological techniques.

Course Learning Outcomes:
1. Developing an understanding of the basic principles of psychological assessment and its various phases.
2. Developing knowledge about the steps in test construction and test standardization. Demonstrating understanding of the impact of cultural contexts on assessment. Developing knowledge of the ethical and legal issues involved in the assessment process. Acquiring knowledge to effectively evaluate the appropriateness and quality of psychological tests and their psychometric strengths and weaknesses.
3. Developing knowledge about the application of tests in a variety of settings.

Course Content:
Unit-I: Introduction to psychological Assessment
1. Psychological assessment: Principles of assessment, Nature and Purpose
2. Types of assessment: Observation, Interview, Scales and tests
3. Integrating inputs from multiple sources of information, report writing and providing (Practical) feedback to the client/referral source.
4. Ethical and professional issues and challenges

Unit-II: Psychological Testing
1. Definition of a test, types of Tests
2. Characteristics of a good test
3. Applications of psychological tests in various contexts (educational, Counselling and Guidance)

Unit-III: Test and Scale Construction
1. Test Construction and Standardization: Item analysis, Reliability, Validity, and norms (Characteristics of z-scores, percentiles)
2. Scale Construction: Likert and Thurstone

Unit-IV: Tests of Cognitive Ability and Personality
1. Tests of cognitive ability: General mental ability tests (The Wechsler scales of intelligence, Stanford-Binet Intelligence Scales: 5th Edition.
2. Tests of Personality: Inventories such as 16PF, MMPI. Projective tests like Rorschach and Thematic Apperception Test (A brief introduction to both).

Project Work:
1. Prepare a list of tests which measure different components of psychological issues.
2. Use of psychological tests to measure the attributes and interpret the obtained scores.
Practical Work:
1. Using Scale to measure Mental/ Social/ Physical/ Economic conditions
2. Measurement of Mental Health by using any Scale/ Test.

Reference Books:
1. Aiken, L.R., & Groth-Marnet, G. (2009). Psychological testing and assessment (12th Ed.). N. Delhi: Pearson Edu.
2. Anastasi, A., & Urbina, S. (2003). Psychological testing (7th Ed.). N. Delhi, India: Prentice - Hall of India Pvt. Ltd.
3. Barve, B. N., & Narake, H. J. (2008). Manomapan. Nagpur, India: Vidya Prakashana.
4. Connolly, I., Palmer, M., Barton, H. & Kirwan, G. (eds.), (2016). Introduction to Cyberpsychology. London: Routledge.
5. Desai, B., & Abhyankar, S. (2007). Manasashatriyamapan. Pune, India: Narendra Prakashana.
6. Gregory, R. J. (2014). Psychological testing: History, principals and applications. (6th Ed.). Boston: Pearson Edu.
7. Husain, A. (2012). Psychological testing. New Delhi, India: Pearson Education.

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8. Kaplan, R. M., & Saccuzzo, D. P. (2012). Psychological testing: Principles, applications and issues (8th Ed.). New Delhi, India: Cengage.

SEMESTER III

VIII. MAJOR COURSE- MJ 4:
FOUNDATION OF SOCIAL PSYCHOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
Develop basic skills among Students to overcome poverty corruption and unemployment from the Society.

Learning Outcome:
1. Understanding the basic social psychological concepts and familiarize with relevant methods.
2. Understanding the applications of social psychology to social issues like gender and environment.
3. Developing skills to understand social situations and its measurement

Course Content:

Unit-I: Introduction
1. Nature and scope of social psychology
2. History of social psychology
3. Relationship of social psychology with Sociology and Anthropology

Unit-II: Attitude
1. Nature and definition
2. Formation of attitude
3. Factors responsible for attitude change

Unit-III: Social Interaction and Influences
1. Social perception- Nature, factors affecting social cognition.
2. Pro-social behaviour- Nature, factors developing pro-social behaviour.

Unit-IV: Group dynamics and Inter Group Relations
1. Nature of Groups
2. Types and functions of group
3. Prejudice-Nature & determinants (Sociological & Psychological)

Reference Books:

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1. Baron, R. A., Byrne, D., & Bhardwaj, G. (2010). Social psychology (12th Ed.). New Delhi, India: Pearson.
2. Hogg, M. A., & Vaughan, G. M. (2005). Social psychology. Harlow: Pearson Prentice Hall.
3. Husain, A. (2012). Social psychology. New Delhi, India: Pearson.
4. Myers, D. G. (2008). Social psychology, New Delhi, India: Tata McGraw-Hill.
5. Taylor, S. E., Peplau, L. A., & Sears, D. O. (2006). Social psychology (12th Ed.). New Delhi, India: Pearson.
6. Suleman, M. Adhunik Samaj Manovigyan.
7. Singh, A. K. Uchhatar Samaj Manovigyan.

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IX.   MAJOR COURSE- MJ 5:
PRACTICALS-II:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks (2 Practicals: 25+25 & Record notebook:10)
Project   = 15 marks
Viva-voce   = 25 marks (Practical: 15 & Project: 10)

Practicals:
Group A : Project Work: (Any one)
1. Role of gender in impression formation: Subjects are given the same verbal description for Male/female targets, but gender is manipulated by changing the name (like using Ram/Rama or Ankit/Ankita). Subjects are asked to rate the given person "Ram/Rama" on the basis of the description provided on different dimensions.
2. Analysis of news in National daily's (Newspapers in Hindi, English and other Languages), identifying news of unethical/immoral incidents, making a list of incidents for a month, then classifying it according to types of incidents and also analyzing underlying values and bases of moral behaviour, and the kind of social problem associated with it.

Group B : Practical Work: (Any two)
1. Measurement of Attitude by the using Equality of Women Attitude Scale- Rama Tiwari any Attitude Scale.
2. Measurement of Nationalism by the using Sense of Nationalism Scale- K.L. Dangwal any Nationalism Scale.
3. Measurement of Prejudice by the using Prejudice Scale- R.L. Bharadwaj & H. Sharma any Prejudice Scale.
4. Person Perception- Upadhyaya

Book Recommendations
1. M.R.D' Amato (2006): Experimental Psychology: Methodology Psychophysics and Learning TMH Edition – Fifteenth Reprint (2006)
2. Stephen F Davis (2005): Handbook of Research methods in Experimental Psychology, edited by Stephen F Davis, Blackwell publishing 35, Main Street Maldon, NA 02148-5020 U.S.A.
3. Barry and Morton (1985): Experimental methods in psychology, Mc Graw Hill
4. Broota K.D. (1992): Experimental Designs in Behavioural research New Delhi, Wiley Estern
5. Robert L. Solso (2002 M. Kimberly Maclin): Experimental Psychology, Pearson Education P. Ltd. Indian Branch
6. C.B. Dave and others (1998): Experimental Psychology Theory and Statistics Viral Prakashan – Allahabad
7. Mohsin, S.M. (1982): Experiments in Psychology. Patna: Motilal Banarsidas.
8. Suleman, M. (1996). *Manovagyanik Prayog aur Parikshan.*
9. Singh, A. K. Uchhatar Manovaiganic Prayog evam Parikshan. Bharti Bhawan.
10. JhokLro] vkj- vk/kfqud iz;ksxd eukfsoKku
11. 'kekZ xks vk/kfqud iz;ksxd eukfsoKku
12. flg]] v- vk/kfqud iz;ksxd eukfsoKku
13. JhoLro] ch- vk/kfqud iz;ksxd eukfsoKku
      14. Rukjl I mnkl] eks vk/kfqud iz;ksxd eukfsoKku

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15. rjUUq] vk-euksKku esaizkx vkSijh{k.k

16. Cukjl Ihmkl] eksseukKku esaizkx vkSijh{k.k

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X.   SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

A Common Syllabus for FYUGP   (Credits: Theory-03) **45 Hours**

Instruction to Question Setter for
End Semester Examination (ESE):
There will be **objective type test** consisting of **Seventy-five questions of 1 mark each**. *Students are required to mark their answer on* **OMR Sheet** *provided by the University.*

Course Objectives:
The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

Q. INTRODUCTION TO COMPUTER SYSTEM
1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU)   **(3 Hours)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer   **(4 Hours)**

3. Operating system: What is an Operating System, Operating System Examples, Functions of Operating System(Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting
(6 Hours)
4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages   **(4 Hours)**

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails.   **(6 Hours)**

R. MICROSOFT OFFICE 2016 AND LATEST VERSIONS
6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents
          (7 Hours)

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation, slide show, Master Slides, Creating photo album, Rehearse timing and record narration   **(5 Hours)**

9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning   **(4 Hours)**

Reference Books
68.   Nishit Mathur, Fundamentals of Computer, APH publishing corporation (2010)
69.   Neeraj Singh, Computer Fundamentals (Basic Computer), T Balaji, (2021)
70.   Joan Preppernau, Microsoft Power Point 2016 step by step, Microsoft press (2015)

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71.   Douglas E Corner, The Internet Book 4th Edition, prentice –Hall (2009)
72.   Steven Welkler, Office 2016 for beginners, Create Space Independent Publishing Platform (2016)
73.   Wallace Wang, Microsoft Office 2019, Wiley (January 2018)
74.   Noble Powell, Windows 11 User Guide For Beginners and Seniors, ASIN, (October 2021)

SEMESTER IV

XI.   MAJOR COURSE- MJ 6:
FOUNDATION OF DEVELOPMENTAL PSYCHOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
To provide knowledge about Human Development, relevant social issues and developmental issues in children and adults.

Learning Outcome:
Demonstrating an ability to understand and distinguish major theoretical perspectives and methodological approaches in human development. Developing an ability to identify the milestones in diverse domains of human development across life stages. Understanding the contributions of socio-cultural context toward shaping human development. Acquiring an ability to decipher key developmental challenges and issues faced in the Indian context.

Course Content:
Unit-I: Introduction to developmental Psychology:
1. Issues and theories in Developmental Psychology-Nature and nurture; plasticity in development.
2. Theoretical Perspectives: Psychodynamic (Freud and Erikson);
3. Cognitive (Piaget, information processing approaches)
4. Socio-cultural: Vygotsky. 5. Research methods: Longitudinal, Cross sectional and ethics in research.

Unit-II: Domains of Development across life span-I
1. Physical development (from infancy to late adulthood)
2. Cognitive development and language development, Role of language in cognitive development.

Unit-III: Domains of Development across life span-II
1. Socio-emotional development and Moral Development

Unit-IV: Developmental issues in Indian context
1. Issues of social relevance (gender, disability and Poverty)
2. Developmental issues in children and adolescents Challenges of adulthood;

Reference Books:
1. Georgas, J., Berry, J. W., Van de Vijver, F. J., Kagitçibasi, C., & Poortinga, Y. H. (Eds.) (2006). Families across cultures: A 30-nation psychological study. New York: Cambridge University Press.
2. Berk, L. E. (2010). Child development (9th Ed.). New Delhi, India: Prentice Hall.
3. Feldman, R. S., & Babu, N. (2011). Discovering the life-span. New Delhi, India: Pearson.
4. Kakar, S. (2012). The inner world: A psychoanalytic study of childhood and society in India (4th Ed.). New Delhi, India: Oxford University Press.
5. Papalia, D. E., Olds, S. W., & Feldman, R. D. (2006). Human development (9th Ed). N. Delhi, Tata McGraw-Hill.
6. Mitchell, P., & Ziegler, F. (2007). Fundamentals of development: The psychology of childhood. New York: Psychology Press.
7. Santrock, J. W. (2012), A topical approach to life-span development. New Delhi, India: Tata McGraw-Hill.
8. Saraswathi, T. S. (2003). Cross-Cultural perspectives in human development: Theory, research and applications. New Delhi, India: Sage Publications.
9. Shaffer, D. R., &Kipp, K. (2007). Developmental psychology: Childhood and adolescence Indian reprint: Thomson Wadsworth.
10. Sharma, N., & Chaudhary, N. (2009). Human development: Contexts and processes. In G. Misra (Ed.), Psychology in India. Vol 1: Basic psychological processes and human development. India: Pearson.

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11. Srivastava, A. K. (Ed) (1997). Child development. An Indian perspective. New Delhi: NCERT.
12. Srivastava, D. N. & Verma, Priti. Child psychology: Child Development. Agra: Vinod Pustak Mandir.
13. मानवीय विकास के विविध आयाम – वन्दना एवं सुदर्शन चौहान|
14. Singh, Rajender Prsad: Vikasatmak Manovigyan.
15. Hurlock, Developmental Psychology
16. Sinha, RRP- Vikasatmak Manovigyan.
17. Singh, R. Vikasatmak Manovigyan.

XII.   MAJOR COURSE- MJ 7:
EMERGENCE OF ENVIRONMENTAL PSYCHOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
To understand & develop pro-environmental behaviour and psychological process (Attitude and Belief) in relation to environmental problem. To understand process related to environmental degradation and their impact on human life.

Learning Outcome:
1. Understanding the role of psychological processes (people's attitude, beliefs) in people's responses to environmental problems.
2. Understanding the processes related to environmental degradation and their impact on human life.
3. Understanding pro-environmental behaviour and human-environment transaction, and being able to design behavioural interventions to minimize the adverse effects of anti-environment behaviour.

Course Content:
Unit-I: Introduction to Emergence of Environmental Psychology
Definition and Scope. Human- environment relationship.
Salient features of environmental psychology.
Recent trends and future directions in environmental psychology.
Indian views on human – environment relationship.

Unit-II: Human-Environment transaction
Personal space, crowding.
Indian research on crowding and personal space.
Theoretical model: Ecological and adaptation

Unit-III: Environmental stress:
Concept and type of stress.
Sources of stressors: Environmental, social, physical and psychological
Pollution: noise, air, water

Unit-IV: Pro-environmental behaviour
Changing the environmental destructive mindset.
Environmental awareness and education
Reinforcement strategies

Reference Books:
1. Fisher, J.D., Bell, P.A., and Baum, A. (1984). Environmental Psychology, NY: Holt, Rinchart and Winston.
2. Jain, U. (1987). The psychological consequences on crowding. New Delhi, India: Sage.
3. Jain. U., & Palsane, M. N. (2004). Environment and behaviour. In J. Pandey (Ed.), Psychology in India revisited: Developments in the discipline (Vol. 3: Applied social and organizational psychology, pp. 261-308). New Delhi, India: Sage.
4. Nagar, D. (2006). Environmental psychology. New Delhi, India: Concept.
5. Tripathi, Dyashankar: Pryawaran Adhyan.
6. Tiwari, Prem Sagarnath: Pryawaran Manovigyan.

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XIII.   MAJOR COURSE- MJ 8:
PRACTICALS-III:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks (2 Practicals: 25+25 & Record notebook:10)
Project   = 15 marks
Viva-voce   = 25 marks (Practical: 15 & Project: 10)

Group A : Project Work: (Any one)
1. Prepare a report based on interview with elderly person either in family or in old age homes. This will help to build conversational skills, interview skills, qualitative/content analysis, professional ethics, sensitivity to the problem of aged, responsibility awareness of policies etc. in the students.
2. Life review of an old person or a middle-aged person. They also learn how to transcribe data from audio-recording.

Group B : Practical Work: (Any two)
1. Self-concept questionnaire- R.K. Saraswat
2. Battle's Self-Esteem Inventory for Children- Anand Kumar
3. Parental Encouragement questionnaire- K.G. Agarwal.
4. Delinquency Proneness Scale- R. Chopra & S. Kaur

Book Recommendations
1. M.R.D' Amato (2006): Experimental Psychology: Methodology Psychophysics and Learning TMH Edition – Fifteenth Reprint (2006)
2. Stephen F Davis (2005): Handbook of Research methods in Experimental Psychology, edited by Stephen F Davis, Blackwell publishing 35, Main Street Maldon, NA 02148-5020 U.S.A.
3. Barry and Morton (1985): Experimental methods in psychology, Mc Graw Hill
4. Broota K.D. (1992): Experimental Designs in Behavioural research New Delhi, Wiley Estern
5. Robert L. Solso (2002 M. Kimberly Maclin): Experimental Psychology, Pearson Education P. Ltd. Indian Branch
6. C.B. Dave and others (1998): Experimental Psychology Theory and Statistics Viral Prakashan – Allahabad
7. Mohsin, S.M. (1982): Experiments in Psychology. Patna: Motilal Banarsidas.
8. Suleman, M. (1996). *Manovagyanik Prayog aur Parikshan.*
9. Singh, A. K. Uchhatar Manovaiganic Prayog evam Parikshan. Bharti Bhawan.
10. Jhoklro] vkj- vk/kfud iz kk sxd euksfoKku
11. 'kekZ xks vk/kfud iz kk sxd euksfoKku
12. flag] v- vk/kfud iz kk sxd euksfoKku
13. Jhoklro] ch- vk/kfud iz kk sxd euksfoKku
14. Ckukjhh mnk] eksvk/kfud iz kk sxd euksfoKku
15. rjUkq] vk-euksfoKku esaiz kx vkSij h{k k
16. Ckukjh mnk] ekseuksfoKku esaiz kx vkSij h{k k

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SEMESTER V

XIV. MAJOR COURSE- MJ 9:
INTRODUCTION TO PERSONALITY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
1. To provide introductory knowledge about personality, factors (Heredity & Environment) affecting personality to understand self through Vedanta, Yoga, Sufi and Buddhist tradition.

Learning Outcome:
1. Appreciating conceptualizations of personality in the Western as well as Eastern traditions.
2. Understanding self and personality through Eastern perspectives such as Mimamsa, Vedanta, Samkhya, Yoga, Buddhist and Sufi traditions. Developing a critical understanding of personality through various Western approaches including type and trait, psychoanalytic, socio-cognitive and humanistic.
3. Understanding biological and environmental influences on personality development.
4. Fostering an applied perspective by engaging students in a discussion about the everyday applications of various personality theories.

Course Content:
Unit-I: Introduction to Personality
1. Concept and Definition of Personality
2. Role of Factors in the development of Personality (heredity and environment)
3. Assessment of Personality

Unit-II: Western approaches to personality-1
1. Trait and Type Approaches (including Eastern Perspective such as "Tri-guna" theory)
2. Socio-Cognitive Approach to Personality

Unit-III: Western approaches to personality –II
1. Psychoanalytic Approach to Personality
2. Humanistic Approach to Personality

Unit-IV: Understanding self through Eastern Perspective
1. Understanding self through Vedanta, and Yoga
2. Understanding self through Sufi and Buddhist tradition.

Reference Books:
1. Carducci, B. J. (2009). The psychology of personality: Viewpoints, research & application. Hong Kong: Wiley-Blackwell.
2. Ciccarelli, S. K., & Meyer, G. E. (2010). Psychology: South Asian edition. New Delhi, India: Pearson Education.
3. Cornelissen. R. M. M... Misra, G., & Varma. S. (Eds.) (2011). Foundations of Indian Psychology Theories and concepts (Vol. 1). New Delhi, India: Pearson.
4. Feist, J. Feist, GJ. & Herman, T.A.R.W. (2018). Theories of Personality. Tata Mc Graw Hill.
5. Friedman, H.S., & Schustack, M.W.(2006).Personality Classic theories and modern research. N.Delhi, India: Pearson.
6. Kuppuswamy, B. (2001). Elements of ancient Indian psychology, New Delhi, India: Konark Publishers Pvt. Ltd.
7. Misra, G. & Mohanty, A. K (Eds.) (2002). Perspectives on indigenous psychology. New Delhi, India: Concept Publishing Company
8. Paranjpe. A. C. (1984), Theoretical psychology. The meeting of cast and west. New York: Plenum Press.
9. Patnaik, D. (2015). My Gita. New Delhi: Rupa.
10. Rao, K. R., Paranjpe, A. C., & Dalal. A. K. (Eds.) (2008), Handbook of Indian psychology. New Delhi, India:

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Foundation Books.
11. व्यक्तित्व मनोविज्ञान – मधु अस्थाना|
12. व्यक्तित्व का मनोविज्ञान- अरुण कुमार सिंह|

XV.   MAJOR COURSE- MJ 10:
POSITIVE PSYCHOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
1. To make students aware about positivity, Happiness and well-being through Positive Psychology.

Learning Outcomes:
1. Meaning and conceptual approaches to happiness and well-being.
2. Being able to locate the diversity in the experiences of happiness with individual's life span and across different domains.
3. Learning the various pathways through which positive emotions and positive traits contribute to happiness and well-being.
4. Being able to identify the key virtues and character strengths which facilitate happiness and well-being.

Course Content:
Unit-I: Introduction
1. Positive psychology: Meaning, definition, assumptions and goals;
2. Meaning and measures of happiness and well-being: Hedonic and eudaimonic traditions
3. Indian perspectives and positive psychology

Unit-II: Happiness and well-being
1. Happiness: Concept and definitions
2. Happiness and the facets of life: Gender, Love, Marriage
3. Happiness across the life span: Happiness and well-being across culture and nationalities
4. Psychology of flow

Unit-III: Emotions, Personality traits and well-being
1. Positive emotions (hope, optimism, gratitude) and well-being
2. Cultivating positive emotions
3. Positive traits: Personality and positive beliefs

Unit-IV: Virtues, character strengths, and well being
1. Classification of human virtues (Seligman's approach)
2. Wisdom as a foundational strength and virtue; Character strengths and health.
3. Religion, spirituality and transcendence.

Reference Books:
1. Baumgardner, S. R., Crothers, M. K. (2009) Positive psychology. New Delhi, India: Pearson.
2. Carr. A. (2004) Positive Psychology The science of happiness and human strength UK: Routledge.
3. David. S. A., Boniwell, I., & Ayers, A. C. (2013), The Oxford handbook of happiness. Oxford: Oxford University Press.
4. Husain, A., & Saeeduzzafar. (2011). Islamic virtues and human development New Delhi. India: Global Vision Publishing House.
5. Joseph, S. (Ed.) (2015). Positive psychology in practice. Promoting human flourishing in work, health, education, and everyday life Hoboken, NJ. John Wiley & Sons.
6. Kumar, U. Archana, & Prakash, V. (2015). Positive psychology - Applications in work, health and well-being: Delhi & Chennai, India: Pearson,
7. Peterson, C. (2006) A Primer in Positive Psychology. New York: Oxford University Press.
8. Seligman, M.E.P. (2002). Authentic Happiness: Using the New Positive Psychology to Realize Your Potential for Lasting Fulfillment. New York; Free Press/Simon and Schuster.

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9. Snyder, C. R., & Lopez. S. J. (2002). Handbook of positive psychology: New York: Oxford University.
10. Snyder, C.R., & Lopez, S. (2007), Positive psychology: The scientific and practical explorations of human strengths. Thousand Oaks, CA: Sage.
11. सकारात्मक मनोविज्ञान – मधु जैन
12. सकारात्मक मानस शास्त्र - डॉ० विश्वनाथ शिंदे

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XVI.   MAJOR COURSE- MJ 11:
PRACTICALS-IV:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	= 60 marks (2 Practicals: 25+25 & Record notebook:10)
Project	= 15 marks
Viva-voce	= 25 marks (Practical: 15 & Project: 10)

Group A: Project Work:
1. Case study on Personality, Social Behaviour, Mental Retardation: any one.

Group b: Practical Work:
1. Measurement of personality by using Maudsley Personality Inventory (MPI).
2. Measurement of personality by using Thematic Apperception Test (TAT).
3. Measurement of personality by using Word Association Test (WAT).
4. Measurement of personality dimension by using Dimensional Personality Inventory- Mahesh Bhargava.

Book Recommendations
1. M.R.D' Amato (2006): Experimental Psychology: Methodology Psychophysics and Learning TMH Edition – Fifteenth Reprint (2006)
2. Stephen F Davis (2005): Handbook of Research methods in Experimental Psychology, edited by Stephen F Davis, Blackwell publishing 35, Main Street Maldon, NA 02148-5020 U.S.A.
3. Barry and Morton (1985): Experimental methods in psychology, Mc Graw Hill
4. Broota K.D. (1992) : Experimental Designs in Behavioural research New Delhi, Wiley Estern
5. Robert L. Solso (2002 M. Kimberly Maclin): Experimental Psychology, Pearson Education P. Ltd. Indian Branch
6. C.B. Dave and others (1998): Experimental Psychology Theory and Statistics Viral Prakashan – Allahabad
7. Mohsin, S.M. (1982): Experiments in Psychology. Patna: Motilal Banarsidas.

8. Suleman, M. (1996). *Manovagyanik Prayog aur Parikshan*.
9. Singh, A. K. Uchhatar Manovaiganic Prayog evam Parikshan. Bharti Bhawan.
10. JhokLro] vkj-vk/kfiq d ik k&xd eukfoKku
11. 'kekPxks vk/kfiq d ik k&xd eukfoKku
12. flg]v-vk/kfiq d ik k&xd eukfoKku
13. JhokLro]ch-vk/kfiq d ik k&xd eukfoKku
14. 0ukjlhmkl] eksvk/kfiq d ik k&xd eukfoKku
15. rjLUq]vk-eukfoKku esaizkx vkSijh{kk
16. 0ukjlhmkl] ekseukfoKku esaizkx vkSijh{kk

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SEMESTER VI

XVII. MAJOR COURSE- MJ 12:
BASICS OF CLINICAL PSYCHOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
To provide knowledge about distinguishing normal and abnormal behaviour, educate students about anxiety, trauma and Dissociative Personality Disorders.

Learning Outcome:
1. Foundational knowledge of Clinical Psychology and its historical development.
2. Acquiring knowledge and skills for distinguishing normal and abnormal behaviour and learn the criteria of determining abnormality. Developing competencies for assessing the psychological functioning of individuals through techniques such as psychological assessment, observation and interviewing.
3. Developing familiarity with the current diagnostic systems (current edition of the Diagnostic and Statistical Manual of Mental Disorders and International Classification of Diseases- Mental Disorder section).
4. Acquiring knowledge about anxiety disorders and Trauma & Stressor-related, Dissociative and Personality Disorders. Developing sensitivity towards individual and cultural diversity and understanding its implication in clinical work especially within the Indian context. Understanding the essence of a reflective practitioner by engaging in reflective processes that him or her aware of his or her strengths and vulnerabilities.

Course Content:
Unit-I: Introduction
1. Definition of Clinical Psychology, Historical development of Clinical Psychology.
2. Concept of Abnormal behaviour.

Unit-II: Clinical Assessment and Classification
1. Clinical Assessment: Clinical Interview (emphasis on Mental Status Examination – MSE and Case History Interview), Observation, Psychological testing.
2. Classification and Diagnosis: Classification models: DSM-V (latest) and ICD (latest).

Unit-III: Anxiety and Obsessive-Compulsive Disorders: Clinical Picture and Etiology
1. Generalized Anxiety Disorder
2. Specific Phobia and Social Anxiety Disorder (Social Phobia)
3. Obsessive – Compulsive Disorder

Unit-IV: Trauma & Stressor-related, Dissociative and Personality Disorders: Clinical Picture and Etiology
1. Adjustment Disorder
2. Post-Traumatic Stress Disorder
3. Dissociative Identity Disorder
4. Personality Disorders (Clusters A, B and C): Only Clinical Picture.

Reference Books:
1. Beg, M. A., & Beg, S. (1996). Logotherapy and the Vedantic view of life and mental well-being. Journal des Viktor-Frankl-Instituts,1, 97-112.
2. Butcher, J.N., Hooly, J.M, Mineka, S.& Dwivedi, C.B (2017). Abnormal Psychology. N. Delhi: Pearson:
3. Hecker, J. E., & Thorpe, G. L. (2005). Introduction to clinical psychology. Delhi: Pearson Education.
4. Husain, A., Beg, M. A., & Dwivedi, C. B. (2013) Psychology of humanity and spirituality New Delhi: Research India Press
5. Llewelyn, S., Murphy, D. (Eds.) (2014) What is clinical psychology? Oxford UK: Oxford Univ. Press.
6. Plante. T. G. (2011). Contemporary clinical psychology. (3rd edition). New York: John Wiley & Sous.
7. Pomerantz A. M. (2008). Clinical psychology Science practice and culture. New Delhi. Sage Publications.
8. Sommers-Flanagan, J. & Sommers-Flanagan, R. (2017), Clinical Interviewing New Jersey: Wiley.

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9. मनोरोग विज्ञान - डॉ० मशरुर जहाँ|
10. आधुनिक नैदानिक मनोविज्ञान - मो० सुलेमान|
11.   मनोरोग विज्ञान - मो० सुलेमान|

XVIII. MAJOR COURSE- MJ 13:
FOUNDATION OF ORGANIZATIONAL BEHAVIOUR

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
To provide organizational behavioural knowledge to the students for better organizational Behavioural outcomes.

Learning Outcome:
1. Developing a deeper understanding of conceptual and theoretical bases of motivation and employees' work attitudes and their relationship with performance and organizational outcomes.
2. Understanding leadership processes from different theoretical perspectives.
3. Understanding group dynamics, working through conflicts and working in teams.

Course Content:
Unit-I: Introduction
1. Nature, Concept and Scope of Organizational psychology.
2. Historical Developments: The Early Years, Classical School: Taylor/Human Relations Approach.

Unit-II: Introduction of work-related Attitudes and Work Motivation
1. Employees attitude and Job satisfaction
2. Work motivation
3. Job involvement

Unit-III: Leadership
1. Basic Approaches: Trait theory, Behavioural theories and Contingency theories
2. Indian perspective on leadership

Unit-IV: Dynamics of Organizational Behaviour
1. Stress in Organization:
2. Nature, Effect, sources and Techniques for managing Stress.

Reference Books:
1. Aamodt, M. G. (2016). Industrial/Organizational psychology, An applied approach. Boston: Cengage Learning.
2. Kalra, S. K. (2004). Consultative managerial leadership style in India: A viable alternative In
3. P. N. Mukherjee. & C. Sengupta (Eds.), Indigenity and universality in social sciences A south Asian response. New Delhi: Sage Publications.
4. Muchinsky, P. M., & Culbertson, S. S. (2016), Psychology applied to work. Summerfield, NC: Hypergraphic Press.
5. Pareek, U. (2007). Understanding organizational behaviour. New Delhi: Oxford University Press.
6. Pareek, U. & Gupta, R. K. (2010). Organizational behaviour. New Delhi: Tata McGraw Hill.
7. Sinha, J. B. P. (2008). Culture and organizational behavior. New Delhi, India: Sage Publications.
8. Muhaamad Suleman: Sangthnatmak Vayohar.

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XIX.   MAJOR COURSE- MJ 14:
COUNSELLING SKILLS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
1. To develop skills among students for reading stress, Anxiety and choosing relaxation, reducing negative-self talk and developing client-counsellor relationship.

Course Learning Outcomes:
1. Understanding Profession of counselling, particularly in the Indian context.
2. Acquiring basic counselling skills of problem identification, and relationship building (e.g., empathy, listening, paraphrasing, unconditional positive regard).
3. Demonstrating skills of helping clients. Students may choose relaxation, reducing negative/maladaptive self-talk, also learn skills of terminating the counselling relationship.
4. Developing qualities of an effective counsellor including increasing self-awareness, reflexivity, self-monitoring and objectivity.
5. Developing proficiencies to assist professional counsellors during intake interviews.
6. Helping clients having mild concerns in life; for instance-acting as peer counsellors in the college/community.

Course Content:
Unit-I: Introduction:
1. Defining counselling, goals of counselling, basic counselling skills
2. Understanding counselling process: Development of helping relationship, counsellor - counselee relationship
3. Ethical considerations in counselling

Unit-II: Basic Approaches to counselling: basic theoretical concepts and techniques only
1. Person centred approach
2. Psychodynamic approach
3. Behavioural approach
4. Cognitive behavioural approach: (CBT)

Unit-III: Specific Counselling Skills
1. Inside and outside skills of counselling, self-monitoring skills as a counsellor
2. Training clients in relaxation
3. Improving client's self-talk and self-perceptions, terminating helping

Unit-IV: Models of Counselling Skills
1. Nature and importance of counselling skills and working alliance
2. Roger's model of counselling skills.
3. Indian models of counselling: the role of detachment and self-surrender.

Reference Books:
1. Belkin, G. S. (1998). Introduction to Counselling (3rd Ed.) lowa: W. C. Brown, Capuzzi, D. & Gross, D. R. (2007). Counselling and Psychotherapy: Theories and Interventions (4th Ed.) New Delhi. Pearson.
2. Corey, G. (2009) Counselling and Psychotherapy: Theory and Practice (7th Ed.) New Delhi: Cengage Learning
3. Feltham, C., & Horton. I. E. (2006). The Sage handbook of counseling and psychotherapy. London: Sage Publications.
4. Jones, R. N. (2008). Basic counselling Skills: A helper's manual (2nd Ed.). New Delhi: Sage Publications.
5. आधुनिक परामर्शन मनोविज्ञान– अमरनाथ रॉय और मधु अस्थाना |
6. परामर्श मनोविज्ञान-डॉ॰ विमल अग्रवाल|

XX. MAJOR COURSE- MJ 15:
PRACTICALS-V:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment = *60 marks (2 Practicals: 25+25 & Record notebook:10)*
Project = *15 marks*
Viva-voce = *25 marks (Practical: 15 & Project: 10)*

Group A: Project Work: (Any one)
1. Formulating a case using diagnostic techniques on a Subject - Behavioural assessment, psychological assessment, Cognitive assessment and Personality assessment.
2. Helps in building societal competence: Analysing social problems and understanding social dynamics.

Group b: Practical Work: (Any two)
1. Self-Confidence Inventory (ASCI) by Agnihotri.
2. Neurosis Measurement Scale- M.P. Uniyal & A.R. Bisht
3. Anxiety, Depression and Stress Scale- Pallavi Bhatnagar
4. Sinha's Anxiety Test- A.K.P. Sinha & L.N.K. Sinha

Book Recommendations
1. M.R.D' Amato (2006): Experimental Psychology: Methodology Psychophysics and Learning TMH Edition – Fifteenth Reprint (2006)
2. Stephen F Davis (2005): Handbook of Research methods in Experimental Psychology, edited by Stephen F Davis, Blackwell publishing 35, Main Street Maldon, NA 02148-5020 U.S.A.
3. Barry and Morton (1985): Experimental methods in psychology, Mc Graw Hill
4. Broota K.D. (1992) : Experimental Designs in Behavioural research New Delhi, Wiley Estern
5. Robert L. Solso (2002 M. Kimberly Maclin): Experimental Psychology, Pearson Education P. Ltd. Indian Branch
6. C.B. Dave and others (1998): Experimental Psychology Theory and Statistics Viral Prakashan – Allahabad
7. Mohsin, S.M. (1982): Experiments in Psychology. Patna: Motilal Banarsidas.
8. Suleman, M. (1996). *Manovagyanik Prayog aur Parikshan*.
9. Singh, A. K. Uchhatar Manovaiganic Prayog evam Parikshan. Bharti Bhawan.
10. Jhoktro]vkj-vkfPÚud ik   kÖxd euksfoKku
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SEMESTER VII

XXI.   MAJOR COURSE- MJ 16:
QUANTITATIVE DATA ANALYSIS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
1. To provide knowledge to students about collection and analysis of data so that result can be presented statistically and logically.

Course Learning Outcomes:
1. Understanding the nature of measurement and its various levels.
2. Developing skills to use quantitative techniques such as measures of central tendency, variability, and correlation.
3. Knowing how to use the normal probability curve as a model in scientific theory
4. Grasping concepts related to hypothesis testing and developing related computational skills
5. Learning basic techniques of descriptive and inferential statistics (parametric as well as non-parametric).

Course Content:
Unit-I: Nature of Quantitative Data and Descriptive Statistics in Psychology
1. Levels of measurement
2. Measures of central tendency: Characteristics and computation of mean, median and mode
3. Measures of variability or dispersion: Characteristics and computation of range, Quartile Deviation and Standard Deviation.
4. Derived scores: Standard scores (z-scores, T-scores: Meaning and Calculations)

Unit-II: Normal distribution and Correlation:
1. Normal Probability Curve (NPC): Nature, Characteristics and application of NPC; deviation from NPC: Skewness and kurtosis; finding areas when the score is known, finding the scores when the area is known.
2. Correlation: Calculation of Person's and Spearman coefficient, Correlation and its significance; factors affecting correlation.

Unit-III: Inferential Statistics (Parametric) in Psychology
1. Hypothesis testing for more than two groups: Logic of ANOVA, Sources of variance, assumptions and computation of one - way ANOVA

Unit-IV: Non-parametric tests
1. Nature and assumptions
2. Chi-square: Assumptions and Computation of Chi-square.

References:
1. Broota, K. D. (1992) Experimental design in behavioural research New Delhi: Wiley Eastern
2. Minium, E. W., King, B. M. & Bear, G. (1993). Statistical reasoning in psychology and education New York: John Wiley.
3. Mohanty, B. &Misra, S. (2015). Statistics for behavioural and social sciences New Delhi: SAGE Publications.
4. Srivastwa, Ramjee: Manovagyanik yewam saikhshnikmapan.
5. Singh, A. K.: Manovigyan, Smajsastrttha siksha me sodhvidhiya.

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XXII. MAJOR COURSE- MJ 17:
EDUCATIONAL PSYCHOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
1. The main objective of educational psychology is to increase the ability of new dimensions of knowledge-Intelligence, Self-direction and Social functioning.
2. The main objective of educational psychology is to increase the ability of new dimensions of knowledge-Intelligence, Self-direction and Social functioning.
3. Educational Psychology helps students to be motivated towards education and shape their personality through education and social learning.
4. It also helps teachers to understand the human nature, examination system and education.

Learning Outcomes:
1. Understanding the meaning and processes of education at individual and social levels in the Indian context.
2. Demonstrating an appreciation of the role of the teacher in education.
3. Developing an Insight into the notion of inclusion in education.

Course Content:

Unit-I: Introduction of Educational Psychology
1. Definitions
2. Aim and Problems
3. Contribution of Psychology to Education
4. Applications in:
a. Educational Institutions   b. Rehabilitation Center   c. Career

Unit-II: Heredity and Environment
1. Definitions
2. Importance
3. Relevance and Significance in Education
4. Mental Retardation
5. Learning Disability

Unit-III: Educational Technology and Programme Learning
1. Meaning of Educational Technology
2. Importance of Educational Technology
3. Programme Learning
4. Meaning and Procedure of Programme Learning

Unit-IV: Educational Assessment
1. Meaning of Educational Assessment
2. Importance and Applications of Educational Assessment
3. Differences between Test and Measurement
4. Types and Characteristics of Intelligence Test.

UNIT-V: Class Room Management and Class Room Diversity
1. Meaning, Nature and Importance of Classroom Management
2. Issues related to Classroom Management: Discipline and Control
3. Inclusive Education: Concept and Importance

Book Recommendations
1. Mitra B. "Personality Development & Soft Skills", Oxford Publication, Third impression, 2017.
2. ICT Academic of Kerala, "Life Skill for Engineers: Mc. Graw Hill Education (India) Private Ltd., 2016.
3. Caruso, D.R. and Solovey P., "The Emotionally Intelligent Managers", How to Develop and Use
4. the Four Key Emotional Skill of Leadership", Jhon Wiley & Sons, 2004.
5. Kalyana, "Soft Skill for Managers", First Edition; Wiley Publishing Ltd., 2015.
6. Larry James, "The First Book of Life Skills"; First Edition, Embassy Books, 2016.

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7.   Shalini Verma, "Development of Life Skills and Professionalism Practice"; First Edition; Sultan Chand (G/L) & Company, 2014.

XXIII. MAJOR COURSE- MJ 18:
SCHOOLS OF PSYCHOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
1.   The main objective of the history of psychology is to make students understand the key issues and theoretical concepts related to psychology.
2.   History of Psychology helps to better understand current psychological thoughts and findings.
3.   It also helps students to know what was the foundation of psychology and how it is related with modern psychology.

Course Learning Outcomes:
1.   Building an understanding of the history of psychology.
2.   Identifying and appreciating the diversity of contributions of the contemporary fields of psychology.
3.   Describe the key figures in the history of psychology and their major contribution and perspectives.

Course Content:
Unit-I: Structuralism and Functionalism
     Structuralism: Contribution of Wundt and Tichener
     Functionalism: Contribution of Chicago and Columbia School

Unit-II: Behaviourism
     Watson is a founder of Behaviourism
     Contribution of Skinner

Unit-III: Psychoanalysis
     Contribution of Freud as a founder of Psychoanalysis
     Neo Freudian: Karen Horney and Sullivan

Unit-IV: Gestalt School
     Contribution of Wertheimer in Gestalt School
     Contribution of Kohlar and Koffka

Unit-V: Humanistic Psychology
     Features of Humanistic Psychology
     Contribution of Maslow and Rogers

Book Recommendations
1.   Md. Suleman. Manovigyan ke Sampradaik Itihas.
2.   Arun Kumar Singh. Manovigyan ke Sampradaik Itihas.
3.   Arun Kumer Singh.The Comprehensive History of Psychology
4.   David Hotherrsall and Benjamin J. Lovett. History of Psychology
5.   Baker, D.B. The Oxford Handbook of the History of Psychology: Global Perspectives.

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XXIV. MAJOR COURSE- MJ 19:
PRACTICALS-VI:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

Underline Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	*= 60 marks (2 Practicals: 25+25 & Record notebook:10)*
Project	*= 15 marks*
Viva-voce	*= 25 marks (Practical: 15 & Project: 10)*

Group A: Project: Any Two Projects related with Educational Psychology.

Group b: Practical:
1. Tripathy R.R., Emotional Maturity Scale(EMS)
2. Shweta Shandilya & Alok Gardia Test of Sense of Responsibility
3. Kulshrestha S.P., Educational Interest Record
4. Vivek Bhargava and Rajshree Bhargava. Career Performance Record
5. Sona Dixit and Laxmi Khandelwal. Sustainable Habits
6. Mohsin S.M., Experiment in Psychology

Book Recommendations
1. Mohsin, S.M. (1982): Experiments in Psychology. Patna: Motilal Banarsidas.

2. Suleman, M. (1996). Manovagyanik Prayog aur Parikshan.

3. Singh, A. K. Uchhatar Manovaiganic Prayog evam Parikshan. Bharti Bhawan.

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SEMESTER VIII

I.   MAJOR COURSE- MJ 20:
APPLIED PSYCHOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
1. Understanding human nature and solving problems in human behaviour with the help of the theoretical approach of psychology.
2. Understanding the research-based knowledge on memory, emotion and motivation in a real-life setting.
3. Revised the knowledge of Spectroscopy.
4. Identify the problem related to the workplace, health society education and provide knowledge to solve these issues.

Learning Outcomes:
1. Understand the health issues from the standpoint of biological, psychological and social factors acting together.
2. Knowing the importance of positive emotions such as Happiness, Hope optimism in developing life satisfaction.
3. Developing and understanding major concepts of psychology and its implementation in different life setting.
4. Developing knowledge about the application of psychological thoughts in variety of setting.

Course Content:

Unit-I: Introduction: Nature and Fields of Applied Psychology

Unit-II: Psychology of Guidance and Counselling: Nature**,** Area and Procedure.
1. Individual Difference and their assessment.
2. Measurement of Personality, interest and aptitude

Unit-III: Psychology in Education
1. School as an agent of socialization
2. Factors influencing School achievement
3. Learning and Motivational Problems: Exceptional and Problem Child,
4. remedial measures.

Unit-IV: Psychology and Mental Health
1. Meaning and characteristics of Mental Health
2. Symptoms and causes of Anxiety Neurosis, Hysteria, Phobia and Schizophrenia.
3. Major Therapies: Psychoanalytic and Behaviour Therapies

Unit-V: Psychology and Sports
1. Personality traits of efficient sportsmen, Team feelings and Motivational factors to improve sportsmen sprit.

Book Recommendations
1. **Frank W. Schneider,** University of Windsor, Canada,
2. **Jamie A. Gruman,** University of Toronto a Scarborough.
3. **Larry M. Coutts,** University of Windsor, Canada, Sage Publication
4. **Smarak Swain,** Applied Psychology, Oakbridge,
5. **Anastasi, A. (1979).** Fields of applied psychology. New Delhi: McGraw Hill.
6. **Goldstein, A. P., & Krasner, B. (1987).** Modern applied psychology. Elmford, New York: Pergmon Press.
7. **McCormick, E.J., & Ilgen, D. (1980).** Industrial psychology. Englewood Cliffs, N.J.: Prentice Hall.

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II.   ADVANCED MAJOR COURSE- AMJ 1:
SOCIAL COGNITION AND GROUP PROCESSES

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
1. Understanding of basic Social Psychological concept.
2. Understanding the applications of social psychology to social issues like gender and environmental and understanding how people evaluate social situation.
3. Understanding the basic social psychological concept and familiarize with relevant methods.
4. Developing skills to understand social situation and how to measure social problems like prejudice, attitude, and social inequality.

Learning Outcomes:
1. Understanding social cognition, perception attitude and behaviours human express when they think of themselves and others as member of social groups.
2. Understanding how group memberships shape one's social identity and its related influences.
3. Learning to resolve and manage social group conflicts.
4. Introduce students to realm of social influences on behaviour.

Course Content:

Unit-I: Social Cognition
1. Nature, types and determinates
2. Self: Nature, functions and culture differences.

Unit-II: Social Perception
1. Forming impression: Role of Non-Verbal cues, Group Stereotypes
2. and Central traits.
3. Models of Information Integration: Primary and Recency effect.

Unit-III: Groups
1. Nature and functions
2. Task performance
3. Social facilitation
4. Social loafing
5. Communication and decision making in groups.

Unit-IV: Pro-social Behaviour
1. Cooperation
2. Helping behaviour
3. Personal, situational and social-cultural difference by standard effects.

Unit-V: Leadership
1. Functions, traits, situational and interactionist approaches
2. Leadership effectiveness
3. The charismatic leader.

Book Recommendations
1. Allock, J. E., Carment, D. N., & Sadava, S. N. (1991). A textbook of social psychology. Scarborough, Canada: Prentice Hall.
2. Baron, R. A., & Byrne, D. (1998). Social psychology (8th Edition). New Delhi: Prentice Hall of India.
3. Singh, A. K. (1996). Adhunik samajik manovigyan ki roop rekha (3rd Edition). Varanasi: Moti Lal Banarasi Das.
4. Tripathi, L. B. (1992). Adhunik Samajik Manovigyan. Agra: National psychological corporation.
5. Worchel, S., & Cooper, J. (1983). Understanding social psychology. Illinois: Dorsey

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III.   ADVANCED MAJOR COURSE- AMJ 2:
LIFE SKILLS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
1. The main objective of studying life skills is to gain abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life.
2. To provide an opportunity for realizing one's potential through practical experiences.
3. Revise the knowledge of advance Nuclear Psychology-1.

Learning Outcomes:
1. Acquiring knowledge about the internal quality of human beings like love, hope optimism, self -worth, self-esteem etc.
2. Developing skills for applying psychological knowledge to real life situation so as to improve internal personal relationship and adjustment in life.
3. Understanding the essence of a reflective practitioner by engaging in reflection process that him or her aware of his or her strength and vulnerabilities. To understand the problem of life and how to deal with it.

Course Content:

Unit-I: Overview of Life Skill
1. Meaning and significance of Life Skills
2. Life Skills identify by WHO
3. Interpersonal Relationship.
4. Uses of life skills in personal and professional life.

Unit-II: Self Awareness and Empathy
1. Definition and need for Self Awareness and Empathy.
2. Self-esteem and Self-concept.
3. Human values, Tools and Techniques of Self-Awareness and Empathy.
4. Life skills in journalism, Meditation and Mindfulness.

Unit-III: Critical and Creative Thinking
1. Definition and need for Critical and Creative Thinking.
2. Need for creativity in the 21st century.
3. Imagination, Intuition, experiences and sources of creativity.
4. Critical vs creative thinking
5. Convergent and divergent thinking

Unit-IV: Decision Making and Problem Solving
1. Definition of Decision making and problem solving
2. Steps in Problem Solving
3. Problem Solving techniques
4. Analytical Thinking: *Numeric, Symbolic, Reasoning and Logical Thinking*

Unit-V: Interpersonal Relationship
1. Meaning and benefits of Interpersonal Relationship
2. Components of Interpersonal Skills
3. Techniques for improving Interpersonal Relationship

Book Recommendations
1. Barun K. Mitra. "Personality Development & Soft Skills", Oxford Publishers, Third impression, 2017.
2. ICT Academy of Kerala. "Life Skills for Engineers", McGraw Hill Education (India) Private Ltd., 2016.
3. Caruso, D. R. and Salovey P. "The Emotionally Intelligent Manager: How to John Wiley & Sons. 2004.Develop and Use the Four Key Emotional Skills of Leadership",

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4. Kalyana. "Soft Skill for Managers"; First Edition; Wiley Publishing Ltd, 2015.
5. Larry James. "The First Book of Life Skills"; First Edition, Embassy Books, 2016.
6. Shalini Verma. "Development of Life Skills and Professional Practice"; First Edition; Sultan Chand (G/L) & Company, 2014.

IV.   ADVANCED MAJOR COURSE- AMJ 3:
PRACTICALS-VII:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

<u>*End Semester Examination (ESE):*</u>
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	*= 60 marks (2 Practicals: 25+25 & Record notebook:10)*
Case Study	*= 15 marks*
Viva-voce	*= 25 marks (Practical: 15 & Case Study: 10)*

Group A: Case Study
1. Measurement of Mental Health by using any Psychological Scale/Test
2. Case study based on Social Issues and Life Skills

Group B: Practical
1. Social Cognition *by N.K. Jain*
2. Social Support Scale by *K.B. Veram and Madhu Ashthana*
3. Family Environment Scale *by M.C. Joshi & O.P.R. Vyas*
4. Attitude Scale Towards Domestic Violence by *Ekta Soni, Rakesh Kr. Behmani*
5. Creative Behaviour Questionnaire by *Dr. Ashok Pratap Singh and Dr. Lalit Kumar Mishra*

Books Recommended
1. Mohsin, S.M. (1982): Experiments in Psychology. Patna: Motilal Banarsidas.

2. Suleman, M. (1996). *Manovagyanik Prayog aur Parikshan*.

3. Singh, A. K. Uchhatar Manovaiganic Prayog evam Parikshan. Bharti Bhawan.

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COURSES OF STUDY FOR FYUGP IN **"PSYCHOLOGY" MINOR**

MINOR COURSE-1A   **(SEM-I)**

V.   MINOR COURSE- MN 1A:
                 INTRODUCTORY PSYCHOLOGY

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objectives:
1. To make the students acquainted with the fundamentals of Psychology and its application.

Course Learning Outcomes:
1. Developing knowledge of the basic concepts in Psychology.
2. Developing skills for applying psychological knowledge to real life situation so as to improve interpersonal interactions and adjustment in life.

Course Content:
Unit-I: Orientation to psychology:
Nature, fields and applications of psychology; Conative Process: Motivation, types of motives (Sociogenic/ Psychogenic motives); Affective Processes: Emotion, Positive and Negative emotion

Unit-II: Psychology of individual Differences:
Theory of intelligence; Spearman's Two Factor theory, Emotional Intelligence, Personality; Freudian Psychoanalysis.

Unit-III: Understanding Developmental Process;
Cognitive Development; Piaget; Psycho-Social Development; Erikson

Unit-IV: Application of Psychology;
Work; Health

References:
1. Ciccarelli, S. K. & Meyer, G. E. (2008). Psychology (South Asian Edition). New Delhi: Pearson.
2. Feldman. S. R. (2009). Essentials of understanding psychology (7th Ed.) New Delhi: Tata McGraw Hill.
3. Michael, W., Passer, Smith, R. E. (2007). Psychology The science of mind and Behavior. New Delhi: Tata McGraw-Hill.

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VI.   MINOR COURSE- MN 1A PR:
MINOR PRACTICALS-**1A PR**

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment = 15 marks
Practical record notebook = 05 marks
Viva-voce = 05 marks

Practicals:
1. Administration of Sinha Anxiety Scale
2. Maudsley Personality Inventory.

MINOR COURSE-1B   (SEM-III)

VII.   MINOR COURSE- MN 1B:
PSYCHOLOGY AND MENTAL HEALTH

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Learning Outcomes:
> To provide knowledge about Mental Health problems like Anxiety and Depression to enhance positive mental health and well-Being in India and across the world.

Learning Outcomes:
1. Understanding the status of mental health problem in India and the world.
2. Starting conversations around mental health and creating mental health awareness amongst non-Psychology students.
3. Being able to identify people suffering from common mental health problems like anxiety and depression.
4. Learning to provide psychological first aid to people
5. Understanding and enhancing positive mental health and wellbeing.

Course Content:
Unit-I: Mental health
1. Concept of mental health
2. Issues of mental health in India.
3. Importance of mental health, identify mental health challenges to help reduce the stigma of mental illness
4. Mental Health issues in adolescence and young adults: Bullying, academic grades, body image, relational issues.

Unit-II: The invisible monsters: Anxiety, Depression and Suicide
1. Anxiety: Signs and Symptoms
2. Depression: Signs and Symptoms, Causes
3. Suicide: Preventative treatment measures, becoming gatekeepers of suicide

Unit-III: Reaching out and providing initial help
1. Recognizing the signs that someone may need support
2. Knowing what to do and what not to do when a person reaches out for help

Unit-IV: Mental Health Practice and Care
1. Counseling, Therapy, Guidance, Mentoring
2. Peer Mentoring: Concept and Skills

Reference Books:
1. Butcher, J. N., Hooly, J. M, Mineka, S. & Dwivedi, C. B (2017). Abnormal Psychology. New Delhi: Pearson.
2. Muir-Cochrane, E., Barkway, P. & Nizette, D. (2018). Pocketbook of Mental Health (3rd Edition). Elsevier
3. Snider, Leslie and WHO (2011). Psychological First Aid: Guide for Field Workers. Retrieved from
4. http://www.aaptuk.org/downloads/Psychological_first_aid_Guide_for_field_workers.pdf
5. WHO (2003). Investing in Mental Health. Retrieved from
   http://www.who.int/mental_health/media/investing_mnh.pdf
6. Allen, F. (2011). Health Psychology and Behaviour. TATA Mc. Graw Hill Edition.
7. Kumar V. (2020): Health Psychology, Exotic India Art.

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VIII.   MINOR COURSE- MN 1B PR:
MINOR PRACTICALS-**1B PR**

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:

1. Sinha Anxiety Scale
2. Bell's Adjustment Inventory
3. Women Equality Attitude Scale- Ram Tiwari

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MINOR COURSE-1C   (SEM-V)

IX.   MINOR COURSE- MN 1C:
COMMUNITY PSYCHOLOGY

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objectives:
1. To make understand student about the role of psychology in community development for health promotion among Child/Mothers/Physically Challenged and Elderly people.

Course Learning Outcomes:
1. Understanding the role of Psychology in community development.
2. Developing an appreciation of the core values that guide community psychology and facilitate community functions.
3. Developing insights with respect to health promotion programs in communities, community programme for child and maternal health, for physically challenged and elderly people in the Indian context, through case studies.

Course Content:
Unit-I: Introduction to community Psychology
1. Definition of community psychology; types of communities – locality based and relational.

Unit-II: Core values in community psychology
1. Individual and family wellness; sense of community; respect for human diversity; social justice;
2. Community functions – Learning and socialization, functions.

Unit-III: Communities as setting for health promotion
1. Need and process of community organization and building for health promotion programming
2. Community programme for child and maternal health, for physical challenged and old age in the Indian context.

Unit-IV: Interventions for Community Development and Empowerment
1. Concept and practices for community development and empowerment
2. Case studies of community intervention programs by the governmental and non-governmental organizations in Indian context such as, rural panchayat programs, children's education, citizen right, self-help group, social accounting.

Reference Books:
1.   Banerjee, A., Banerji, R., Duflo, E., Glenneske, R., & Khenani, S. (2006) Can Information Campaign start local participation and improve outcomes? A study of primary education in Uttar Pradesh, India, World Bank Policy Research, Working Paper No. 3967
2.   Fetterman, D. M., Kaftarian, S. J. & Wandersman, A (Eds) (1996) Empowerment Evaluation, New Delhi: Sage Publication.
3.   Kloos B. Hill, J Thomas, Wandersman A, Elias M. J. & Dalton J. H. (2012). Community Psychology: Linking Individuals and Communities, Wadsworth Cengage Learning.
4.   McKenzie, J. F. Pinger, R. R. & Kotecki, J. E. (2005). An introduction to community health. United States: Jones and Bartlett Publishers.
5.   Misra, G. (Ed). (2010) Psychology in India. Indian Council of Social Science Research. Dorling Kindersley (India) Pvt Ltd. Pearson Education.
6.   Poland, B. D., Green, L. W. & Rootman, I. (2000) Setting for Health Promotion: Linking Theory and Practice, Sage Publication, New Delhi
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X.   MINOR COURSE- MN 1C PR:
MINOR PRACTICALS-1C PR

Marks: Pr (ESE: 3Hrs) = 25   **Pass Marks: Pr (ESE) = 10**

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

Practicals:

1. Human Rights Awareness Test
2. Life Satisfaction Scale.
3. Academic Achievement Scale.

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MINOR COURSE-1D   **(SEM-VII)**

XI.   MINOR COURSE- MN 1D:
PSYCHOLOGY AT WORK

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objectives:
1. To provide knowledge about work motivation and knowledge of communication in different organization to improve efficiency.

Course Learning Outcomes:
1. Understanding the meaning and theoretical foundations of Psychology.
2. Knowing how to apply knowledge of Psychology to the real work setting.

Course Content:

   Unit 1: Introduction to Psychology: Definition, Brief History and Contemporary Trends.

Unit 2: Work Motivation: Theories and applications: Maslow, Herzberg, Goal Setting, Expectancy, Equity.

Unit 3: Communication in Organizations: Communication process, purpose of communication in organizations, barriers to effective communication, managing communication.

Unit 4: Leadership: Approaches- contemporary approach, Types and Traits of Leader.

Reference Books:
1. Greenberg, J. & Baron, R.A. (2007). Behaviour in Organizations (9th Ed.). India: Dorling Kindersley
2. Robbins, S.P.& Judge, T.A. (2008). Essentials of Organizational Behaviour. 9th Edition. New Delhi: Prentice Hall of India

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XII.   MINOR COURSE- MN 1D PR:
MINOR PRACTICALS-1D PR

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:

1. Work Motivation Questionnaires
2. Organizational Communication Scale
3. Leadership Scale

FYUGP

HOME SCIENCE HONOURS/ RESEARCH

AK SINGH COLLEGE ,JAPLA, PALAMU

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented from 3rd Semester of Academic Session 2022-26

& From 1st Semester of Session 2023-27 Onwards

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DEPARTMENT OF HOME SCIENCE

Ranchi University, Ranchi - 834 008 (Jharkhand)

Ref. No. RUPG H/Sc- 71   Date : 23.06.23

Members of Board of Studies of NEP Curriculum in Home Science for Four-Year Undergraduate Programme (FYUGP)
23-06-2023

Sl.No.	Name, Designation and Affiliation	Present as
1.	Dr. Shipra Kumari, Head, Univ. Department of Home Science, Ranchi University Ranchi	Chairperson
2.	Prof. Rekha Sinha, Professor, Birsa Agricultural University, Ranchi	External Member
3.	Dr. Seema Kumari, HOD & Associate Professor, BBMK University, Dhanbad, Jharkhand	External Member
4.	Dr. Seema Dey, Assoc. Prof., Univ. Department of Home Science, Ranchi University Ranchi	Member
5.	Dr. Reshma Xalxo, Assoc. Prof., Univ. Department of Home Science, Ranchi University Ranchi	Member
6.	Dr. Manju Kumari, Assoc. Prof., Univ. Department of Home Science, Ranchi University Ranchi	Member
7.	Dr. Asha Kumari Prasad, Assoc. Prof., Univ. Department of Home Science, Ranchi University Ranchi	Member
8.	Dr. Asha Kumari, Associate Professor, Univ. Department of Home Science, Ranchi University Ranchi	Member
9.	Dr. Meenakshi Akhouri, Asstt. Prof., Univ. Department of Home Science, Ranchi University Ranchi	Member
10.	Dr. Ahumati Kumari, Asstt. Prof., Univ. Department of Home Science, Ranchi University Ranchi	Member
11.	Dr. Prabha Nag, Asstt. Prof., Univ. Department of Home Science, Ranchi University Ranchi	Member
12.	Dr. Asha E. M.Toppo, Asstt. Prof., Univ. Department of Home Science, Ranchi University Ranchi	Member
13.	Dr. Kiran Kumari, Assoc. Prof., Ranchi Women's College, Ranchi	Member
14.	Dr. Renu Kumari, Assoc. Prof., Ranchi Women's College, Ranchi	Member
15.	Dr. Suniti Nayak, Asst. Prof., Marwari College, Ranchi	Member
16.	Ms. Arpita Nitu Bara, Alumni, Univ. Department of Home Science, Ranchi University Ranchi	Member

(Shipra Kumari)
Chairperson
Dept. of Home Science
Ranchi University, Ranchi

DIRECTOR
IQAC, RANCHI UNIVERSITY
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Students are Instructed to Refer Syllabus of Allied/ Opted Subjects from R.U. Website

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HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1ˢᵗ of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:
  - s) Odd Semester: **From first Monday of August to third Saturday of December**
  - t) Even Semester: **From first Monday of January to third Saturday of May**
- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester

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will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
  - ➢ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
  - ➢ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
  - ➢ Bachelor's Degree after a 3-year (6 semesters) programme of study,
  - ➢ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
  - ➢ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

  s) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.

  One credit for Theory   = <u>15 Hours of Teaching</u> i.e., 15 Credit Hours
  One credit for Practicum   = <u>30 Hours of Practical work</u> i.e., 30 Credit Hours

    t) For credit determination, instruction is divided into three major components:
        Hours (L) – Classroom Hours of one-hour duration.
      Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
  Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.

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- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

xc.   The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

xci.   No student will be detained in odd Semesters (I, III, V & VII).

xcii.   To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

xciii. To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

xciv.   To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

xcv.   However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

xcvi.   Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

xcvii. To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year.

xcviii. A student has to pass in minimum 3 papers out of the total 4 papers.

xcix.   It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result of the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
	Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)												
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
	Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)												
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
	Exit Point: Bachelor's Degree												
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4

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	Exit Point: Bachelor's Degree with Hons. /Hons. with Research	160	224

Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

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COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME   **2022 onwards**

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	AEC-1	Language and Communication Skills (MIL 1 - Hindi/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Hindi)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4
IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2
	VAC-2	Value Added Course-2	2

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	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4
	RC/	Research Internship/Field Work/Dissertation OR	12/
	AMJ-1 AMJ-2 AMJ-3	Advanced Major paper-1 (Disciplinary/Interdisciplinary Major) Advanced Major paper-2 (Disciplinary/Interdisciplinary Major) Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	4 4 4
		Total Credit	**160**

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NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	xix. Discipline/ Interdisciplinary courses and xx. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64
Minor	xix. Discipline/ Interdisciplinary courses and xx. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Double Major Courses		Credits
	Code	Papers	Credits
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:

AEC   Ability Enhancement Courses
SEC   Skill Enhancement Courses
IAP   Internship/Apprenticeship/ Project
MDC   Multidisciplinary Courses
MJ   Major Disciplinary/Interdisciplinary Courses
DMJ   Double Major Disciplinary/Interdisciplinary Courses
MN   Minor Disciplinary/Interdisciplinary Courses
AMJ   Advanced Major Disciplinary/Interdisciplinary Courses
RC   Research Courses

AIMS OF BACHELOR'S DEGREE PROGRAMME IN HOME SCIENCE

The aim of bachelor's degree programme in Home Science is intended to provide:

1. **Basic Concept:** The fundamental concepts and philosophical foundation of each course need to be discussed.
2. **Understanding Landscape:** An understanding of landscape at different levels needs to be discussed and understood for a thorough knowledge of spatial dimensions.
3. **Understanding Ecosystem Structure and Potential:** To comprehend the dynamic dimensions of human and ecosystem relationships.
4. **Human Perception and Behaviour:** Learning human perception and behaviour to acquire the geographical knowledge evolved over time, is essential to improve decision making process.
5. **Identification of Critical Problems and Issues:** Detection and identification of the critical problems and spatial issues are essential for sustainable development.
6. The aims of the Home Science are also to:

a. Enable students with knowledge, skills, attitudes and values to do community work in all areas of Home Science
b. Ensure global competitiveness and excellence in theory and research.
c. Prepare the students for master's program in their respective specialisation.
d. Train the students to take science from lab to community to improve quality of life of people.
e. Demonstrate systematic, extensive and coherent knowledge in one of the five disciplines of Home Science Namely Food and Nutrition, Human Development and Childhood Studies, Development Communication and Extension, Resource Management and Design Application, and Fabric and Apparel Science.
f. Ensure basic understanding of all five areas to be able to work in national development programs with multi-disciplinary acumen.
g. Demonstrate skill in profession, community outreach, policy and research in their specialization area.
h. Demonstrate community and laboratory-based data collection, analysis and interpretation.
i. Enhance communication skills for research findings and critique of life processes in community education.
j. Demonstrate subject related skills for employment opportunities.

PROGRAM LEARNING OUTCOMES

The programme learning outcomes relating to Honours/Research Degree in Home Science:

1. Understand and appreciate the role of interdisciplinary sciences in the development and well- being of individuals, families and communities
2. Understand the sciences and technologies that enhance the quality of life of people
3. Acquire professional and entrepreneurial skills for economic empowerment of self in particular, and community in general
4. Develop professional skills in food, nutrition, textiles, housing, product making, communication technologies and human development
5. Take science from the laboratory to the people and enhance quality of life.
6. It is also suggested that after the completion of FYUGP Hons./Research, students should be able to demonstrate the knowledge obtained in such way so that they can explore the employability options and service to the society.

SEMESTER WISE COURSES IN HOME SCIENCE MAJOR-1 FOR FYUGP   **2022**
onwards

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	Basics of Food Science and Nutrition	4	25	75	---
II	MJ-2	Fundamentals of Human Development	4	25	75	---
	MJ-3	**Practical-I**	4	---	---	100
III	MJ-4	Introduction to Textiles	4	25	75	---
	MJ-5	**Practical-II**	4	---	---	100
IV	MJ-6	Early Childhood Care and Education	4	25	75	---
	MJ-7	Fundamentals of Clothing Construction	4	25	75	---
	MJ-8	**Practical-III**	4	---	---	100
V	MJ-9	Resource Management Concept and Context	4	25	75	---
	MJ-10	Communication and Extension	4	25	75	---
	MJ-11	**Practical-IV**	4	---	---	100
VI	MJ-12	Family Finance and Consumer Behaviour	4	25	75	---
	MJ-13	Family Meal Management	4	25	75	---
	MJ-14	Communication Model in Extension	4	25	75	---
	MJ-15	**Practical-V**	4	---	---	100
VII	MJ-16	Public Health Nutrition	4	25	75	---
	MJ-17	A. Dietetics B. Childhood and Adolescence C. Fashion Marketing and Merchandising	4	25	75	---
	MJ-18	A. Nutrition for Health and Physical Fitness B. Adulthood and Aging C. Apparel Construction	4	25	75	---
	MJ-19	**Practical-VI- A, B, C**	4	---	---	100
VIII	MJ-20	Statistics	4	25	75	---
	AMJ-1	A. Food Safety, Sanitation and Hygiene B. Interpersonal Relationship and Family Dynamics C. Textile Design and Illustration	4	25	75	---
	AMJ-2	A. Food Service Management B. Gender, Society and Human Development C. Dyeing, Printing and Finishing of Textiles	4	25	75	---
	AMJ-3	**Practical-VII- A, B, C**	4	---	---	100
	or RC-1	Research Methodology	4	25	75	---
	RC-2	Project Dissertation/ Research Internship/ Field Work	8	---	---	200

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		Total Credit	92			

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Skill Enhancement Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	Health Care, Dietetics, Maternal & Child Nutrition	3	---	75	---
II	SEC-2	Techniques of Food Presevation	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	9			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Minor Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	Introductory Home Science	4	15	60	25
III	MN-1B	Nutrition: A Lifespan Approach	4	15	60	25
V	MN-1C	Current Concerns in Public Health Nutrition	4	15	60	25
VII	MN-1D	Care and Well-being in Human Development	4	15	60	25
		Total Credit	16			

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):
There will be <u>Only One Semester Internal Examination</u> in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

S. (SIE 10+5=15 marks):
There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

T. (SIE 20+5=25 marks):
There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.
Conversion of Attendance into score may be as follows:
Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):
AB.   (ESE 60 marks):
There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

AC.   (ESE 75 marks):
There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

AD.   (ESE 100 marks):
There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

Subject/ Code

F.M. =10   **Time**=1Hr.   Exam Year

General Instructions:
xlvi. **Group A** carries very short answer type compulsory questions.
xlvii.**Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
xlviii.   Answer in your own words as far as practicable.
xlix. Answer all sub parts of a question at one place.
l.   Numbers in right indicate full marks of the question.

Group A

28.   [5x1=5]

xlvi.	....
xlvii.	....
xlviii.	....
xlix.	....
l.	....

Group B

29. ....   [5]
30. ....   [5]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **20 Marks**:

Subject/ Code

F.M. =20   **Time**=1Hr.   Exam Year

General Instructions:
xlvi. **Group A** carries very short answer type compulsory questions.
xlvii.**Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
xlviii.   Answer in your own words as far as practicable.
xlix. Answer all sub parts of a question at one place.
l.   Numbers in right indicate full marks of the question.

Group A

37.   [5x1=5]

xlvi.	....
xlvii.	....
xlviii.	....
xlix.	....
l.	....

38. ....   [5]

Group B

39. ....   [10]
40. ....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION

Question format for **50 Marks**:

Subject/ Code

F.M. =50   **Time**=3Hrs.   Exam Year

General Instructions:

xvii. **Group A** carries very short answer type **compulsory** questions.

xviii.   **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.

xxx. Answer in your own words as far as practicable.

xxxi. Answer all sub parts of a question at one place.

xxxii.   Numbers in right indicate full marks of the question.

Group A

55.   [5x1=5]

    xlvi.   ....
    xlvii.   ....
    xlviii.   ....
    xlix.   ....
    l.   ....

Group B

56. ....   [15]
57. ....   [15]
58. ....   [15]
59. ....   [15]
60. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **60 Marks**:

Subject/ Code

F.M. =60   **Time**=3Hrs.   Exam Year

General Instructions:

xix. **Group A** carries very short answer type **compulsory** questions.

xx. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.

xxx. Answer in your own words as far as practicable.

xxxi. Answer all sub parts of a question at one place.

xxxii.   Numbers in right indicate full marks of the question.

Group A

73.   [5x1=5]

    xlvi.   ....
    xlvii.   ....
    xlviii.   ....
    xlix.   ....
    l.   ....

74. ....   [5]
75. ....   [5]

Group B

76. ....   [15]
77. ....   [15]
78. ....   [15]
79. ....   [15]
80. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **75 Marks**:

Subject/ Code

F.M. = 75   **Time**=3Hrs.   Exam Year

General Instructions:
xix. **Group A** carries very short answer type **compulsory** questions.
xx. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xxx. Answer in your own words as far as practicable.
xxxi. Answer all sub parts of a question at one place.
xxxii.   Numbers in right indicate full marks of the question.

Group A

82.   [5x1=5]

    xlvi.   ....
    xlvii.   ....
    xlviii.   ....
    xlix.   ....
    l.   ....

83. ....   [5]
84. ....   [5]

Group B

85. ....   [15]
86. ....   [15]
87. ....   [15]
88. ....   [15]
89. ....   [15]
90. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

Subject/ Code

F.M. = 100   **Time**=3Hrs.   Exam Year

General Instructions:
xix. **Group A** carries very short answer type **compulsory** questions.
xx. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xxx. Answer in your own words as far as practicable.
xxxi. Answer all sub parts of a question at one place.
xxxii.   Numbers in right indicate full marks of the question.

Group A

10.   [10x1=10]

    xlvi.   ....   vi.   ....
    xlvii.   ....   vii.   ....
    xlviii. ....   viii.   ....
    xlix.   ....   ix.   ....
20. l...................   x   ....   [5]
21. ....   [5]

Group B

58. ....   [20]
59. ....   [20]
60. ....   [20]
61. ....   [20]
62. ....   [20]
63. ....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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SEMESTER I

XVIII. MAJOR COURSE –MJ 1:
BASICS OF FOOD SCIENCE AND NUTRITION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description

The course "Basics of Food Science and Nutrition" aims at developing the basic understanding of food and nutrition; it's the effect on human health and newer advances in food technology. This course encompasses the physiological, biochemical and social aspects of food and discusses the relationship between metabolites and human health. Moreover, the Course is focused on the advances in the most emerging area of Applied Science of Nutraceuticals (where food is the medicine) and provides a detailed insight into understanding the composition, molecular interaction and bio mechanisms of food metabolites. The knowledge and skills to utilize food and nutrients are as the powerful tools for physical, mental and social well-being.

Learning Objectives:
1. Study the different methods of cooking foods
2. Obtain knowledge of different food groups, their composition and nutrients present in the foods.
3. Understand the vital link between foods, nutrition and health
4. Gain knowledge on functions, requirements and effects of deficiency of nutrients

Learning Outcome:
A successful completion of this course will enable students to
1. Summarize and critically discuss and understand both fundamental and applied aspects of Food Science and nutrition and Food Production
2. Able to explain functions of specific nutrients in maintaining health
3. Identifying nutrient specific force and apply the principles from the various factors of foods and related disciplines to solve practical as well as Real world problems
4. Use current information Technologies to locate and apply evidence-based guidelines and protocol and get imported with critical thinking to take leadership roles in the field of health, diet special nutritional needs and nutritional counselling.

Course Content
Unit-I. Introduction of Food Groups, Food Pyramid and Cooking Methods   (12 Lectures)
Definition and Terms used in Food Science and Nutrition. Health, Food, Nutrition, Nutrients: Macronutrients (Carbohydrates, Proteins and lipids) and Micronutrients (Vitamins and Minerals), and Malnutrition. Various classifications of Foods and Food Groups.
Definition, Classification and Functions of Foods, Basic Food Groups and Need for Grouping Foods and Application of Food Groups in Planning Adequate/Balanced Diets Culinary terms and Methods of Cooking
An Overview of culinary terms
Different Modes of heat transfer like Radiation, Conduction and Convection
Moist heat methods like Boiling, Simmering, Poaching, Steaming, Pressure cooking
Dry heat methods: Air as medium of cooking: Grilling, broiling, roasting, Baking,
Fat as medium of cooking: Sautéing, Shallow fat frying, Deep fat frying
Combined (Moist and dry) Methods: Braising, Stewing
Other cooking methods: -Microwave cooking and Solar cooking.
Advantages and Disadvantages of Cooking methods

Unit-II. Nutritional Significance of Different Food Groups   (12 Lectures)

Basic Concepts, classification, Composition, nutritive value and Role in Cookery
Cereals and Cereal Products-
        Types of cereals: wheat, rice, millets,
        Cereal Products-Flaked rice, puffed rice, wheat flour.
Principles and properties of Cereals and its utility: Germination (Amylase Rich Foods- ARF),
Fermentation, Parboiling, Gelatinization, Dextrinization, Gluten formation)
        Pulses and Legumes,
        Fruits and Vegetables,
        Salt, Sugar and Jaggery,
        Nuts, oils and Oil seeds
        Milk and Milk Products including Fortified milk & its importance
Eggs-Basic structure of an egg and biological value, Quality evaluation and grading of eggs Meat,
poultry and fish
Spices & Condiments – their importance and functional properties

Unit III- Macronutrients

(12 Lectures)

Definition, Classification, Dietary Sources, Functions, Recommended Dietary Allowances, Clinical
signs and symptoms of Deficiency diseases and Excess of Energy, Carbohydrates, Proteins, Lipids,
Water

Unit IV- Minerals   (12 Lectures)

Definition, Classification, Distribution of minerals in the body.
Functions, sources, requirements and effects of deficiencies of Minerals: Calcium, Phosphorus, Iron,
Iodine, Zinc, Fluorine, Copper, Magnesium, Sodium, Potassium, Selenium.

Unit V- Vitamins   (12 Lectures)

Classifications, functions, sources, Clinical signs and symptoms of deficiency, requirements of
Fat Soluble Vitamins - A, D, E and K
Water Soluble, Vitamins-B Complex Vitamins- Thiamine, Riboflavin, Niacin, Pyridoxine, Folic acid,
Cyanocobalamin and Vitamin C

Recommended Readings:

1.   Maney   S
   (2008). Foods, Facts and Principles, 3rd Edition Published by Wiley Eastern, New Delhi.
2.   Usha
   Chandrasekhar (2002) Food Science and Application in Indian Cookery, Phoenix Publishing House P. Ltd., New
   Delhi.
3.   Raina   U,
   Kashyap S, Narula V, Thomas S Suvira, VirS, Chopra S (2010) Basic Food Preparation: A Complete Manual, 4th
   Edition, Orient Black Swan Ltd, Mumbai.
4.   Srilakshmi, B.
   (2017) Nutrition Science, New Age International (P) Ltd., New Delhi,
5.   Mahtab,   S.
   Bamji, Kamala Krishnasamy, Brahmam G.N.V (2012) Text Book of Human Nutrition, Third Edition, Oxford and
   IBH Publishing Co. P. Ltd., New Delhi.
6.   Sunetra Roday
   (2017). Food Science and Nutrition, Oxford University Press, New Delhi.
7.   Longvah,   T,
   Ananthan, R., Bhaskarachary, K., Venkaiah, K (2017). Indian Food Composition Tables (IFCT), Indian Council of
   Medical Research, National Institute of Nutrition, Hyderabad

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XIX.   SKILL ENHANCEMENT COURSE- SEC 1:
HEALTH CARE, DIETETICS, MATERNAL & CHILD NUTRITION

Marks: 75 (ESE: 3Hrs) = 75	**Pass Marks: Th (ESE) = 30**

(Credits: Theory-03) **45 Hours**

Course Objectives:
To make students understand
1.   The concept and importance of health care
2.   The importance of maternal and child nutrition for overall development
3.   Importance of diet in maintaining good health of mother and child

Course Outcome
Students will have
1.   Understanding of maintaining good health
2.   Knowledge and practice for maintaining good health and maternal and child nutrition

Course Contents:

Unit-I: Health Care & Dietetics   **(09 Lectures)**
Concept of Health and Dimensions of Health, Health and Hygiene, Introduction, Causes, Symptoms and Prevention for cardiovascular disease, Diabetes, Fever and Under Nutrition., Diet Plan for cardiovascular Patient, Diabetes, Fever, Anaemia.

Unit-II: Nutritional needs during pregnancy   **(09 Lectures)**
Nutritional needs during pregnancy, common disorders of pregnancy (Anaemia, HIV Infection) Maternal health and Nutritional Status,

Unit-III: Nursing mothers and infants   **(09 Lectures)**
Nutritional need of nursing mothers and infants.

Unit-IV: Infant and child mortality   **(09 Lectures)**
Breast feeding, weaning and complementary feeding. Child health and morbidity, neonatal, infant and child mortality.

Unit-V: Nutrition policies   **(09 Lectures)**
Overview of maternal and child nutrition policies

Suggested Readings:
1.   Wadhwa A and Sharma S, Nutrition in the Community.
2.   Bansji M S, Textbook of Human Nutrition
3.   Wadhwa A and Sharma S (2003), Nutrition in the Community- A Textbook, Elite Publishing House Pvt. Ltd. New Delhi
4.   National Guidelines on Infant and Young Child Feeding (2006). Ministry of Women and Child Development, Government of India.

SEMESTER II

XIII.   MAJOR COURSE- MJ 2:
FUNDAMENTALS OF HUMAN DEVELOPMENT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Course Description
The course introduces students to the concept of human development. It then moves on to discuss the various schools of thought that gave rise to different theoreticalframeworks to understand human development. It explains basic developmental principles and factors like heredity and environment which influence growth and development. It deals with development during different stages of life span, starting from conception to old age. It further discusses the principles of working with human beings and methods of studying human development.

Learning Objectives
1. Develop an understanding about the need and importance of studying human growth and development across life span
2. Learn about the biological and environmental factors that affect development
3. Learn about the characteristics, needs and developmental tasks of different stages in the human life cycle
4. Understand the different theoretical frameworks fundamental to HDFS
5. Learn about the classic human development theories
6. Develop professional attitude for working with human beings across life span

Learning Outcomes
1. Explain the need and importance of studying human growth and development across life span.
2. Identify the biological and environmental factors affecting human development.
3. Describe the characteristics, needs and developmental tasks of different stages in the human life cycle
4. Explain the broad theoretical perspectives and frameworks of HDFS

Course Content
Unit I Theoretical Frameworks and Theories   **(12 Lectures)**
> Theoretical Frameworks
> Biological-maturational
> Environmental learning
> Constructivist
> Culture-contextual

Overview of theories of human development
> Freud's theory of psychosexual development
> Erikson's theory of psychosocial development
> Piaget's theory of cognitive development
> Learning theories- Skinner

Indian Thinkers (selected) on Child Development
> Mahatma Gandhi
> Rabindranath Tagore
> Gijubhai Badeka and Tarabai Modak

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Unit II: Introduction to Human Development   **(10 Lectures)**
    Definition, History
    Scope and importance of Human Development in contemporary society
    Domains, Stages and Contexts of development,
    Principles of Growth and Development,

Unit III: Prenatal Development and Birth Process   **(10 Lectures)**
    Reproductive health
    Conception, Pregnancy, Prenatal Development – stages, factors affecting, diagnostics techniques,
    Birth Process
        Stages of birth
        Types of delivery (natural, c-section, breech, home vs. assisted delivery)
Capacities and Immediate care of newborn, adjustments made by newborn, types of feeding - natural and artificial, weaning, infant and mother mortality and morbidity, immunization schedule.

Unit IV: Stages in the Human Life Cycle: An Overview   **(14 Lectures)**
    Characteristics, needs and developmental tasks of individuals in relation to physical, cognitive, socio-emotional domains of development in the following life stages:
        Neonate (birth-1 month)
        Infancy (1 month-2 years)
        Early childhood (2-6 years)
        Middle childhood (6-11 years)
        Adolescence (12-18 years)
        Emerging and Young adulthood (18-35 years), diversity of roles and relationships
        Middle age / mature adulthood (35-60 years)
        Late adulthood / Old age (60 years and above)- Parenting and Grand Parenting

UNIT V: Professional Skills for Working with Human Beings   **(14 Lectures)**
    Research Methods:
    Case study, interview, naturalistic observation, laboratory   observation,
    experimental methods, cross sectional and longitudinal and sequential studies.
    Ethics of research with human subjects – written consent, privacy,
    no harm, no plagiarism, debriefing
    Self-awareness and contextual sensitivity
        Building professional attitudes
        Understanding development in different contexts and circumstances
        Developing contextual sensitivity and preparation for field experiences
        Personal and Professional issues involved in a career as HDFS professional (Identify entry level jobs, career path and job tasks/requirements)

Recommended Readings:
1.   Berk, L.E. (2005). Child development (5th ed.). New Delhi: Prentice Hall.
2.   Bhangaokar, R., & Kapadia, S. (in press). Human Development Research in India: A historical overview. In G. Misra (Ed.), Hundred years of Psychology in India. New Delhi: Springer.
3.   Feldman, R., & Babu, N. (2009). Discovering the life span. New Delhi: Pearson
4.   Kakar, S. (1998). The inner world. Psychoanalytic study of childhood and society in India.
5.   Delhi: Oxford University Press.
6.   Kapadia, S. (2011). Psychology and human development in India. Country paper. *International Society for the Study of Behavioural Development Bulletin Number 2, Serial No. 60, pp.37-42.*
7.   Keenan, T., Evans, S., & Crowley, K. (2016). *An introduction to child development.* Sage.

8.   Lightfoot, C.,
    Cole, M., & Cole, S. (2012). *The development of children*

9.   (7th ed.).   New
    York: Worth Publishers.

10.   Santrock,   J.
    (2017). *A topical approach to life span development* (9th ed.). New NY.: McGraw-Hill Higher Education.

11.   Singh,   A.
    (2015). Foundations of Human Development: A life span approach. ND: Orient Black Swan.

12.   Walsh,   B.A.,
    Deflorio, L., Burnham, M.M., & Weiser, D.A. (2017). *Introduction to Human Development and Family Studies*.
    NY: Routledge

XIV.   MAJOR COURSE- MJ 3:
PRACTICALS-I:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04)   **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Part A
1. Market survey of locally available food items like cereals, pulses, fruits and vegetables, milk and milk products, fats and oils, nuts and oilseeds, sugar and jaggery, meat, fish, and poultry and miscellaneous food items like biscuits, jams, jellies, ketchup etc. and their cost
2. Classify foods on the basis of nutrients: -Protein, Iron, Calcium, Vitamin A, Vitamin C
3. Controlling techniques: Weights and measures - standard and household measures for raw and cooked foods
4. Weights and Measures, Determination of Edible Portion of Foods, preparing market order & table setting
5. Food Preparation, understanding the principals involved, nutritional quality and portion size of 5-7 commonly consumed recipes in each food group
   a.   Cereals: rice, pulao, Roti, chapathi, paratha, poori, pastas etc
   b.   Pulses: Whole, dehusked- Dal, sambar, kootu, Chole, Rajmah, etc
   c.   Vegetables: Dry preparations, Curries
   d.   Milk and milk products: Kheer, Custard,
   e.   Meat, fish and poultry preparations
   f.   Egg preparations- Boiled, poached, fried, scrambled, omelettes, egg pudding

Part B
1. Preparation of an album on developmental milestones of children.
2. Visit to maternity ward and ante-natal clinics.
3. Visit to an Anganwadi
4. Plotting growth monitoring chart and interpretation.
5. Observation of motor activities of a toddler.
6. Visit to an old age home
7. Carry out case studies to know more about the different life stages, e.g., school going children, adolescents, middle adults.
8. Observations of infant child rearing practices in families from different social classes.
9. Interviews of adolescent girls and boys to understand their life style and behaviour based on gender and socio-economic status

Recommended Readings
1. Maney S (2008). Foods, Facts and Principles, 3rd Edition Published by Wiley Eastern, New Delhi.
2. Usha Chandrasekhar (2002) Food Science and Application in Indian Cookery, Phoenix Publishing House P. Ltd., New Delhi.
3. Raina U, Kashyap S, Narula V, Thomas S Suvira, VirS, Chopra S (2010) Basic Food Preparation: A Complete Manual, 4th Edition, Orient Black Swan Ltd, Mumbai.
4. Srilakshmi, B. (2017) Nutrition Science, New Age International (P) Ltd., New Delhi,
5. Keenan, T., Evans, S., & Crowley, K. (2016). *An introduction to child development*. Sage.
6. Lightfoot, C., Cole, M., & Cole, S. (2012). *The development of children* (7thed.).NewYork: Worth Publishers.

7. Santrock, J. (2017). *A topical approach to life span development* (9th ed.). New NY.: Mcgraw-Hill Higher Education.
8. Singh, A. (2015). Foundations of Human Development: A life span approach. ND: Orient Black Swan.

XV.   SKILL ENHANCEMENT COURSE- SEC 2:
TECHNIQUES OF FOOD PRESEVATION

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) 45 Hours

Course Objectives:

1. To learn the principles behind the methods of preservations
2. To understand the stages of cookery and chemical characteristics in the preservation of fruits and vegetables
3. Able to formulate preserved food products and acquire skills to preserve different types of food items based on their perishability**.**

Course Outcome

1. Know the principles of preservation behind the methods of preservation and acquire skills to formulate food-based products
2. Understand the stages of sugar cookery, quality of pectin and acidity in the development of preserved food products
3. Explore the principles of preservation in fruits and vegetable based products
4. Skills to prepare cereals and pulse based preserved products and develop new products with retention of quality.

Course Content

This course helps to understand food preservation; the factors that cause food to deteriorate, preservation by chemical treatments, changing the environmental conditions (temperature, moisture content, etc.) Food preservation is a course important for food handlers; whether for their own use, or on a commercial basis.

Unit-I. Concept of Food Preservation   **(09 Lectures)**
Importance of Food Preservation,
Types of Food spoilage by Micro-organisms and by Enzymes
Basic Principles of Food Preservation
Food preservatives- Use of Salt, Acid, Sugar, natural food preservatives and artificial preservatives
Starting a food preserving unit, Product Promotion strategies and marketing skills

Unit-II. Preparation of dehydrated products   **(09 Lectures)**
Methods of drying & dehydration, different types of driers, freeze drying- lyophilisation, packing & storage
Drying methods for the selected products -Rice, Sago, Wheat, Maida, Rice flakes, black gram dhal, green gram dhal, Horse gram dhal Roots and Tubers
General tips with drying foods
Preparation of salted, dehydrated, preserves (Traditional Indian varieties of chips, Papads, Khakharas etc and Masala Powders, onion, garlic, ginger powder etc.)
Hands on experience: Drying of vegetables- peas, potato, carrot, French beans, Reconstitution of dried vegetables, Drying & preparation of powders- garlic, ginger, spices mix etc

Unit-III. Preservation by Using Sugar   **(09 Lectures)**

Role of Pectin in Preserved Foods Stages in Sugar Cookery
Sugar Concentrates – Principles of Gel Formation
Hands on Experience: Preparation of Jam, Jelly, Marmalades, Sauce and Squash Preserves, Candied, Glazed, Crystallized Fruits, Toffee
Evaluation of pH, Acidity and pectin quality Visit to Fruits and Vegetable processing industry

Unit-IV. Preservation by Using Chemicals and Salts and Fermentation   (09 Lectures)
Preparation and Preservation of Fruit Juices, RTS Pickling – Principles Involved and Types of Pickles
Chemical Preservatives – Definition, Role of Preservation Permitted Preservatives, FSSAI guidelines
Foods fermented by Yeasts Foods fermented by Bacteria
Common Fermented Foods, Wine and Cheese Making Hands on experience: Pickle making
Visit to Commercial Pickle Manufacturing Food Industry and Wine industry

Unit-V. Preservation by Advanced Preservation Technology   (09 Lectures)
Meaning and needs of freezing foods Types of Freezing and managing freezers
Guidelines for types of frozen Foods-Fruits, Vegetables, fish, meat and poultry Smoking foods
Pasteurization and Sterilization Food Irradiation
Vacuum Packing Canning and Bottling
Food Packaging Materials for preserved food products Hands on experience: Blanching of fruits & Vegetables
Visit to Food Industries

Recommended Readings :
1.   Srivastava R.P. (2012), *Fruit and vegetable preservation – Principles and Practices*, International Book Distributing Co., (IBDC), New Delhi.
2.   Maria   Parloa (2009), *canned fruit, preserves and jellies: Household methods of preparation*, US Department of Agriculture, Washington.
3.   Shafiur, Rahman, M. (2007), *Handbook of Food Preservation,* 2nd edition, CRC press, New Delhi
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SEMESTER III

XVI.   MAJOR COURSE- MJ 4:
INTRODUCTION TO TEXTILES

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description

An introduction to Textiles course covers the fundamental of the textiles along with the physical analysis of the fiber, yarn and fabric of different textiles. The course is designed to help the students understand the basics of textiles, the processes and technology used for manufacturing it. It explains about the properties and end uses of fiber, yarn, fabric and its co-relation. This knowledge will be base for "Textile designing", "Garment technology", "Fashion designing", "Interior designing" courses. The course will be useful to those entering in textile related manufacturing, design and product development, selection, sourcing, quality control and research.

Course Objectives

1. Get acquainted with textiles technical terms, the properties, identification, production and uses of various textile fibers, fabrics.
2. Develop the skills for identification of fibers, yarn and fabrics
3. Understand different types of yarns, weaves, selection of textiles and finishes, of laundry and stain removal.
4. Learn the methods of dyeing, printing, and finishing of fabrics.

Learning Outcome

1. Develop an understanding of concepts and basics of textiles.
2. Develop critical understanding of the techniques of fibre, yarn and fabric manufacture.
3. Identify the fibers, yarn and fabrics for its appropriate use.
4. Recommend the dyes, printing and finishing of textiles for specific use

Course Content

Unit-I. Introduction to Textiles   **(2 Lectures)**

Definition of textile fibers and terminology Classification of textile fibers, Basic unit and polymer bonds in textile fiber, Physical and Chemical properties of fibers

Unit-II. Fibers   **(12 Lectures)**

Natural fibers (Morphology and polymer system, production, properties and end uses)
    Cellulosic (Cotton, Jute), Protein (Silk, Wool)
Man-made fibers (Manufacturing process, chemical spinning, properties and end uses)
    Viscose Rayon, Acetate Rayon, Nylon, Polyester, Acrylic, Elastomeric

Unit-III. Yarn and Fabric   **(12 Lectures)**

Yarns
    Classification of yarns: simple, ply and cord, Types of Yarn: Textured and novelty, Twist in yarn: "s" and "z", number of twist, Properties of yarn: strength, extension, fineness, length, diameter, composition.
Woven fabrics
    Looms and its part, Classification Basic weaves Plain, Twill, Satin·, Novelty weaves – Pile, Leno-Gauze, Honeycomb, End uses of fabrics with different weaves
Knitted fabrics
    Types and terminology used, Hand knitting, Machine knitting

Nonwoven fabrics

Unit-IV. Coloration and Finishing of Textiles   (10 Lectures)
Dyes
> Terms related to dyes, Classification of dyes, Components of dyeing and its relation to dye material (auxiliaries, temperature and dye bath), Direct, Acid, Basic and Reactive dyes

Printing
> Styles of printing, Modern methods of printing, Pre-preparation for printing (printing paste, printing table)

Finishing
> Basic finishes - Singeing, Scouring, Bleaching, Sizing, Weighting, Degumming, Mercerizing, Sanforizing and Calendaring, Special finishes

Unit-V. Laundry, Storage and Care of Textiles   (8 Lectures)
> Introduction, Types, Uses, Water, Soaps, Detergents, Methods and care during laundering of different textiles

Unit VI- Traditional Textiles of India   (16 Lectures)
Textile art of India, History and Classification of Traditional Indian Textiles- Painted, Printed, Resist Dyed, woven and embroidered.

Woven textiles of Northern India- (Origin, Material, Techniques)
> Rajasthan- Kota Doria, Gujrat- Sujani, Tangaliya, Madhya Pradesh- Chanderi, Maheshwari
> Uttar Pradesh- Brocade, West Bengal- Dacca Muslin, Baluchari, Tangail, Shawl from Kashmir, Assam and Nagaland

Woven textiles of southern India- (Origin, Material, Techniques)
> Maharashtra- Paithani, Himroo, Andhra Pradesh and Telanagana- Dharmavaram, Vrnkatagiri, Gadwal, Narayanpeth, Karnataka- Irkal, Khann, Tamilnadu- Kanjivaram

Recommended Reading:

1. Booth, J.E. (1996). *Principles of Textile Testing.* New Delhi: CBS Publishers & Distributors Pvt. Ltd.
2. Corbman, P.B. (1983). *Textiles: Fibre to Fabric*. McGraw-Hill Publishers.
3. Collier, B.J., & Epps, H.H. (1998). *Textile testing and analysis.* Prentice Hall Publishers.
4. Dantyagi, S. (1996). *Fundamentals of Textiles and their Care*. India: Orient Black swan Private Limited.
5. D'Souza, N. (2014). *Fabric Care*. New Delhi: New Age International Publishers.
6. Greaves, P.H., Saville, B. P. (1995).*Microscopy of textile fibres.* bios Scientific Publishers
7. Gohl, E., Vilesky, L. (2003), Textile Science: an explanation of fiber properties (2 edition), New Delhi.
8. Hollen, R. N., Saddler, J., & Langford, A. (1979).*Textiles*. Macmillan Publishers.
9. Joseph, M. (1992), *Introductory Textile Science.* Sixth edition, California: Harcourt College Publishers
10. Kadolph, S.J. 2009. *Textiles.* Tenth edition. New Delhi: Dorling Kindersley (India)
11. Madhulika, P. (2013). *Weaving.* New Delhi: Random Publishing.
12. Mahapatra, N.N. (2015). *Textile Technology.* New Delhi: A.P.H. Publishing Corporation.
13. Needles, L.H. (1986). *Textile Fibers, Dyes, Finishes, and Processes*. USA, New Jersey: Noyes publications.
14. Rastogi, D., & Chopra, S. (2017). *Textile Science*. India: Orient Blackswan Private Limited.
15. Robert, R. & Mather, R. H. (2015). *The Chemistry of Textile Fibers*. Cambridge: RSC Publishers.
16. Sekhri, S. (2011). *Textbook of Fabric Science: Fundamentals to Finishing*. India: PHI Learning Pvt. Ltd.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

17. Smith, J.L. (2015). *Textile Processing: Printing Dyeing Finishing.* Chandigarh: Abhishek Publication.

18. Tyagi, A. (2016). *Handbook of Fashion and Textile Design*. New Delhi: Sonali publication.

19. Wynne,A.,(1997).Textiles, The Motivate Series Mcmillain Education Ltd. ,London.

XVII. MAJOR COURSE- MJ 5:
PRACTICALS-II:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:

1. Fiber identification: Identification of natural and manmade fibers by following three methods i.e., microscopic test, burning test and solubility test.

2. Study of Yarn: Identification of various types yarn, Detail study of the ply of yarn, count of yarn using beasley yarn count balance, twist by twist tester, crimp by crimp tester and strength of the yarn by single yarn or lea strength tester

3. Characteristics of Fabric (following standards): Fabric count using pick glass, crimp using crimp tester, shrinkage, thickness, tensile strength (breaking strength and elongation) using tensile strength tester, tearing strength using tearing strength tester, bursting strength using bursting strength tester, weight (GSM) of the fabric.

4. Dyeing: Dyeing of yarn/fabric with different classes of dyes

    a. Dyeing of cotton yarn and fabric with direct dyes
    b. Dyeing of silk, wool and nylon yarn and fabrics with basic and acid dyes.
    c. Dyeing of polyester yarn and fabric with disperse dyes.

5. Printing of fabrics using:
    a.   Direct style - block, stencil and screen
    b.   Resist style - Tie &Dye, Batik

6. Care of Textiles
    a.   Stain removal
    b.   Mending of textiles
    c.   Starching using different types of starches
    d.   Washing of Different garments made from different fibres.

Reference Books

1. Booth, J.E. (1996). *Principles of Textile Testing.* New Delhi: CBS Publishers & Distributors Pvt. Ltd.
2. Collier, B.J., & Epps, H.H. (1998). *Textile testing and analysis.* Prentice Hall Publishers.
3. Dantyagi, S. (1996). *Fundamentals of Textiles and their Care*. India: Orient Black swan Private Limited.
4. Greaves,P.H., Saville, B. P. (1995).*Microscopy of textile fibres. B*ios Scientific Publishers
5. Hollen, R. N., Saddler, J., & Langford, A. (1979).*Textiles*. Macmillan Publishers.
6. Madhulika, P. (2013). *Weaving.* New Delhi: Random Publishing.
7. Rastogi, D., & Chopra, S. (2017). *Textile Science*. India: Orient Blackswan Private Limited.
8. Robert, R. & Mather, R. H. (2015). *The Chemistry of Textile Fibers*. Cambridge: RSC Publishers Pvt. Ltd.
    9. Smith, J.L. (2015). *Textile Processing: Printing Dyeing Finishing.* Chandigarh: Abhishek Publication.

XVIII. SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	**Pass Marks: Th (ESE) = 30**

A Common Syllabus for FYUGP   (Credits: Theory-03) **45 Hours**

Instruction to Question Setter for
End Semester Examination (ESE):
*There will be **objective type test** consisting of **Seventy-five questions of 1 mark each**. Students are required to mark their answer on **OMR Sheet** provided by the University.*

Course Objectives:
The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

S. INTRODUCTION TO COMPUTER SYSTEM
1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU)   **(3 Lecture)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer   **(4 Lecture)**

3. Operating system: What is an Operating System, Operating System Examples, Functions of Operating System(Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting
                                                                                        (6 Hours)
4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages   **(4 Hours)**

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails.   **(6 Hours)**

T. MICROSOFT OFFICE 2016 AND LATEST VERSIONS
6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents
          (7 Hours)

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation, slide show, Master Slides, Creating photo album, Rehearse timing and record narration   **(5 Hours)**

9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning   **(4 Hours)**

Reference Books
75.   Nishit Mathur, Fundamentals of Computer, APH publishing corporation (2010)
76.   Neeraj Singh, Computer Fundamentals (Basic Computer), T Balaji, (2021)
77.   Joan Preppernau, Microsoft Power Point 2016 step by step, Microsoft press (2015)
78.   Douglas E Corner, The Internet Book 4th Edition, prentice –Hall (2009)
79.   Steven Welkler, Office 2016 for beginners, Create Space Independent Publishing Platform (2016)
80.   Wallace Wang, Microsoft Office 2019, Wiley (January 2018)

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

81.   Noble Powell, Windows 11 User Guide For Beginners and Seniors, ASIN, (October 2021)

SEMESTER IV

XIX.   MAJOR COURSE- MJ 6:
EARLY CHILDHOOD CARE AND EDUCATION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description
This course explores the range of issues related to Early Childhood Care and Education (ECCE). The focus of the course is on understanding the importance of early years and early interventions. The course further aims to familiarize students with indigenous (Indian) models of ECCE, pedagogical approaches and programmatic trends as they evolved in the Indian context.

Course Objectives
1. Know the importance of early childhood years and significance of intervention programs for early childhood development.
2. Develop insight into the historical developments – global and Indian including the current programs and policies in ECCE. Develop awareness of ECCE programs in different contexts in India.
3. Familiarize with indigenous (Indian) models of Early Childhood Education and explore the current early childhood research, theoretical trends and issues. To learn about different curriculum models and pedagogical approaches in early childhood education.
4. Impart knowledge on programme planning for young children.

Learning Outcome
1. Explain the importance of early childhood years and significance of intervention programs for early childhood development.
2. Describe the historical developments – global and Indian including the current programs and policies in ECCE.
3. Identify various indigenous (Indian) models of Early Childhood Education and apply it to understand the current early childhood research, theoretical trends and issues.
4. Analyze curriculum models and pedagogical approaches in early childhood education.
5. Create developmentally appropriate programs for young children.

Course Content
Unit-I Introduction to Early Childhood Care and Education   **(10 Lectures)**
Concept, meaning, scope and significance of ECCE
Developmental perspective, Neuroscience perspective, Human rights perspective
Expansion from ECE to ECCE to ECD. Aims and objectives of ECCE– General and specific
Types of ECCE service delivery – Formal and informal; Government funded, Philosophy oriented, Laboratory nursery school, Franchise oriented

Unit-II ECCE in India   **(14 Lectures)**
History of Early Childhood Care and Education in India.
Overview of ECCE in pre and post-independence period. Preschool education in the pre and post-independence era (very brief). How the international trends have influenced the national trends.
Contributions of educational philosophers: global and Indian perspective- views of educationists and philosophers: Comenius, Rousseau, Pestalozzi, Froebel, Robert Owen, McMillan Sisters, John Dewey and Montessori, Sri Aurobindo, Tagore, Gijubhai Badheka, Tarabai Modak, Mahatma Gandhi
Present status of young children in India.
Policy perspectives in ECCE
Recent Policies in ECCE-Various Education commissions of India:
National Policy on Education (1986) Programmes / schemes and innovations in ECCE –ICDS, Balwadis, mobile crèches.
National Curriculum Framework 2005

National Policy on Early Childhood Care and Education 2013
Curriculum Framework for Early Childhood Care and Education 2012/2013 New Education Policy, 2020

Unit-III Early Childhood Curriculum   (12 Lectures)
Definition and concept of curriculum
Curriculum approaches – subject centered, learner centered, community centered
 Developmentally Appropriate Practice (DAP) – definition and core considerations, myths and consequences of developmentally inappropriate ECE practices
Components and essential features of developmentally appropriate ECCE curriculum Planning a developmentally appropriate curriculum- approaches, key principles and types of plans

Unit-IV Play and its Importance   (12 Lectures)
Play and its characteristics
Theories of play- surplus energy theory, recreational theory, recapitulation theory Stages and types of play,
 Role of play in overall development of children. Teacher's role in creating environment and promoting play.
 Use of play way approach in the curriculum for young children.

Unit-V Innovative ECCE Models   (12 Lectures)
Nutan Bal Shikshan Sangh, India
Daxinamurti Bal Mandir, India
Gram Bal Shikshan Kendra, India
Lok Jumbish Program, India
Mirambika, India
Rishi Valley, India
High/Scope Model, USA
Reggio Emilia Approach, Italy
Te Whãriki Model, New Zealand
The ECEC Model, Sweden
Seto Gurans National Child Development Services, Nepal

Recommended Redings
1.   Agarwal, J. C. (2007). *Early childhood care and education: principles and practice*s. New Delhi: Shipra
2.   Agarwal,   S.P. and Usmani, M. (2000). *Children's education in India: from vedic times to twenty first century* New Delhi: Shipra.
3.   Canning, N. (2010) *Play and practice in the early years: Foundation stage*. New Delhi: Sage.
4.   Durlak, J.A. (1995). School based prevention programmes for children and adolescents. N.Y.: Sage.
5.   Fleer, M. (2010). *Early learning and development: Cultural–historical concepts in play.* Cambridge: Cambridge University Press.
6.   Kaul, V. (2009). *Early childhood education programme.* National Council of Educational Research and Training, New Delhi.
7.   OECD. (2004). Curricula and pedagogies in early childhood education and care. Retrieved from http://www.oecd.org/education/school/31672150.pdf
8.   Purkait, B.R. (2005). *Milestones in modern Indian education*. Kolkata: New Central Book Agency.
9.   Swaminathan, M.(ed.) (1998).*The first five years: A critical perspectives on early childhood care and education in India*. New Delhi: Sage.
10.   Sarangapani, P.M. (2009). Quality, feasibility and desirability of low cost private schooling: what is the evidence? *Economic & Political Weekly, 44*(43), 67–69.
11.   Sarangapani, P.M. (2010). Comparative education in India: Why it is missing and why we need it. *Journal of Education Planning and Administration 24*(4): 363-378.
12.   Saraswathi, T.H., Menon, S. & Madan, A. (eds.) (2018) *Childhoods in India traditions, trends and transformations.* New Delhi. Routledge.
13.   Sharma, K.K., & Miglani, P. (2016). *Gender, school and society*. Patiala: Twenty First Century Publications.
14.   Early Childhood Care and Education (n.d.) Retrieved from

http://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/home_science/10._early_childhood_care,_education_an d_development/14._aurobindo,_gijubhai_badheka,_tarabai_modak/et/671 6_et_et.pdf

15.   Singh, A. (1995).
Playing to learn: A training manual for early childhood education. Chennai: M. S. Swaminathan Research Foundation.

16.   Venkataraman, B.
(2009). Education for sustainable development. *Environment: Science and Policy for Sustainable Development*, *51*(2), 8-10.

XX.   MAJOR COURSE- MJ 7:
FUNDAMENTALS OF CLOTHING CONSTRUCTION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description
It is designed to develop skills in students related to clothing manufacturing techniques using appropriate tools and preparation of fabric for clothing construction. It deals with the components of garments, material selection and techniques of construction. The knowledge of fundamentals of clothing construction will enable the students to make sound decisions related to material resources through the application of clothing construction and application skills. This will prepare students for advanced studies and professional employment in the areas of clothing and textiles.

Course Objectives
1.   Develop an understanding about the basics of clothing construction
2.   Learn about the principals involved in clothing construction.
3.   Know about various sewing equipment that are essential in a sewing room.
4.   Learns to construct garment.
5.   Develop skill in coordinating fabrics, patterns and supportive materials

Learning Outcome
A successful completion of this course will enable students to
1. Understand basic principles of clothing construction.
2. Comprehend the importance and function of clothes, Identify the common fabrics, utilize design components in garment construction, understands various garment construction process
3. Gain an insight of various sewing machines and other sewing equipment's available in the market, their functioning & common problems faced while usage
4. Co-ordinates fabrics, patterns and supportive materials and construct the garment

Course Content
Unit I Introduction to Clothing   (10 Lectures)
History of Clothing. Origin of Clothing
Use of clothing among primitive people
Functions and theories of clothing
Clothing in relation to culture
Psychological aspects of clothing
Self-respect, self-enhancement, self-expression, gender desirability and individuality
Socio-psychological aspects of clothing among children
Significance of uniforms and national costumes.
Clothes for conformity, mobility and aesthetic appearance.
Terminology: Clothing, fabric, fashion, fad, silhouette, weaving, knitting, felting, plackets, brands, clothing symbolism, tradition,

Unit II Sewing Machines   (10 Lectures)
Types of sewing machines -Mechanical Sewing Machine. Electronic Sewing Machine. Computerized or Automated Sewing Machine. Embroidery Machine.
Parts of sewing machine, Types and function Maintenance, Common problems and its remedies.

Tools and equipment used for clothing construction Measuring tool, Drafting Tool, Marking Tool, Cutting Tool, Stitching Tool, Pressing Tool,
Needles, threads and their relation to fabric, Types of needles for hand and machine sewing
Types of threads hand and machine sewing
Selection of right thread, needle for the fabric to be sewn.

Unit-III. Introduction to Clothing Construction   (10 Lectures)
Anthropometric measurements Introduction and importance
Instruments used for anthropometric measurements Standardization and size charts.
 Importance and use of size charts Size charts of child, woman and man Factors affecting selection of fabrics, Social factors, Economic factors, Physiological factors, Environmental factors.

Unit-IV. Design Components   (10 Lectures)
Elements and Principles of Design Introduction
Basic elements of design, Basic principles of design
Relation between elements and principles of design to the Clothing and Fashion Color, line and texture in relation to: Age, Season, Occasion, Figure Type, and Complexion

Unit-V. Components of Garments   (10 Lectures)
Garment Silhouettes
Introduction to basic Garments-Skirts, Blouses, Pants
Introduction to Garment detailing for- Necklines, Fullness, Pockets, Seams, Sleeve, Yoke and Plackets.

Unit VI- Traditional Costumes of India   (10 Lectures)
Traditional costumes of Northern India Jammu and Kashmir, Punjab, Haryana Traditional costumes of Western India Rajasthan, Gujarat, Maharashtra
Traditional costumes of Southern India Andhra Pradesh, Tamil Nadu, Kerala, Karnataka Traditional costumes of Eastern India Orissa, West-Bengal, Assam, Nagaland, Meghalaya, Manipur, Arunachal, Mizoram, Tripura
Traditional costumes of Central India Uttar Pradesh, Madhya Pradesh and Bihar

Recommended Readings:
1. Armstrong, Pearson. (1995), Pattern making for Fashion Design, Fairchild Publication, New York 1995 (Indian Ed.)
2. Cream, Penelope.,(1996), The Complete Book of Sewing - A Practical Step by Step Guide to Sewing Techniques, DK Publishing Book, New York ,
3. Dorothy wood, the practical encyclopaedia of sewing, Anneess publishing Ltd, London.
4. Holman, Gillian. (1997), Pattern Cutting Made Easy, BSP.
5. Janace E. Bubonia. (2012), Apparel production terms and processes, Fairchild Books, New York.
6.   Kallal, Mary Jo, (1985), Clothing Construction, Mc Millan Publishing Company, New York.
7.   Norma Hollen, Jane Saddler, Anna L. Langford & Sara, J.,(1988) Textiles 6th ed., Macmillan Publication, New York
8.   Readers, Digest, Complete Guide to Sewing, The Reader's Digest Associations (Canada) Ltd. Montreal, Pleasantville, New York.
9.   Thomas, A, (1986), the Art of Sewing UBSPD Publishers Distributors Ltd. New Delhi.

XXI.   MAJOR COURSE- MJ 8:
PRACTICALS-III:

Marks: Pr (ESE: 3Hrs) =100	**Pass Marks: Pr (ESE) = 40**

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Part A
1.   Observation of early childhood programs at government and non-governmental institutions.
2.   List the activities for each domain to promote all round development in young children.
3.   Plan and record activities and methods of playful interactions to foster development in children (birth –two years and two –six years)
4.   Conduct workshops in any two of the following: Developing worksheets to teach readiness concepts Enhancing social and language skills, Music, movement and drama for children
5.   Prepare a developmentally appropriate plan and its implementation. Methods and tools to assess progress of children and program. Prepare low-cost play materials/equipment's

Part B
1. Preparation of fabric for cutting
       a. Preshrinking, b. Identification and straightening of Grain.
2. Taking measurements directly from body
3. Tools and Equipment used in Garment Construction: Squares and Scales, French curves – for armhole, necklines etc.
4. Preparing sample of:
       a.   Basic hand stitches- basting, back stitch, hemming visible/invisible, Lock stitch.
       b.   Seams- plain seams and decorative seams
5. Fullness
       a.   Darts-Single point, Fish dart
       b.   Tucks- Pin tucks, wide tucks, corded tucks, criss crossed tucks
       c.   Pleats- Knife, box, inverted box, accordion pleat
       d.   Gathers – Hand and machine
       e.   Shirring
       f.   Ruffles and frills
6. Neckline finishes- Binding and facing
7. Plackets: Faced and continuous bound
8. Pockets: Patch, in seam pocket
9. Snap button and fastener attachment
10. Introduction to drafting method and stitching of the following garments.
Petticoat/ Apron/Kalidar Kurta
a. Drafting on paper
b. Transferring pattern markings from paper
c. Fabric cutting
d. Stay stitching
e. Sewing on machine

Preparation of portfolio with
a.   Pictures of traditional textiles with the descriptive analysis

b.   Pictures of the traditional costumes with constructional details.

Reference Books

1.   Agarwal, J. C. (2007). *Early childhood care and education: principles and practice*s. New Delhi: Shipra
2.   Canning, N. (2010) *Play and practice in the early years: Foundation stage*. New Delhi: Sage.
3.   Durlak, J.A. (1995). School based prevention programmes for children and adolescents. N.Y.:Sage.
4.   Fleer, M. (2010). *Early learning and development: Cultural–historical concepts in play*. Cambridge: Cambridge University Press.
5.   Kaul, V. (2009). *Early childhood education programme.* National Council of Educational Research and Training, New Delhi.
6.   Readers, Digest, Complete Guide to Sewing, The Reader's Digest Associations (Canada) Ltd. Montreal, Pleasantville, New York.
7.   Thomas, A, (1986), the Art of Sewing UBSPD Publishers Distributors Ltd. New Delhi.

SEMESTER V

XXII. MAJOR COURSE- MJ 9:
RESOURCE MANAGEMENT CONCEPT AND CONTEXT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description
Resources and their management is the ultimate goal of all families. The Course introduces the conceptual and contextual meaning of resources and their management in micro level family settings in the changing world in a simple format with experiential learning to the learners. Presenting optimal initiatives and equipping students with appreciable management acumen to imbibe the contexts in their family system and the environment is the major scope.

Course Objectives
1. Learning to identify and manage the use of resources available for functional use
2. Comprehending the purpose of managing resources
3. Setting realistic goals and being practical and prudent in the use and management of limited resources by making intelligent decisions
4. Becoming money, time and energy conscious in daily living

Learning Outcome
1. Understanding on the concepts related to family resource management
2. Appreciation of the significance of management process in efficient use of resources
3. Imbibing nuances of human values and standards for successful management and decision making
4. Focus on management of human energy as a family resource

Course Content
Unit I Introduction to Resource Management in Family Settings   (12 Lectures)
Introduction to home management- meaning, definitions, conceptual framework, need and philosophy Concept, definition, universality and scope of family resource management Approaches to resource management – family resources Vs home management Ethics in management of resources – essential qualities for success
Motivating factors in management – Values, Standards and Goals – meaning, types/ classification and influences. Theories of Motivation- Maslow's hierarchy of needs theory; human wants – nature and role in management

Unit II Resources   (12 Lectures)
Concept, classification and characteristics of family resources Factors affecting utilization of family resources. Maximizing use of resources and resource conservation.
Natural resources: renewable and non – renewable resources, methods of harnessing renewable resources for residential use

Unit III Functions of Management: An Overview   (12 Lectures)
Decision Making- the crux of management, Types of decisions; factors of control, role of values, standards and goals in decision making process
Management process: Definitions and steps in management process: Planning, Controlling, Organizing and Evaluation

Significance of managing resources of the family
Relation of Family Resource Management to other areas of Home Science

Unit IV Resource Management Process   (12 Lectures)

Management process applicable to specific resources:
Money- sources of income, meaning of income and expenditure, steps in money management, Budgeting- budget items, methods of handling money
Time – concept of time schedule, time norms and peak loads
Energy – Types of effort (Manual, pedal, visual etc)., Concept of body posture, drudgery and fatigue, fatiguing activities, classification of activities (sedentary, moderate and heavy), use of labour-saving devices in management of time and energy, methods of alleviating fatigue Principles of Work simplification, Mundel's Classes of Change, time and motion studies, working heights at different levels.

Unit V Ergonomics: Role in Management of Human Resources   (12 Lectures)

Ergonomics – concept and principles, work, worker and work environment relationship, role of work, workplace and equipment's (appliances) as sources of drudgery
Occupational health hazards – sources, problems and solutions
Waste management: home level solid and liquid waste management practices Application of Management Processes in: Event Planning &Execution

Recommended Readings:

1. Bhargava, B. (2005). *Family Resource Management and Interior Decoration*, Jaipur: Apple Printer and V. R. Printers
2. Deacon, R. F., and Firebaugh, F.M. (1975). *Home Management: Contexts and Concepts.* Boston: Houghton Mifflin Company.
3. Fitzsimmons, C. (1950). *The Management of Family Resources*. California: W. H. Freeman Co.
4. Gandotra, V., and Jaiswal, N .(2008). *Management of Work in Home*, New Delhi: Dominant Publishers and Distributors. (ISBN No. 81-7888-526-3)
5. Grandjean, E., and Kroemer, K.H.E. (1999). *Fitting the Task to the Human - A Text Book of Occupational Ergonomics,* New York: Taylor and Francis
6. Gross. I.H., Crandall, E. W. and Knoll, M. M. (1980). *Management for Modern Families.* New Jersey: Prentice Hall Inc.
7. Gross. I.H., and Crandall, E. W. (1967). *Management for Modern Families*. Delhi: Sterling Publishers.
8. Koontz, H., and O' Donnel C. (2005), *Management – A Systems and Contingency Analysis of Managerial Functions*. New York: McGraw-Hill Book Company
9. Kreitner. R. (2009/2010). *Management Theory and Applications*. India: Cengage Learning India Pvt Ltd (ISBN 13: 9788131511244)
10. Nickell, P., Rice, A. S., and Tucker, S.P. (1976). *Management in Family Living*. New York: John Wiley& Sons Inc.
11. Nickell, P., and Dorsey, J, M. (2002). *Management in Family Living*. New Delhi: CBS Publishers (ISBN13: 9788123908519)
12. Rao V.S.P., and Narayana P.S. (2008). *Principles and Practices of Management*. New Delhi: Konark Publishers Pvt. Ltd. (ISBN 13: 9788122000283)
13. Seetharaman, P., Batra, S., & Mehra, P. (2005). *An Introduction to Family Resource Management*. New Delhi: CBS Publishers &Distributors (ISBN 13: 9788123911861)
14. Shukul, M., and Gandotra,V . (2006). *Home Management and Family Finance.* New Delhi: Dominant Publishers and Distributors. (ISBN No. 81-7888-403-8)
15. Singh, S. (2007). *Ergonomics Integration for Health and Productivity*. New Delhi/ Udaipur: Himanshu Publication
16. Swanson, B.

(1983). *Introduction to Home Management*. New York: Macmillan Publishing Co. Inc.

17.   Varghese,   M. A., Ogale. N. and Srinivasan K. (1985). *Home Management*. New Delhi: New Age International (P) Limited, Publishers (ISBN 13: 9780852269046)

XXIII. MAJOR COURSE- MJ 10:
COMMUNICATION AND EXTENSION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Course Description

The Course introduces to the students the concept of Communication and Extension. It will orient the students with creation, transmission and application of knowledge designed to bring out planned changes in the behavior of people. Communication is an exciting and challenging field of human interaction.

Course Objectives

1. Understand the concept of Communication and its role in exchange of information
2. Examine the models and barriers to communication
3. Learn about the concept of extension, extension approaches and models
4. Enhance the students in the selection and use of media in different socio-cultural environment

Learning Outcome

1. Gain knowledge on the need and importance of communication and its significance in exchange of information
2. Analyse the models of Communication and role of media in societal development
3. Perceive the importance of extension education
4. Acquire knowledge on the extension models and approaches

Course Content

Unit-I. Communication Concept   (12 Lectures)

Meaning, definition, nature, scope and importance of communication

Functions of communication – information function, command or instructive function, influence or persuasive function and integrative function.

Elements of Communication – three elements – source, message, receiver, four elements –encoding, decoding, sender and receiver, five elements – communicator, communicate, message, channel and feedback

Means of Communication – Oral, Written, Sign / signal, action, object Types of Communication – Formal and Informal Communication

Pattern - one way, two ways, circular

Communication media – Print and electronic media Advantages and Limitations of communication media

Unit-II. Communication Models   (12 Lectures)

Importance of communication in extension

Models of Communication-Aristotle Model, Shanon – Weaver Mode, Berlo Model, Scharmm Model

Concept, purposes and significance of model in communication

Barriers to Communication – semantic, psychological, organizational and personal

Unit-III. Effective Communication   (12 Lectures)

Characteristics – Clear, correct, complete and precise message, reliability, consideration of the recipient

Skills – Observance, clarity and Brevity, Listening and Understanding, self-efficacy and self confidence

Significance – Team work, Team building, problem solving and decision making skills, facilitate creativity and reduces misunderstanding

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Concepts relating to communication – perception, fidelity, communication gap, Empathy, Homophily, heterophily

Unit-IV. Communication and Extension   (12 Lectures)

Concept, need, functions, principles and scope of extension Steps in extension teaching
Elements of extension communication system
Communication methods in extension – group method, mass method and individual method
Advantages and limitations of communication and extension

Unit-V. Extension Models and Approaches   (12 Lectures)

Models – Innovation transfer model, Social education model, Indigenization model, Social action / consignation models, Empowerment participation model, Combination models
Approaches – General Extension, Commodity specialized, Training and visit, Agricultural, Extension participatory, project, farming systems development, cost sharing and Educational Institution approach

Recommended Reading

1.   Dahama, O.P and Bhatnagar O.P. (1995). Education and Communication for Development. New Delhi: Oxford and IBH Co.
2.   Gupta, D. (2007). Development Communication in Rural Sector. New Delhi: Mukhopadhyay Abhijeet Publication
3.   Nisha, M. (2006). Understanding Extension Education. New Delhi: Kalpay Publications
4.   Reddy, A.A. (2001). Extension Education. Bapatla: Sri Lakshmi Press
5.   Rogers Everett, M. (2003). Diffusion of Innovations, 5th Ed. New York: The Free Press
6.   Singh, U.K and Nayak, A.K. (2007).   Extension Education. New Delhi: Common Wealth Publishers
7.   Wilson, M.C., and Gallup, G. (1955). Extension Teaching Methods. Washington: US Department of Agriculture

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XXIV. MAJOR COURSE- MJ 11:
PRACTICALS-IV:

Marks: Pr (ESE: 3Hrs) =100	**Pass Marks: Pr (ESE) = 40**

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Part A
1. Comprehend and give a write up on values held and goals set – different age groups
2. Identify resources in and around a family, their use and benefits accrued: Prepare an Inventory
3. Harnessing natural resources: model making – solar devices, windmills, rainwater harvesting, water conservation measures
4. Conservation of community and natural resources for optimization: Portfolio
5. Identification and development of self as a resource.
   – SWOC analysis-who am I and Microlab
   – Building Decision Making abilities through management games
   – Role play
   – Goal setting exercise for one academic year
6. Elucidate changing value systems in Indian conditions – pros and cons
7. Preparation of time plans for self and family
8. Drafting family budget for different income groups
9. Time and Motion Studies for simplifying work- Flow process chart etc.
10. Ergonomic analysis of different work, work places and appliances as sources of drudgery
11. Trial experiments on time and energy management using different household appliances
12. Determining working heights for different individuals at different levels
13. Planning an Event - management and evaluation, with reference to
    – Managerial process
    – Resource optimization - time, money, products, space, human capital and natural resources

Part B
1. Developing skill in planning and conducting small group communication
2. Preparation of Communication Models
3. Apply communication methods in the implementation of programme
4. Interaction with villagers and understand the felt and unfelt need
5. Carryout a case study using any one Extension approach

Recommended Readings
1. Fitzsimmons, C. (1950).*The Management of Family Resources*. California: W. H. Freeman Co.
2. Gandotra,V., and Jaiswal, N.(2008). *Management of Work in Home*, New Delhi: Dominant Publishers and Distributors.(ISBN No. 81-7888-526-3)
3. Grandjean, E., and Kroemer, K.H.E. (1999). *Fitting the Task to the Human - A Text Book of Occupational Ergonomics,* New York: Taylor and Francis
4. Gross.I.H., Crandall, E. W. and Knoll, M. M.(1980). *Management for Modern Families.* New Jersey: Prentice Hall Inc.
5. Nickell, P., and Dorsey, J, M. (2002). *Management in Family Living*. New Delhi: CBS Publishers (ISBN13: 9788123908519)
6. Shukul, M., and Gandotra,V . (2006). *Home Management and Family Finance*. New Delhi: Dominant Publishers and Distributors.(ISBN No. 81-7888-403-8)

7.   Singh, S. (2007). *Ergonomics Integration for Health and Productivity*. New Delhi/ Udaipur: Himanshu Publication

8.   Varghese, M. A., Ogale. N. and Srinivasan K. (1985). *Home Management*. New Delhi: New Age International (P) Limited, Publishers (ISBN 13: 9780852269046)

9.   Dahama, O.P and Bhatnagar O.P. (1995). Education and Communication for Development. New Delhi: Oxford and IBH Co.

10.   Gupta, D. (2007). Development Communication in Rural Sector. New Delhi: Mukhopadhyay Abhijeet Publication

11.   Nisha, M. (2006). Understanding Extension Education. New Delhi: Kalpay Publications

12.   Reddy, A.A. (2001). Extension Education. Bapatla: Sri Lakshmi Press
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SEMESTER VI

XXV. MAJOR COURSE- MJ 12:
FAMILY FINANCE AND CONSUMER BEHAVIOUR

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description

Consumer is the king in the consumer market. Consumers' behaviour and attitude reflects their living styles which *per se* will be the delineation of their family finance management practices. The Course exposes students to real life situations for realizing their role as consumers as well as financial managers in family settings

Learning Objectives

1. Provide situations to understand significance of family income and expenditure and saving for future
2. Register and react as responsible consumers
3. Analyze relevance of consumer movement in India
4. Gain knowledge on consumer protection Laws and Acts and reflect upon personal rights and responsibilities

Learning Outcomes

1. Becoming familiarized to the changing trends in consumerism
2. Enriched Knowledge on market systems
3. Emerge as informed consumers
4. Review the benefits of planned financial management

Course Content

Unit I Consumer and the Market   **(12 Lectures)**

Consumer: definition and meaning; consumer Vs customer
Role of consumers in the economy, National Income, Per Capita Income, Household wise distribution of income
Classification of Consumer goods
Consumer and the market: definition and classification of markets, types Consumer demand and supply
Channels of distribution
Consumer behaviour: changing nature of consumer behaviour to suit modern market and business trends – concepts of C2C, B2B, B2C, C2B etc; Factors influencing Consumer behavior
Meaning, characteristics of buyer behaviour, buying motives – types; consumer buying process;
Change in consumer purchase practices in the digital market – concept of e-commerce, m-commerce, online shopping etc; Extended use of plastic currency and cards

Unit II Household Income and Expenditure   **(12 Lectures)**

Household Income – Types, Sources, Supplementation of family income, use of family income, per capita income
Household expenditure: Items of expenditure, mental and written plans, Factors influencing expenditure pattern, expecting exigencies and tackling them
Account maintenance: methods of account keeping like balance sheets, account books, ledgers, income-expenditure records
Process of budgeting- steps in drafting a family budget, balancing income and expenditure, ways to meet emergent expenses

Personal finance management: Tax implications: significance in budgeting, measures adopted and instruments used to ensure tax benefits, calculation of personal income tax for an individual's monthly income

Engel's Laws of consumption, drafting well balanced family budgets

Unit III: Family Savings and Credit Practices   (12 Lectures)

Consumer credit- Concept, meaning, need, sources, credit cards, credit services availed by the family members, types of loans availed by families

Mortgages: Definition and conceptual meaning, significance in meeting emergent needs of expenditure

Financial security arrangements: Family savings and investments- need, principles, channels of investment

Savings and savings institutions, merits and demerits of each Guidelines for wise savings practices

Unit IV: Consumerism in India   (12 Lectures)

Consumerism: genesis, reasons for consumer movement Historic Declaration of Consumer rights Consumerism in India

Consumer problems – types, nature, causes and solutions

Concern for the Consumer: Consumer education: Meaning and definition; need and scope, objectives, aspects, methods, contents and resources, Problems

Consumer education and empowerment: meaning, need and achievements with specific relevance to India

Consumer aids: classification – Labels, Trademarks, Brand Names, Patents, Warranty, Guarantee, Quality Control and After Sales Service, Government and Voluntary Agencies, Role of advertisements influencing consumer behaviour

Product labeling and packaging – significance to fair practices

Unfair consumer practices: adulteration and faulty weights and measures

Green Consumerism-Meaning and importance with respect to consumerism, need, consideration in daily consumption and significance, ethos of adopting sustainable/eco- friendly lifestyle as green consumers

Unit V: Consumer Protection   (12 Lectures)

Consumer protection: concept, need and significance Consumer rights and responsibilities in India

Consumer organizations – origin, functioning, role and types Consumer cooperatives – role, history and growth in India

Consumer redress: role of consumer forums and consumer courts in safeguarding consumers Basic legislative framework for consumer protection in India- Consumer Protection Act 1986 (COPRA), Alternative redressal mechanisms, Mediation centres

Standardization and quality control measures: Role of ISI, FPO, AGMARK, ISO, Eco mark, Wool mark, Silk mark, Cotton mark, Handloom mark, BEE Star labeling and others

Consumer Protection Act 2019

Recommended Readings:

1. Gangawane, L. V., and KhilareV. C. (2007). *Sustainable Environmental Management: Dr Jayshree Deshpande Festchrift Volume.* Delhi: Daya (ISBN 13: 9788170354741)
2. Gupta, C.B., and Nair, R.N. (2004). *Marketing Management*. New Delhi: Sultan Chand and Sons
3. Kathiresan, S., and Radha, V. (2004). *Marketing*. Chennai: Prasanna Publishers
4. Khanna S.R., Hanspal S., Kapoor S., & Awasthi H.K. (2007). *Consumer Affairs. New* Delhi: Universities Press India Pvt. Ltd.
5. Nair R., and Nair S, R. (2003). *Marketing*. New Delhi: Sultan Chand and Sons
6. Nair, S (2002). *Consumer Behaviour*. New Delhi: Sultan Chand and Sons
7. Pattanchetti, C.C., and Reddy (2002). *Principles of Marketing*. Coimbatore: Rainbow Publishers
8. Sawhney, H.K., &Mital, M. (2007). *Family Finance & Consumer Studies*. New Delhi: Elite Publishing House Pvt. Ltd.
9. Seetharaman,

P., and Sethi, M. (2001). *Consumerism: Strength and Tactics*. New Delhi: CBS Publishers.

10.   Verma,   B.P.
(2003). *Civil Engineering Drawing, Drawing and House Planning*. New Delhi: Khanna Publishers

11.   Wagner,   S.
(2003). *Understanding Green   *Consumer*
Behavi* Routledge (ISBN 9780415316194)

XXVI. MAJOR COURSE- MJ 13:
FAMILY MEAL MANAGEMENT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description

Course investigates how nutrition requirements and challenges change throughout the human lifecycle and how alteration in nutritional requirements impact on human health. The course covers assessment of normal growth and body development during childhood and adolescence and factors affecting the nutritional status of adults and the elderly**.**

Course Objectives

1. Study the growth and development during various stages of life span
2. Understand the basics for recommending the dietary allowances
3. Study nutritional needs at different stages of life span
4. Gain experience in planning adequate diets for different age groups and for different income groups.

Learning Outcome

1.   Design food plans and assess the adequacy of diets to meet the nutritional needs of humans at various stages of life cycle.
2.   Assess nutrition issues and conditions and also recommend nutrition intervention and support to promote the health and wellbeing.
3.   Have the knowledge, both to develop and critique nutritional interventions designed to improve human health and well-being at specific age associated time points.
4.   On completion of the course students will be able to critically assess nutritional requirements and nutritional health status of an individual.

Course Content

Unit-I. Introduction to RDA and Balanced Diet   **(12 Lectures)**

Basic concept and purposes of Recommending the Dietary Allowances,
Factors Affecting Recommended Dietary Allowances
Requirements and Recommended Dietary Allowances for various age groups Uses of ICMR- RDA in planning balance diet. Exchange system and Dietary Diversity

Unit-II. Nutrition in Pregnancy and Lactation   **(12 Lectures)**

Physiological Changes occurring during Pregnancy
Importance of Food and Nutritional Care and Requirement during pregnancy General Dietary and nutritional Problems and Complications,
Physiology and Hormones involved in Lactation Food supplements and galactogogues.
Factors Affecting the Volume and Composition of Breast Milk,
Nutritional Requirements during lactation

Unit-III. Nutrition in Infancy   **(12 Lectures)**

Growth and Development of Infants,
Composition of Human Milk and Human Milk Substitute,
Bottle Feeding and related Problems,
Weaning and Supplementary Feeding Foods,
Feeding Problems and Complications.
Use of growth charts and standards and prevention of growth faltering

Unit-IV. Nutrition in Childhood and Adolescence   **(12 Lectures)**

Growth and Development of Pre School, School Going Children and Adolescence.
Food and Nutritional Requirements,

Factors to be considered while Planning Diet for Children and Adolescents,
Growth Spurt during Adolescence.
Food Habits, Dietary Guidelines, Food and Nutritional Requirements,
Nutritional and Behavioral Problems and Eating Disorders

Unit-V. Nutrition for Adults and Elderly   **(12 Lectures)**
Reference Man and Reference Woman,
Food and Nutritional Requirements for Adults doing Different Activities
Processes of Aging,
Food and Nutritional Requirements of Elders,
Nutrition Related Problems of Old Age,
Dietary Guidelines and diet Modifications.

Recommended Reading

1.   Mahtab,   S,
Bamji, Kamala Krishnasamy, Brahmam, G.N.V. (2012) *Text Book of Human Nutrition*, Third Edition,
Oxford and IBH Publishing Co. P. Ltd., New Delhi.
2.   Srilakshmi, B.
(2013), *Dietetics*, New Age International (P) Ltd., New Delhi.
3.   SunetraRoda
y (2017). *Food Science and Nutrition*, Oxford University Press, New Delhi
4.   Longvah,   T,
Ananthan, R, Bhaskarachary, K, Venkaiah, K. (2017). *Indian Food Composition Tables (IFCT),*
Indian Council of Medical Research, National Institute of Nutrition, Hyderabad.
5.   Shakuntala
Manay, Shadaksharaswamy. M (2013) *Foods, Facts and Principles*, New Age International Pvt Ltd
Publishers, 2nd Edition) Ltd., New Delhi.
6.   Swaminathan,
M. (2012), *Advanced Textbook on Food and Nutrition,* Vol. 1, Second Edition, Bangalore Printing and
Publishing Co. Ltd., Bangalore.

XXVII.   MAJOR
COURSE- MJ 14:
COMMUNICATION MODEL IN EXTENSION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description
The Course enables the students to understand the concept and process of communication. Apply knowledge of communication and be able to evaluate the theoretical approach used in the inter disciplinary field of communication and learn the concept of diffusion of innovations and adoption.

Learning Objectives
1. Understand the concept and process of communication for development
2. Acquire skill in information education and communication
3. Learn the concept of diffusion and acquires skill to transfer the Innovation
4. Strengthen the knowledge of traditional and modern media in development communication

Learning Outcomes
1. Explain the basic concept, nature and significance of Communication model
2. Learn the communication channel and skill
3. Analyse the media in development communication
4. Understand the adoption and diffusion process to help the extension agents to accelerate them

Course Content
Unit-I. Communication Model   **(12 Lectures)**
Concept of communication model and significance
Functions – teaching elements of communication process, conducting research, predicting the success of failures of communication process.
Importance of communication model – easy understanding of communication process, showing information flow, introducing the parts of communication process, easy presentation of communication process and understanding the communication process.

Unit-II. Methods of Communication   **(16 Lectures)**
Extension methods of communication – Individual method – Farm and home visit, farmer's call, personal letter, adaptive or minikit trial, farm clinic
Group method – result demonstration, method demonstration, group meeting, small group training, field day or farmer's day and study tour
Elements of extension communication system – communicator, message, channel treatment and presentation, audience, audience response
Characteristics of change agent – empathy, linkage, structure, synergy, energy, proximity, openers
Role and competencies of change agent – broad knowledge, operational and relational knowledge, sensitivity and maturity, authenticity

Unit-III. Media in Development Communication   **(12 Lectures)**
Traditional media – types (folk songs, drama, and puppetry) characteristics and role in development communication
Radio – Origin and history, news, features and commentaries, role in development communication
Television and cinema – history, features and role in development communication ICTs – scope and development communication

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Unit-IV. Diffusion of Innovations   **(10 Lectures)**

Diffusion-concept, elements of diffusion, difference between communication and diffusion Innovation - form, functions and meaning of innovation, perceived attributes of innovation, preventive innovation

Unit-V. Adoption   **(10 Lectures)**

Definition, adoption process – diffusion network – the innovation decision process, the innovation decision period, rate of adoption, mandates for adoption, over adoption, adopter categories, measurement of adoption, role of extension agent in the adoption and diffusion of innovation.

Recommended Reading

1.   Gupta, D. (2007). Development communication in Rural Sector. New Delhi:
2.   Meenakshi Raman and Sangeetha Sharma. (2013). Technical Communication-Principles and Practice. New Delhi: Oxford University Press
3.   Mukhopadhya y Abhijeet Publication
4.   Nair, R. (1993). Perspectives in Development Communication. New Delhi:
5.   Nisha, M. (2006). understanding Extension Education. New Delhi: Kalpay Publications
6.   Parveen Pannu and Yuki Azaad Tomer. (2012). Communication Technology for Development. New Delhi: International Publishing House Pvt Ltd.
7.   Ray, G.L. (2015). Extension Communication and Management. Ludhiana: Kalyani Publishers
8.   Reddy, A.A. (2001). Extension Education. Bapatla: Sri Lakshmi Press
9.   Rogers Everett, M. (2003). Diffusions of Innovations. 5th Edition. New York: Sage Publication
10.   Singh, U.K. and Nayak, A.K. (2007). Extension Education. New Delhi: Common The Free Press, Wealth Publishers)

XXVIII.   MAJOR COURSE- MJ 15:
PRACTICALS-V:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Part A
1. Evaluation and designing of advertisements in the print media including products, services and social ads.
2. Evaluation and designing of informative and attractive labels for different type of food products.
3. Case study of banks and post offices to understand their services and products
4. Learning to fill different bank forms for depositing money, start fixed deposit or recurring deposit
5. Food adulteration tests
6. assignments on:

   a.   Consumer credit – merits and demerits
   b.   Online shopping – advantages and disadvantages
   c.   Credit and debit card usage – pros and cons
7. Visit to consumer Forums and consumer courts to understand their operational procedures
8. Identify various marks of significance like Hall mark, wool mark, silk mark etc. and know the complex modes of identity clauses
9. Visits to various types of consumer markets to find out how they function
10. Do an elaborate Market study to identify labels and packaging and the information transfer expected in different consumer products
11. Learn to distinguish one mark from another from the logo and colour of logo like eco labels, green labels
12. Calculate taxable income and accruing tax for an individual whose occupation, monthly income, savings and like are specified
13. Compare provisions made in Consumer Protection Act 1986 with COPRA 2019

Part B
1.   Planning, Preparing and Evaluating Menu during Pregnancy
2.   Planning, Preparing and Evaluating Menu during Lactation
3.   Planning, Preparing and Evaluating Menu for Infants (Supplementary Foods)
4.   Planning, Preparing and Evaluating Menu for Preschoolers
5.   Planning, Preparing and Evaluating Menu for School Going Children
6.   Planning, Preparing and Evaluating Menu for Adolescents
7.   Planning, Preparing and Evaluating Menu for Adults
8.   Planning, Preparing and Evaluating Menu for Elderly

Part C
1. Preparation of charts, posters, flash cards, Pamphlet, Notice
2. Preparation of IEC material on various topics for different group
3. Selecting the target audience
4. Project preparation on specific area in development communication
5. Case studies in development communication

Recommended Readings

1.   Gupta, D. (2007). Development communication in Rural Sector. New Delhi:
2.   Meenakshi Raman and Sangeetha Sharma. (2013). Technical Communication-Principles and Practice. New Delhi: Oxford University Press
3.   Nisha, M. (2006). understanding Extension Education. New Delhi: Kalpay Publications
4.   Parveen Pannu and Yuki Azaad Tomer. (2012). Communication Technology for Development. New Delhi: International Publishing House Pvt Ltd.
5.   Ray, G.L. (2015). Extension Communication and Management. Ludhiana: Kalyani Publishers
6.   Reddy, A.A. (2001). Extension Education. Bapatla: Sri Lakshmi Press
7.   Singh, U.K. and Nayak, A.K. (2007). Extension Education. New Delhi: Common The Free Press, Wealth Publishers

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SEMESTER VII

XXIX. MAJOR COURSE- MJ 16:
PUBLIC HEALTH NUTRITION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course description
The focus of this course is to examine the role of the dietician/nutritionist in identifying health and nutrition problems and integrating nutritional services with medical and social services within the community. This course will also provide basic knowledge and skills relevant to the practice of community nutrition, the concept of community, the role of nutrition in health promotion and perspectives for resolving community nutrition problems, Needs for assessment issues and national and state community nutrition programs, determinants of health outcomes, measurement of nutrition and health status, food and nutrition policy, legislative issues and management of community programs.

Learning objectives:
1. To know the basics of public health nutrition
2. To understand the need of prioritizing nutrition issues
3. To assess the nutritional and Health Status of an individual and the community.
4. To learn nutritional programmes and policies to overcome malnutrition
5. To understand various national and International nutritional organizations for combating malnutrition
6. To apply ICT in the formulation of community nutrition education programme

Learning outcomes:
1. Finally, the concepts and knowledge required for the delivery of community nutrition services will be applied to program planning, intervention and program evaluation
2. Gaining knowledge on nutritional programmes and policies overcoming malnutrition
3. Understanding the national, international and voluntary nutritional organizations to combat malnutrition
4. Able to organize community nutrition education programme with the application of computers.
5. Apply immunological intervention programmes to overcome epidemic of communicable diseases.

Course Content
Unit-I. Introduction to Public Health Nutrition and National Development   (12 Lectures)
Meaning and Scope of Public Health Nutrition
Roles and responsibilities of public health nutritionists
Definitions of optimum health, malnutrition (under nutrition, overweight, obesity, micronutrient deficiency), nutritional status, nutrition intervention, food and nutrient supplements, , nutrition education, morbidity, mortality rates
Nutrition – A Global Developmental Priority Importance of nutrition throughout the life cycle, dual burden of malnutrition
Sustainable Development Goals (SDGs), 12 of the 17 Goals require good nutrition to be met Ecology Consequences and of Malnutrition,
Strategies to Overcome Malnutrition Relation of nutrition to national development Nutrition and food security

Unit-II. Nutritional Assessment   (12 Lectures)

Introduction, Definition of Nutritional Status, Instruments, Standard of Reference, Age Assessment, Measurement Techniques, Weight, Linear Measurement/Height, Circumferences, Soft Tissue Subcutaneous Fat, Objective and Classification of nutritional assessment Methods
Overview of nutritional status assessment methods:

Direct Nutritional Assessment parameters - (anthropometry, clinical signs and symptoms, dietary assessment and biochemical parameters); ecological parameters – environment, Food prices, and indirect parameters – SES, Mortality and Morbidity rates

Anthropometric measurements
Techniques commonly used in public health (weight for age, weight for height, height for age & BMI for age), Comparison of indices with references
The new WHO growth standards, its use and implications and classification to define mild, moderate & severe forms of malnutrition
New WHO growth standards for Adolescents, implications of introducing new standards in school health program)

Biochemical Estimation
Name of assessment of parameters, Reference value/Desirable Level of nutrients and their metabolites in body tissues
Lipids & Lipoproteins (TG. LDL and HDL cholesterol and their ratios)
Carbohydrates (blood and urinary glucose)
Protein (serum protein, albumin, NEAA/EAA ratio, hydroxyproline index, urea/creatinine ratio, etc.)
Iron (Hb, HcT, serum iron, transferrin, ferritin)
Vitamin A (serum retinol, carotene)
Vitamin D (serum alkaline phosphatase, calcium and phosphorous)
B-complex vitamins, including Folic acid & Vitamin B12 (urinary excretion)
Vitamin C (serum ascorbic acid, whole blood ascorbic acid)
Iodine (T3, T4, urinary excretion)
Sodium, potassium and chloride
Fluoride
TB Test, HIV Test CD4 counts

Clinical Examination of common nutritional deficiencies
Specific nutrient Deficiency signs & symptoms (Vitamin A, Iron, Iodine, Zinc U, B complex vitamins etc.)
Grouping of Signs

Dietary Survey and Types of Nutritional Survey
Dietary intakes methods and understanding their usage and limitations in different field situations: 24-hour diet recall methods; Food frequency method; Weighed food inventory; food diaries and food composition methods
Rapid assessment methods for dietary intake
Dietary Diversity Score for Household, Individual, women and children

Indirect Nutritional Assessment parameters
Vital Statistics, Age Specific Mortality Rate, Morbidity and Cause of Specific Mortality.

Unit-III. Social & Behavior Change Communication   (12 Lectures)

Concepts, components and process of communication for nutrition health promotion
Definitions of Formal – non-formal communication, Participatory communication
Components of BCC (Sender, Message, Channel, Receiver)
Various types of communication – interpersonal, mass media, visual, verbal/ non-verbal.
need of SBCC in India
Social ecological model and communication for development (C4D) approach

Concepts and Theories of Social and Behavior Change Communication   (12 Lectures)
Definitions, Three characteristics, Ten overarching principles for developing SBCC program or campaign
Steps for developing a successful Social and Behavior change communication program

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Evaluating and re-planning
Training workers in nutrition education programmes
Methods of education when to teach, whom to teach
Use of computers to impart nutrition education
Organization of Nutrition education programmes

Unit –IV. National, International and Voluntary Organizations to Combat Malnutrition
Role of Nutrition in Achieving Global Targets   (12 Lectures)
Optimal Infant and Young Child Feeding: Significance of the first 1000 days of life
Improving maternal, infant and young child nutrition – WHO Global Targets 2025
Nutrition Intervention programmes in India –
Integrated Child Development Services (ICDS): ICDS Mission Mode, ICDS mission in various states
Role of AWW; Supplementary Nutrition, Bal bhog, Sakhibhog, Shishubhog
Mid-Day Meal (MDM) program
Fortification program

National Programs to Combat Micronutrient Malnutrition
Iron: National Nutritional Anemia Control Program, Nutritional Program for Control of Anemia among Adolescent Girls, National Iron Plus Initiative (NIPI)
Vitamin A: Vitamin A Prophylaxis Program (VAPP)
Iodine: National Iodine Deficiency Disorders Control Program (NIDDCP), Universal Salt Iodization (USI), Double Fortified Salt (DFS)
Diarrhea Control Program: Role of Zinc, ORS and National Deworming Campaign
Fluorosis Control Program
Organizations Working towards Meeting Global Nutrition Targets
National organization – ICAR, ICMR, CSWB, SSWB, NNMB, NIN, CFTRI, DFRL, NIPCCD and NFI, Save the Children, Tata Trusts
International Organizations - World Bank, World Health Organization (WHO), United Nations International Children's Emergency Fund (UNICEF), World Food Programme (WFP), Bill and Melinda Gates Foundation
Voluntary organizations – Global Alliance for Improved Nutrition(GAIN) Micronutrient Initiatives, CARE, CRS, AFPRO, IDA; World Alliance for Breastfeeding Action (WABA)

Unit-V. Epidemiology of Communicable Diseases   (12 Lectures)
Definition, causes, signs and symptoms, treatment and prevention of communicable diseases, Respiratory infections and intestinal infections,
Other infections- dengue, Flu
Types of immunity- active, passive and herd-group protection
Immunization agents- vaccines, immunoglobulin
Immunization schedules - National and WHO Expanded Programme on Immunization-Universal Passive, Combined, Chemoprophylaxis, non-specific measures

Recommended Readings:
1.   Park A. (2007), Park's Textbook of Preventive and Social Medicine XIX Edition M/S Banarasidas, Bharat Publishers, 1167, Prem Nagar, Jabalpur, 428 001(India)
2.   Bamji M.S, Prahlad Rao N, Reddy V (2004). Textbook of Human Nutrition II Edition, Oxford and PBH Publishing Co. Pvt. Ltd , New Delhi
3.   Bhatt D.P (2008), Health Education, Khel Sahitya Kendra, New Delhi
4.   Gibney MJ, Margetts BM, Kearney JM, Arab L (2004) Public Health Nutrition Blackwell Publishing Co. UK
5.   Swaminathan M (2007), Essentials of Food and Nutrition. An Advanced TextbookVol.I, The Bangalore Printing and Publishing Co. Ltd, Bangalore
6.   UNICEF. https://www.unicef.org/
7.   WHO.http://www.who.int/
8.   National Guidelines on Infant and Young Child Feeding. wcd.nic.in
9.   WHO Non-communicable diseases and risk factors. http://www.who.int/ncds/en/
10.   National Nutrition Mission – ICDS. icds-wcd.nic.in
11.   Ministry of

Health & Family Welfare, www.mohfw.nic.in

12.   Field guide to designing communication strategy, WHO publication-2007

13.   Communicatio n for Development (C4D) Capability Development Framework, UNICEF and 3D Change, 2009

14.   Health education: theoretical concepts, effective strategies and core competencies: a foundation document to guide capacity development of health educators/World Health Organization. Regional Office for the Eastern Mediterranean, 2012

SELECTION OF SPECIALISATION

Institute or Student may select All Courses from any of Following Groups of Specialization in any one given area of Home Science in Semester VII & VIII.

All courses (papers) of same group must be taken.

Group A-   FOOD AND NUTRITION (FN)

Group B-   HUMAN DEVELOPMENT AND FAMILY STUDIES (HDFS)

Group C-   CLOTHING AND TEXTILES (CT)

Note: Change of group once studied in a semester cannot be allowed in any circumstances unless a student quite the programme and seek re-admission.

XXX. MAJOR COURSE- MJ 17 A:
DIETETICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description
This course prepares the students to use advanced knowledge about food and nutrition for prevention as well as treatment of diseases and also maintain human health. Dietetics focuses on food management through proper planning, preparation, monitoring, implementation and supervision of a patient's modified diet and to develop basic counseling skills as dietitian.

Learning Objectives
1. Understand the role of dietitian and to maintain good nutritional status, correct deficiencies or disease conditions of the patients
2. Gain knowledge on the principles of diet therapy and designing or formulating different therapeutic diets for various disease conditions
3. Develop skill to plan and prepare therapeutic diets for prevention of disease conditions
4. Diet therapy may include prescribing specialized dietary regimes or meal plans. As entrepreneur.

Learning Outcomes:
1. Integrate knowledge of research principles and methods associated with nutrition and dietetics practice.
2. Collect, organize and assess data relating to the health and nutritional status of individuals, groups and populations.
3. Demonstrate initiative and judgment using a professional, ethical and entrepreneurial approach advocating for excellence in nutrition and dietetics.
4. Independently plan and execute a research project in regard to nutrition and dietetics practice.

Course Content
Unit-I. Concepts in Diet Therapy   **(12 Lectures)**
Growth and Scope of Dietetics
Purposes and Principles of Therapeutic Diets Modifications of Normal Diets Classification of the Therapeutic Diets,
Role of Dietitians Characteristics of Dieticians,
Hospital Dietary Food Service, Diet Counseling, Team Approach to Nutritional Care, Principles of Food Prescription, Indian Dietetic Association,
Computer Assisted Instructions **(CAI)** - Diet Planning using computers, Use of Technology in diet counseling.

Unit-II. Medical Nutrition Therapy in Obesity, Underweight and Diabetes Mellitus   **(12 Lectures)**
Etiology, Pathophysiology, Clinical symptoms, metabolic alterations, Assessment/Indicators, Lifestyle & Dietary guidelines for the following conditions
Obesity (Bariatric Surgery: types, Management)
Underweight

Diabetes Mellitus (Acute and Chronic Complications of Diabetes
Diet Modifications, Use of Food Exchange Lists, Insulin-Types and Use, Oral Hypoglycemic Agents, Carbohydrate counting, Glycemic Index, Glycemic Load)

Unit-III. Medical Nutrition Therapy in Gastro Intestinal Disorders and Diseases of the liver (12 Lectures)
Etiology, Pathophysiology, Clinical Symptoms, Assessment/Indicators, Lifestyle & Dietary guidelines for the following conditions
Diarrhea
Dysentery
Constipation and Peptic Ulcer

Jaundice Hepatitis Fatty Liver Cirrhosis Hepatic Coma

Unit-IV. Medical Nutrition Therapy in Diseases of the Cardio Vascular System and Kidney Diseases

Etiology, Pathophysiology, Clinical Symptoms, Lifestyle & Dietary guidelines for the following conditions: **(12 Lectures)**

Atherosclerosis, Hyperlipidemia, Ischemic Heart Disease, Congestive Heart Failure,

Bypass Surgery Hypertension (DASH Diets) Nephrotic Syndrome Nephrolithiasis

Acute and Chronic Renal Failure 4.10Dialysis – Principles and Types 4.11Kidney Stones

Unit-V. Medical Nutrition Therapy for Fever, Food Allergy and Cancer Febrile Conditions (12 Lectures)

Acute and chronic infectious disease-Typhoid, Tuberculosis and HIV and AIDS

Guidelines for management of tuberculosis and infectious diseases.

Food Allergy - Definition, Causes, Science and Symptoms, Types of Allergies, Diagnosis, Dietary Modifications

Gluten sensitivity and Lactose intolerance

Cancer: Etiology, Metabolic alterations, Types of Cancer, Dietary Recommendation for Cancer Survivors. Nutritional therapy for Cancer

Recommended Readings:

1.   Srilakshmi, B. *Dietetics, New* Age International P. Ltd., New Delhi, 2018.

2.   *Dietary Guidelines of Indians* – A Manual, National Institute of Nutrition, Hyderabad, 2015.

3.   Garg, M. *Diet, Nutrition and Health*, ABD Publishers, 2006.

4.   Krause,   M.V. and Mahan, L.K. *Food, Nutrition and Diet Therapy*, 9th Ed., W.B. Saunders Company, Philadelphia, 2019.

5.   Maimun Nisha, *Diet Planning for Diseases*, Kalpaz Publishers, 2016.

6.   *Dietary Guidelines of Indians* – A Manual, National Institute of Nutrition, Hyderabad, 2011.

7.   Brown,   J (2014). *Nutrition now* (7thed). Wadsworth, USA, ISBN- 13:978-1-133-93653-4, ISBN 10:1-133-93653-9

8.   Nelms   M, Sucher K (2015). *Nutrition Therapy and Pathophysiology*. (3rd edition) Cengage Learning, USA. ISBN-13: 978-1305111967, ISBN-10: 130511196n, New Delhi

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OR MJ 17 B:
CHILDHOOD AND ADOLESCENCE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description

The course introduces students to child and adolescent development. It explains basic developmental principles and psychosocial factors which influence development from conception till 18 years. It further explores the influence of a range of issues from birth through age 18.

Learning Objectives

1. Develop an understanding about the need and importance of studying child and adolescent development.
2. Develop an understanding about the historical views and theories on childhood and adolescent development.
3. Learn about the characteristics, needs and developmental tasks of infancy, early middle and late childhood, and early, middle and late adolescence.
4. Learn about the biological and environmental factors that affect development during childhood and adolescence.
5. Learn key issues which influence childhood and adolescent development.

Learning Outcomes

1. Explain the need and importance of studying childhood and adolescence as a distinctive stage of the life-span.
2. Describe the characteristics, needs and developmental tasks of infancy, early childhood, middle childhood and early and late adolescence.
3. Identify the biological and environmental factors affecting development during childhood and adolescence.
4. Analyse key issues that influence child and adolescent development.

Course Content:

UNIT-I Childhood and Adolescent Development: Introduction   (12 Lectures)

Concept, meaning and principles of 'growth' and 'development'.
Concept of critical periods of development during infancy, childhood and adolescence.

UNIT-II Historical Foundations and Theories of Childhood and Adolescent Development

Historical foundations and scientific beginnings

(12 Lectures)

Brief overview of theories of child and adolescent development – maturational, behavioral, psychosocial, cognitive, social learning,
Brief overview of theories of child and adolescent development including the maturational, behavioral, psychosocial, cognitive, social learning, ecological, and sociocultural, perspectives.

UNIT-III Development across Childhood and Adolescence   (12 Lectures)

Major characteristics of different stages of childhood and adolescence (infancy, early, middle and late childhood, puberty, early and late adolescence)
What are developmental tasks and milestones, and their importance
With reference to each domain of development (physical, cognitive, language, socio-emotional) characteristics, needs, developmental tasks and milestones of individuals from birth to 18 years are explained.

Neonate (birth–1 month)
Infancy (1 month–2 years)
Early childhood (2-6 years)
Middle childhood (6-11 years)
Adolescence (12-18 years)

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

UNIT-IV Familial and Social Influences on Childhood and Adolescent Development   (12 Lectures)
　　　　Family influences on child and adolescent development
　　　　Influence of various parenting styles on development, behavior and functioning during childhood and adolescence
　　　　Changes in self-esteem, self- concept and identity from early childhood through adolescence
　　　　Moral development from early childhood to late adolescence in relation to societal norms and social understanding
　　　　Development of gender roles and perceptions, changes in gender identity from early childhood through adolescence

UNIT-V Childhood and Adolescent Development: Key Issues   (12 Lectures)
　　　　Influence of peer relationships on development
　　　　Impact of media and its influences on development and learning
　　　　Physical, psychological and social effects of substance abuse and risk behaviors Role of nutrition in childhood and adolescent development.
　　　　Brief overview of aggression, gender roles and stereotypes, androgyny, friendship, popularity and rejection, sibling relations, juvenile delinquency, suicide, depression, elopement, puberty, early/late maturation, human sexuality, eating disorders during childhood and adolescence

Recommended Readings:

1.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Berk,　　　L.E. (2017). Child development (9th ed.). Pearson
2.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Bhogle,　　　S. (1999). Gender roles: The construct in the Indian context. In T.S. Saraswathi (Ed.), Culture socialization and human development: Theory, research and applications in India (p.p.278-300). New Delhi: Sage.
3.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Kapadia,　　　S. (2017) Adolescence in Urban India: Cultural Construction in a Society in Transition. Springer
4.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Keenan,　　　T., Evans, S., & Crowley, K. (2016). An introduction to child development. Sage.
5.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Kumar,　　　K. (1993). Study of childhood and family. In T.S. Saraswathi & B. Kaur (Eds.). Human development and family studies in India: Anagenda for research and policy, (pp.67-76). New Delhi: Sage.
6.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Lightfoot,　　　C., Cole, M., & Cole, S. (2012). The development of children (7th ed.). New York: Worth Publishers
7.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Santrock,　　　J. (2017). A topical approach to life span development (9th ed.). New NY.: Mcgraw-Hill Higher Education.
8.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Saraswathi, T.S., & Kaur, B. (1993). Human Development and family Studies in India- an Agenda for research and Policy. New Delhi. Sage.
9.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Saraswathi, T. & Oke, Meera. (2013). Ecology of Adolescence in India. Psychological Studies. DOI 58. 10.1007/s12646-013-0225-7.
10.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Saraswathi, T.S., Menon, S., & Madan, A. (eds.) (2018) Childhoods in India Traditions, Trends and Transformations. New Delhi. Routledge.
11.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Sinha,　　D.,　& Misra, R.C. (1999). Socialization and cognitive functioning. In T.S. Saraswathi (Ed.), Culture, socialization and human development: Theory, research and applications in India (pp.167-187). New Delhi: Sage.
12.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Verma,　S.,　& Saraswathi, T. S. (2002). Adolescence in India: Street urchins or Silicon Valley millionaires? In B. B. Brown, R. W. Larson & T. S. Saraswathi (Eds.), The world's youth: Adolescence in eight regions of the globe (p. 105–140). Cambridge University Press.
13.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　https://doi.org/10. 1017/CBO9780511613814.005

OR MJ 17 C:
FASHION MARKETING AND MERCHANDISING

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description
The course introduces students to the business aspects of fashion with a focus on fashion marketing and merchandising. It focuses on learning to capture the attention, of potential customers and promoting required products and services to them. It deals with how to understand, predict, and respond to consumer wants and behaviour to maximize business sales and revenue.

Learning Objectives:
1. Determine how business of fashion identifies its target market and adapts to deliver the desired satisfactions to the ultimate customer. Learns the product / merchandise presentation to potential customers.
2. Understand the buying and selling of goods for the purpose of making a profit.

Learning Outcomes:
Successful completion of this course will enable students to
1. Explain how fashion marketing and merchandising can help the fashion industry.
2. Define role and responsibilities of fashion marketers and fashion merchandisers.
3. Identify target markets and build consumer profiles for fashion products
4. Select promotional tool suitable for potential customers.Develop a promotional plan and promote a merchandise
5. Establish and use inventory control systems

Course Content
Unit-I. Understanding the Basic Concepts of Fashion Marketing and Merchandising   (12 Lectures)
    Fashion business terminologies
    Nature and scope of fashion marketing and merchandising
    The marketing environment: macro and micro
    Areas of fashion marketing and merchandising: public relations, brand management, event planning, customer relations, social media, advertising, retail buying, store management, fashion buying, visual merchandising, retail sales management
    Profiles of occupations in fashion marketing and merchandising

Unit-II. Researching the Fashion Market and Consumer   (12 Lectures)
    The fashion consumer and organizational buyer
    Segmentation and the marketing mix
    Fashion marketing research: identifying the needs and wants of target customer.

Unit-III. Fashion Marketing Communication   (12 Lectures)
    Promotion tools for fashion marketing: advertising, sales promotion, packaging, public relations and publicity. Onsite Promotion: visual merchandising framework and approaches

Unit-IV. Merchandise Management   (12 Lectures)
    Types of Merchandise
    Six rights of merchandising and their importance
    Merchandise planning, acquisition, handling and monitoring
    Supply chain management
    Inventory Control systems, Financial accounting

Unit-V. Future Trends in Buying and Merchandising   **(12 Lectures)**

The changing impact of IT on fashion retailing
The impact of new manufacturing techniques
The fashion buyers of the future
The fashion merchandiser of the future
Future technologies impacts on the consumer
Other types of fashion retail competition

Recommended Readings:

1. Bliss, L. L. (1995) Study Guide Visual Merchandising and Display 3rd ed. Fairchild Publications.
2. Blythe, J. (2006), Principles and Practice of Marketing, Thomson, London.
3. Easey M. (2009), Fashion Marketing, 3rd ed. United Kingdom: Blackwell Publishing
4. Elaine, S. (2013) The Dynamics of Fashion. 4th ed. New York: Bloomsbury publication
5. Kotler, P. and Gary, A. (2001) Principles of Marketing. 9th ed. Upper Saddle River, N.J.: Prentice Hall
6. Wolfe, M. (2009) Fashion Marketing & Merchandising, 3rd ed. United States:
7. Goodheart-Willcox Publishing
8. https://www.slideshare.net/kotharivr/fashion-merchandising-ebook

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XXXI. MAJOR COURSE- MJ 18 A:
NUTRITION FOR HEALTH AND PHYSICAL FITNESS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description

Integration and application of principles of sound nutrition and physical activities to optimize the physiological, psychological, and social lifelong development of the individual and use of scientific principles and current technological advances, helps to assess and evaluate physical fitness, body composition, dietary patterns, energy expenditure, and their interrelationships.

Learning Objectives:

1. Understand the Importance of Nutrition, Fitness and Health
2. Gain Knowledge on Exercise Physiology and Nutrition for Physical Activity
3. Comprehend the Technique and Gadgets for Physical Activity Training
4. Understand the Risks of Hypokinetic Diseases
5. Understand the principles of Exercise and Stress Management

Learning Outcomes:

Upon successful completion of the course students shall be able to:

1. Explain the principles of physical fitness and nutrition (such as body composition, energy intake, energy expenditure, and the acute and chronic physical changes related to exercise and nutrition) complement each other in helping to develop physiological well-being and overall health.
2. Explain the principles of fitness and nutrition (such as setting realistic short-term behavior change goals and the relationship of exercise and diet to stress reduction) complement each other in helping to develop psychological well-being and overall health.
3. Identify some of the social and cultural influences on food habits and exercise/activity patterns.
4. Evaluate current nutritional information with regard to its contribution to Health and physical fitness.

Course Content

Unit-I. Health and Fitness (10 Lectures)

Definition, Components and Relationship among Physical Fitness, Wellness and Health Personalized approach
Benefits of fitness training

Unit-II. Exercise Physiology and Nutrition for Physical Activity (16 Lectures)

Pulmonary, Cardiovascular Regulation and integration, Skeletal and neural control,
Endocrines and exercise Nutrition & Physical performance
Physical fitness: cardio respiratory fitness, muscular strength, muscular endurance, body composition and flexibility
Energy systems, muscles and physical performance-ATP-CP energy systems, Lactic Acid energy systems, Oxygen energy systems, Glycogen depletion
Endurance Training-Muscle and Muscle fibers
Optimal Nutrition and Energy needs for optimum performance e.g. athletes Exercise and fluid loss, Hydration, Nutrition supplements, Ergogenic Aids

Unit-III. Physical Activity Training (12 Lectures)

Aerobic and anaerobic training -To enhance Cardio Vascular Endurance, Flexibility and Body Composition,
Measurement of PAL,
Benefits of Fitness training and Gadgets for measuring PA –Motorized Treadmill, (aerobic Fitness),

Functional Trainer,

Fluid Rower (Upper body), Elliptical Bicycle and Bicycle Ergometer (Lower body), 3.10 Stretch Trainer (Whole body),

3.11 Multi Gym (9, 12, 16 station) for different muscle groups

Unit-IV. Diseases due to Faulty/Poor Food Habits and Physical Inactivity   (12 Lectures)

Life Style related diseases/disorders (Non communicable Disease conditions) - Meaning Causative Factors and Diet Modification/evidence-based guidelines for

Underweight, Obesity,

Diabetes mellitus, Hypertension, Cancer

Cardiovascular Disease, Anemia

Unit-V. Exercise, Stress and Health Management   (10 Lectures)

Stress Assessment and Management

Techniques-Exercise at medium and high altitudes, Underweight, Overweight and Obesity, Relaxation Techniques,

Yoga and Meditation for Health, Clinical Exercise

Physiology for Cancer,

CV and Pulmonary rehabilitation

Recommended Reading

1.   Werner W. K Hoejer (1989), *Life time Physical Fitness and Wellness*, Morton Publishing Company, Colorado.
2.   Mishra, S. C (2005) *Physiology in Sports*. Sports Publication, New Delhi
3.   Greenberg, S. J and Pargman, D (1989) *Physical Fitness – A Wellness Approach Prentice* Hall International (UK) Limited, London
4.   Swaminathan M. (2008) *Essentials of Food and Nutrition* Bangalore Printing Publishing Co. New Delhi
5.   McArdle, W. D, Frank I. Katch, F. I and Victor L. Katch (1996) *Exercise Nutrition: Energy Nutrition and Human Performance*. William & Wilkin Publishing USA.
6.   Mahan, K and Stump, E. S (1996) Krause *Food and Nutrition and Diet Therapy* W.B Saunders Company, USA.

OR MJ 18 B:
ADULTHOOD AND AGING

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description
The course introduces students to the concept of adult development and aging. It explains basic developmental transitions in adulthood and late adulthood or old age. Various facets of adult development across domains and developmental needs of the elderly are discussed. Cultural and gender differences in the experiences of aging are included.

Learning Objectives
1. Understand the theoretical significance of adulthood in life span development with special reference to aging
2. Develop a culturally relevant understanding of issues and concerns of adulthood and aging
3. Sensitize students to transitions in adult life and preparation for old age from a gender perspective
4. Create awareness about policy provisions for adults and elderly across various contexts (work, family, retirement, health, welfare).
5. Prepare students for outreach activities with varied groups of adults and elderly.

Learning Outcomes
1. Explain variations in the experiences of adulthood and old age across cultures and genders
2. Discuss factors that affect physical, cognitive and socio-emotional development during adulthood and old age
3. Identify developmental needs of varied groups of adults and elderly across contexts
4. Execute developmental programs of intervention for varied groups of adults and elders

Course Content
Unit-I Stages of Adult Development and the Process of Aging: A Theoretical Overview   (10 Lectures)
Contemporary changes, increase in life expectancy and decrease in death rate
Stages of Adulthood and Aging: Emerging adulthood (18-25), mature adulthood (25-45), middle age (45-55), late adulthood (55-65), old age (65 and above)
Characteristics and needs in different stages of adulthood
Theories of adult development and aging (Erikson's theory, Wisdom theories, Disengagement, Activity, Ashrama Dharma framework)

Unit-II Development in Emerging and Early Adulthood   (12 Lectures)
Definition, characteristics, developmental tasks
Physical changes - Cardiovascular and Respiratory systems, Motor performance, Immune system
Cognitive development - Changes in mental abilities - Crystallized and fluid intelligence, Information processing - Speed, Attention, Memory, Problem solving and Creativity
Life transitions and adjustments during early adulthood: Exploring sexual orientations, stable romantic relationships, alternative life choices, marriage, family life, parenting and caregiving, social mobility
Cultural, gender and social class variations in the experience of adulthood and aging
Interpersonal relationships and responsibility challenges in different spheres of life (balancing work and family, socio-cultural responsibilities, health challenges, emotional stresses, financial security)

Unit-III Development in Middle and Late Adulthood   (12 Lectures)
Definition, characteristics, developmental tasks,

Physical and cognitive changes, Changes in interests, Social, emotional, vocational changes, Relationships at midlife - marriage and divorce, changing parent-child relationships, grandparenthood, siblings, friendships, relationship across generations- Middle aged children and their aging parents

Preparation for old age (From work to retirement, emotional, financial, social and familial transitions,)

Contextual variations in the experience of late adulthood and aging (rural-urban, socioeconomic, employed-unemployed, organized-unorganized sector etc.)

Unit-IV Development in Old Age (14 Lectures)

The phenomenon of aging - biological, psychological, sociological and functional age; optimal aging, normal aging, primary and secondary aging and successful aging

Gerontology - Definition, concept, importance and scope

Types - Social gerontology, Bio gerontology, Medical gerontology (Geriatric)

Theories of aging process – Sociological, Psychological and Biological theories of aging. Psychosocial development in old age,

Changing relationships in old age – marriage and divorce, widowhood, never-married, childless older adults, siblings, friendships

Myths and realities of aging Adjustments - Physical and mental changes,

Vocational adjustments- adjustment to retirement, different living arrangements, familial roles and relationships.

Dealing with stressful life events, divorce, terminal illness, death and bereavement Overview of Alzheimer, Dementia, Parkinson's disease Common abuses among elderly-physical, emotional, psychological, verbal and financial, reporting abuse, Adult Protective Services.

Policy provisions for the elderly: Global and national

Unit-V Aging and Well-Being in the 21st Century (12 Lectures)

Demographic profile of elderly in the world and India

Living arrangements (intergenerational families, old age homes, institutions etc.) and new models of care giving

Overcoming mental health challenges (loneliness, depression, anxiety, dementia, other age-related diseases etc.)

Life style changes and holistic health (physical well-being, food choices, yoga and restorative fitness, counseling and therapy, social and interpersonal support systems)

Technology and aging (use of internet, advances in health and medical treatment, gadgets supporting safety and security of elderly)

Leisure time activities and innovative models of developmental intervention

Recommended Readings:

1. Arnett, J. J., & Jensen, L. A. (2019). Human Development: A cultural approach (3rd ed.). New York: Pearson.
2. Cavanaugh, J., & Blanchard-Fields, F. (2011). Adult development and aging (7th ed). Stamford, CT: Cengage Learning.
3. Kakar, S. (Ed.). (1993). Identity and adulthood. New Delhi: Oxford University Press.
4. Lamb, S. E. (Ed.). (2012). Aging and the Indian diaspora: Cosmopolitan families in India and abroad. New Delhi: Orient Blackswan.
5. Menon, U. (2013). Women, well-being and ethics of domesticity in an Odia temple Town. New Delhi: Springer.
6. Rajan, I. S., Risseeuv, C., &Perar, M. (Eds.). (2008). Institutional provisions and care for the agedperspectives from Asia and Europe. New Delhi: Anthem Press.
7. Reddy, P.A., Devi, U., &Harinath, N. (2010). Ageing: The global phenomena: issues and strategies. New Delhi: Sonali.
8. Sahoo, F. M. (Ed.). (2009). Behavioral issues in ageing: Care, concern and commitment. New Delhi: Concept Publishers.
9. Sahu, C.

(1988). Problems of aging among Indian tribes. New Delhi: Sarup &Sons.

10.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Shankardass,
M.K. (Ed.). (2020). Ageing issues and responses in India. New Delhi: Springer.

11.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Soneja,　　S.
(2001). Elder abuse in India. Report for the World Health Organization.

12.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Srivastava,　V.
(2010) Women and ageing. New Delhi: Rawat Publisher.

13.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Tanner,　D.,　&
Harris, J (2007). Working with the older people. New York: Routlege publishers.

14.　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Tornstram,　L.
(2005). Gerotranscendence: A developmental theory of positive aging. New York: Springer.

OR MJ 18 C:
APPAREL CONSTRUCTION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description

The course introduces the basic principles of apparel construction including pattern and fabric selection. The course aims at developing skills in using knowledge of apparel construction required to be employed in the field of apparel industry and entrepreneurship. It deals with the tools and techniques required for apparel construction. It covers the pattern making and grading techniques required for making apparels. It gives hands on experience for apparel construction which is the pre requisite of apparel industry.

Learning Objectives:
1.   Learns the requirement for apparel construction
2.   Understand the use, significance and selection of tools and equipment for apparel construction
3.   Understand the coordination of fabric, pattern and supportive material.
4.   Enhance the understanding of drafting and pattern making.
5.   Acquire skills of apparel construction
6.   Understand fit of the garment.

Learning Outcomes:

Successful completion of this course will enable students to
1.   Know the requirements for apparel construction
2.   Describe the use and significance of tools and equipment for apparel construction
3.   Explain drafting and pattern making method.
4.   Explore the skills of apparel construction
5.   Adapt basic block to different designs.
6.   Evaluate fit of the garment

Course Content

Unit-I. Introduction to Apparel Construction   (12 Lectures)

Elements of apparel construction

Grain, Seams, Finish, Workmanship Guides to sew fabrics

Threads, needles, seams and its co-relation to fabrics Uses of essentials tools and supplies

Sewing Needles, hand sewing tools, marking tools, measuring tools, cutting tools, pressing tools, threads, special tools, trims & tapes, buttons & closures.

Unit-II. Basics of Apparel Construction   (12 Lectures)

Body measurements (BM):

Principles of taking BM,

Taking accurate body measurements

Measuring from a garment.

Size charts

Standard size charts for Kids, Men and Women

Ease allowance for various fit.

Comparison of standard size charts from different countries and brands

Fabric Requirement:

Calculation of fabric needed for various garments.

Optimising the fabric requirement

Principles and methods of grading and sizing

Unit-III. Pattern Making   (12 Lectures)

Introduction to pattern making

Pattern making tools

Pattern making techniques: Drafting, Draping and Flat pattern technique

Darts and their manipulation, added fullness and contouring.

Principles of pattern making for: Upper garment, Lower garment, Sleeves, Collar, Dresses

Unit-IV. Fabric Layout, Cutting and Marking   **(12 Lectures)**
      Fabric preparation
      Laying out checks, plaids & directional fabrics,
      Marking with chalk, pencil or liquid markers
      Cutting and sewing tips

Unit-V. Selection of Fabric and Accessories   **(12 Lectures)**
      Fabrics: Easy to stitch, special fabrics, textured and patterned fabrics Selection of appropriate fabrics for apparels.
      Accessories and trimmings: types and use
      Appropriate combination of accessories, trims and materials

Recommended Readings:
1. Aldrich, W. (1988). Metric Pattern Cutting. Unwin Hyman Ltd., London.
2. Amaden, C.& Crawford (1995) Fashion Your Own Skirts the Simple way Amaden-Crawford Associates, USA.
3. Armstrong, H. (2012). Patternmaking for Fashion Design Pearson Education, Inc, New Delhi.
4. Bray N., (1986) Dress Pattern Designing: The Basic Principles of cut and fit, Blackwell Publishing.
5. Hollen, N.R. &Kundel, C.J. (1993). Pattern Making by the Flat-Pattern Method. Prentice Hall, New Jersey.
6. Kopp, E., Rolfo, V. & Zelin, B. (1995). Designing Apparel through the Flat Pattern. Fairchild Publications New York.
7. Singer. (1989). Sewing Pants that Fit. Cowles Creative Publishing Inc. Minnesota, USA
8. Thomas, A. J. (1993). Art of Sewing. UBS Publishers Distributions Ltd. New Delhi
9. Zarapkar, K.R. (2008). Zarapkar System of Cutting. Navneet Publication (India) Ltd., Mumbai.

XXXII.   MAJOR COURSE- MJ 19 A/ B/ C:
PRACTICALS-VI A:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) 120 Hours

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Part I
1.   Assessing the nutritional status of an individual, group and community in different settings
2.   Conducting 3 Day Weighment Survey for an Individual
3.   Planning and conducting nutrition education programmes in a selected village for 3 days
4.   Spot observations based on the observations through field visits in ICDS centres, MDM school programme

Part II
1.   Preparation of Hospital Diets- Modification of diet with respect to texture, consistency and nutrients
2.   Modification of Diets in Obesity
3.   Modification of Diets in Underweight
4.   Modification of Diets in Diabetes Mellitus
5.   Diets for Febrile Conditions – TB, Typhoid
6.   Modification of Diets in Peptic Ulcer, Constipation and Diarrhea
7.   Modifications of Diets in Liver Diseases – Jaundice, Hepatitis and Cirrhosis
8.   Diets for Nephritis, renal Failure and renal Calculi, Protein Restricted Diets
9.   Diets for Cardiovascular diseases – Sodium Restricted, Fat Controlled
10.   Modification of Diet for Cancer Patients and HIV Infected Person
11.   An Overview/desk review on DASH diet, Mediterranean diet, Paleo diet, FODMAP diet, Keto diet VLCD etc.

Part III
1.   Aerobic and Anaerobic Exercises
2.   Relaxation Techniques,
3.   Stress Assessment and Management
4.   Yoga and Meditation
5.   Visit to Fitness Centre: Observational report and 2 Case studies
6.   Desk review of ergogenic aids available in the market
7.   Use of non-invasive equipment's like Pedometer, pulse oximeter, step test, Omrans body composition analyser, home monitoring BP equipment to assess the nutritional status

Recommended Readings:
1.   Srilakshmi, B. *Dietetics, New* Age International P. Ltd., New Delhi, 2018.
2.   *Dietary Guidelines of Indians* – A Manual, National Institute of Nutrition, Hyderabad, 2015.
3.   Krause, M.V. and Mahan, L.K. *Food, Nutrition and Diet Therapy*, 9th Ed., W.B. Saunders Company, Philadelphia, 2019.
4.   Maimun Nisha, *Diet Planning for Diseases*, Kalpaz Publishers, 2016.
5.   Werner W. K Hoejer (1989), *Life time Physical Fitness and Wellness*, Morton Publishing Company, Colorado.
6.   Greenberg, S. J and Pargman, D (1989) *Physical Fitness – A Wellness Approach Prentice* Hall International (UK) Limited, London
7.   Swaminathan M. (2008) *Essentials of Food and Nutrition* Bangalore Printing Publishing Co. New Delhi
8.   McArdle, W. D, Frank I. Katch, F. I and Victor L. Katch (1996) *Exercise Nutrition: Energy Nutrition and Human Performance*. William & Wilkin Publishing USA.

OR MJ 19 B:
PRACTICALS-VI B:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Part I
1. Assessing the nutritional status of an individual, group and community in different settings
2. Conducting 3 Day Weighment Survey for an Individual
3. Planning and conducting nutrition education programmes in a selected village for 3 days
4. Spot observations based on the observations through field visits in ICDS centres, MDM school programme

Pert II
1. Preparation of an album on developmental milestones of children and adolescents.
2. Visit to a pediatric ward
3. Visit to an Anganwadi
4. Interaction with counselors/clinical psychologists
5. Carry out a case study of an adolescent boy and girl using multiple methods
6. Select a topic related to a significant developmental problem or issue faced by children and adolescents and describe ways to assist them, their teachers and parents to deal with the problem.

Part III
1. Preparation of an album on developmental transitions, individual and family life transitions during adult life.
2. Visit to old age home or specialized living arrangements for elderly.
3. Visit to leisure facilities for elderly like laughing clubs, recreational clubs
4. Visiting your parents' workplace to understand their roles and responsibilities.
5. Documenting your mother's and grandmother's life aspirations and experiences before and after marriage.
6. Preparing a list of specialized services for the elderly in the city and / or preparing an elderly support kit (support with amenities, important phone numbers, medicines, reminders etc.)
7. Planning a hands-on workshop session for teaching internet and smart phone use to elderly
8. Interviewing elderly couples about their relationship, life challenges and satisfactions
9. Planning a panel discussion or awareness session on welfare policies and policy recommendations for older persons in India
10. Discussing intergenerational relationships of emerging/young adults and parents as portrayed in cinema, advertisements and social media

Recommended Readings:
1. Kapadia, S. (2017) Adolescence in Urban India: Cultural Construction in a Society in Transition. Springer
2. Keenan, T., Evans, S., & Crowley, K. (2016). An introduction to child development. Sage.
3. Kumar, K. (1993). Study of childhood and family. In T.S. Saraswathi & B. Kaur (Eds.). Human development and family studies in India: Anagenda for research and policy, (pp.67-76). New Delhi: Sage.
4. Saraswathi, T.S., & Kaur, B. (1993). Human Development and family Studies in India- an Agenda for research and Policy. New Delhi. Sage.
5. Saraswathi, T.S., Menon, S., & Madan, A. (eds.) (2018) Childhoods in India Traditions, Trends and

Transformations. New Delhi. Routledge.

6.   Sinha, D., & Misra, R.C. (1999). Socialization and cognitive functioning. In T.S. Saraswathi (Ed.), Culture, socialization and human development: Theory, research and applications in India (pp.167-187). New Delhi: Sage.

2. Verma, S., & Saraswathi, T. S. (2002). Adolescence in India: Street urchins or Silicon Valley millionaires? In B. B. Brown, R. W. Larson & T. S. Saraswathi (Eds.), The world's youth: Adolescence in eight regions of the globe (p. 105–140). Cambridge University Press. https://doi.org/10.1017/CBO9780511613814.005

3. Reddy, P.A., Devi, U., & Harinath, N. (2010). Ageing: The global phenomena: issues and strategies. New Delhi: Sonali.

4. Sahoo, F. M. (Ed.). (2009). Behavioral issues in ageing: Care, concern and commitment. New Delhi: Concept Publishers.

5. Soneja, S. (2001). Elder abuse in India. Report for the World Health Organization.

6. Srivastava, V. (2010) Women and ageing. New Delhi: Rawat Publisher.

7. Tanner, D., & Harris, J (2007). Working with the older people. New York: Routlege publishers.

8. Tornstram, L. (2005). Gerotranscendence: A developmental theory of positive aging. New York: Springer.

OR MJ 19 C:
PRACTICALS-VI B:

Marks: Pr (ESE: 3Hrs) =100	**Pass Marks: Pr (ESE) = 40**

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Part I
   1.   Assessing the nutritional status of an individual, group and community in different settings
   2.   Conducting 3 Day Weighment Survey for an Individual
   3.   Planning and conducting nutrition education programmes in a selected village for 3 days
   4.   Spot observations based on the observations through field visits in ICDS centres, MDM school programme

Part II
   1. Identify the marketplace and evaluate customers, as well as trends affecting future sales
   2. Case studies to understand the buying procedures of various types of fashion retail businesses and also analyze the environment in which buying occurs.
   3. Review trends, emerging and the growing retail formats where will consumers make purchases through literature and field visits
   4. Describe your customers; identifying changes in consumer markets, understanding buying motives and learning about customers through data warehousing and data mining
   5. Plotting customer profiles for various fashion businesses
   6. Visual merchandising projects to be undertaken for different fashion businesses
   7. Interact with Store managers to understand how they develop and prepare merchandise plan as well as a merchandise assortment for their business. What are their best practices?
   8. Visit to various type of markets
   9. Case study of fashion business to understand its supply chain management and inventory control systems

Part III
   1.   Development of basic block
        a)   Upper and
        b)   Lower
   2.   Drafting and construction of different types of
        a)   Collars
        b)   Plackets and
        c)   Sleeves
   3.   Drafting and construction of
        a)   Salwar
        b)   Churidar
   4.   Adaptation of basic block for designing of
        a)   Frock
        b)   Kurta
        c)   Blouse
        d)   Shirt
   5.   Construction of above designed patterns.
        a) Maintaining of journal with the details of the practical work in writing and supported with samples.

Recommended Readings:

1. Bliss, L. L. (1995) Study Guide Visual Merchandising and Display 3rd ed. Fairchild Publications.
2. Blythe, J. (2006), Principles and Practice of Marketing, Thomson, London.
3. Elaine, S. (2013) The Dynamics of Fashion. 4th ed. New York: Bloomsbury publication
4. Kotler, P. and Gary, A. (2001) Principles of Marketing. 9th ed. Upper Saddle River, N.J.: Prentice Hall
5. Wolfe, M. (2009) Fashion Marketing & Merchandising, 3rd ed. United States: Goodheart-Willcox Publishing
6. Aldrich, W. (1988). Metric Pattern Cutting. Unwin Hyman Ltd., London.
7. Amaden,C.& Crawford (1995) Fashion Your Own Skirts the Simple way Amaden-Crawford Associates, USA.
8. Armstrong, H. (2012). Patternmaking for Fashion Design Pearson Education, Inc, New Delhi.
9. Bray N., (1986) Dress Pattern Designing: The Basic Principles of cut and fit, Blackwell Publishing.
10. Hollen, N.R. &Kundel, C.J. (1993). Pattern Making by the Flat-Pattern Method. Prentice Hall, New Jersey.
11. Kopp, E., Rolfo, V. &Zelin, B. (1995). Designing Apparel through the Flat Pattern. Fairchild Publications New York.
12. Singer. (1989). Sewing Pants that Fit. Cowles Creative Publishing Inc. Minnesota, USA
13. Thomas, A. J. (1993). Art of Sewing. UBS Publishers Distributions Ltd. New Delhi
14. Zarapkar, K.R. (2008). Zarapkar System of Cutting. Navneet Publication (India) Ltd., Mumbai

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SEMESTER VIII

I.   MAJOR COURSE- MJ 20:
STATISTICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
On completion of this course, the students will be able to understand
1. Role of statistics in research
2. Application of Statistical Techniques to research data for analysis and interpretation of data meaningfully

Course Learning Outcomes:
On successful completion of this course the student should know:
3. Application of statistics in research and data analysis.
4. Application of statistical tools in data treatment and interpretation

Course Content:
UNIT I
Conceptual understandings of statistical measures. Classification and tabulation of data,
Measures of central tendencies, measures of variables. Frequency distribution, histogram, frequency polygon, Ogive

UNIT II
Binomial distribution. Normal distribution – use of normal probability table

UNIT III
Experimental Designs, Completely randomized Design, Randomized block design, Latin Square design, Factorial design, Trend analysis

UNIT IV
Parametric and non-parametric test
Testing of Hypothesis, Type I and Type II Errors, Level of Significance
Chi-Square Test, goodness of fit, independence of attributes, 2x2 and rxc contingency table
Application of 't' test for small sample, difference in proportion of means and difference in means
Correlation, coefficient of correlation, rank correlation
Regression and prediction
Analysis of Variance- one way and two-way classification

UNIT V
Computer and statistics. Statistical Software. SPSS, R Studio software, Microsoft Excel.

Recommended Readings:
1.   Das, N.G., Statistical Methods, Mc Graw Hill
2.   Gupta, S.C., Fundamentals of Statistics, Himalaya Publishing House, 7th Edn.
3.   Gupta, S.P., Statistical Methods, S Chand & Sons
4.   Gun, A.M., Gupta, M.K., and Dasgupta, B., Fundamentals of Statistics, World Press
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II.   ADVANCED MAJOR COURSE- AMJ 1 A:
FOOD SAFETY, SANITATION AND HYGIENE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course description
A study of food safety, hygiene and sanitary practices in food industries causes investigation, control of illness caused by food contamination (Hazard Analysis Critical Control Points); and work place safety standards in Food Service Industries

Learning objectives
1.   Learn the various aspects of food safety
2.   Understand about food laws and labeling
3.   Understand the need for consumer education

Learning outcomes
1.   Upon completion of this course, the student will be able to: 1. Identify causes of and prevention procedures for food-borne illness, intoxication, and infection.
2.   Demonstrate good personal hygiene and safe food handling procedures; describe food storage and refrigeration techniques; explain sanitation of dishes, equipment, and kitchens including cleaning material, garbage, and refuse
3.   Discuss Occupational Safety and Health Administration (OSHA) requirements and effective workplace safety programs in Food Service Industries.

Course Content
Unit-I. Introduction to Food Safety and adulteration, Basic Principles of Food Safety   (12 Lectures)
Food contamination: definition Sources of contamination
Difference between food poisoning and food infection
Safety in food processing -a. Food procurement; b. Storage; c. Handling; d. Preparation e. Safety of leftover foods
Frame-work for creating enabling environment for serving safe & nutritious food at the workplace.
Regulatory compliance requirements for the canteen establishments, Food Service Industries Safe & nutritious food tips for the employee
Factors affecting food safety and food spoilage:
Food adulteration - definition, types of adulteration in various foods- intentional, incidental and metallic contaminants

Unit-II. Food Laws and Regulations   (12 Lectures)
National Legislation – Essential Commodities Act,
Standard of Weight and Measures Act, ISI, Mark of BIS, Agmark and PFA, FPO, Food Safety and Standards Bill 2005,
International Laws and Agreements - FAO, WHO, Codex Alimentarious, WTO, JEFA, APEDA, ISO 22000 series,
Hazard Analysis Critical Control Point (HACCP): principles of HAACP, applications of HACCP

Unit-III. Current Food Safety Standards in India   (14 Lectures)
Current Food Safety regulations 2001,
Food Safety and Standards Authority of India, objectives of developing food safety standards, enforcement of structure and procedure,
role of food analyst, safety analysis, action by designated officer and report of food analyst
Food Safety Management System (FSMS) Good Practices/ PRPs - HACCP, GMP, GHP Management Element / System
Statutory and regulatory requirements
Certification - HACCP, ISO 22000, FSSC 22000

Unit-IV. Sanitation Procedures   **(12 Lectures)**

Basic Principles of Hygiene and Sanitation Personal hygiene and Environmental hygiene Methods of Sanitation and Hygiene

Sterilization and disinfection using heat and chemicals

Waste product handling and control- Solid and liquid waste disposal Control of infestation- Pest control

Cleaning and sanitizing- need for efficient cleaning program, cleaning agents, equipment's,

Methods to wash, rinse and sanitizing food contact surfaces. Importance and methods of pest control;

Outlining methods of disposal of liquid, solid and gaseous waste

Unit-V. Importance of Personal Hygiene of Food Handlers   **(10 Lectures)**

General principles of hygiene – personal and environmental hygiene, hygienic practices in handling and serving foods, planning and implementation of training programme for health person

Recommended Readings:

1.   Mahtab,   S,
Bamji S, Kamala Krishnaswamy, Brahmam G.N.V, *Text Book of Human Nutrition,* Third Edition, Oxford and IBH Publishing Co. P. Ltd., New Delhi, 2012.
2.   Srilakshmi,   B.,
Dietetics, New Age International (P) Ltd., New Delhi, 2013.
3.   Swaminathan,
M., *Advanced Textbook on Food and Nutrition*, Vol. 1, Second Edition, Bangalore Printing and Publishing Co. Ltd., Bangalore, 2012.
4.   *Dietary*
Guidelines for Indians, ICMR, National Institute of Nutrition.

OR AMJ 1 B:
INTERPERSONAL RELATIONSHIP AND FAMILY DYNAMICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description
The course prepares students for an understanding of contemporary interpersonal relationships in families and in society, from a psycho-social perspective. It includes a focus on concepts and theories of interpersonal communication, with an emphasis on types of relationships (family/peers/workplace), relationship development, communication strategies, stress and conflict management.

Learning Objectives
1. Understand interpersonal relationships and family dynamics in contemporary India.
2. Understand one's own self and others with the aim of improving interpersonal relationships.
3. Understand theories and perspectives related to interpersonal relationships and family dynamics.
4. Develop an insight into interpersonal stress, conflict and its resolution.

Learning Outcomes
1. Explain basic components and processes involved in interpersonal relationship
2. Describe theoretical perspectives in understanding interpersonal relationships and family dynamics.
3. Use one's self-awareness in understanding significant others. Illustrate the significance of self-awareness in our understanding of significant others.
4. Formulate strategies for developing positive dynamics in different relationships and managing conflict.

Course Content
Unit-I Understanding the Self   **(12 Lectures)**
Self-Awareness—personality characteristics, cultural beliefs, values, expectations and ideas guiding behavior
Self-identity— Identifying one's own philosophy and goals of life (influenced by personal history, socialization and context)

Personality—factors that shape one's personality and its influence on behavior and interpersonal communications
Self with family/parents/siblings, peers, social/professional organizations The impact of media on the self

Unit-II Perspectives and Theories   **(10 Lectures)**
Perspectives: On friendships, love, family and other interpersonal relationships
    Ethological Perspective
    Psychological Perspective
    Sociological Perspective
    Cross-cultural perspectives
Theories:
    Social Exchange Theory
    Triangular theory of love - Robert Sternberg

Unit-III Basics of Interpersonal Communication   **(10 Lectures)**
Process and components of basic communication
Interpersonal communication: communication of ideas and feelings, self-disclosure, crediting and criticism

Nurturing positive interpersonal communication and dynamics: perspective taking, empathy, listening and feedback skills.

Resolving interpersonal conflicts: Types of conflicts and management skills (in relation with marital, parental, workplace, family, and friends)

Unit-IV Life Choices (Education, Career, Romantic Relationships)   (12 Lectures)

Engagement with life goals and conscious life choices- in view of personal philosophy, demands of the family, peers, societal norms.

Understanding intimate, love and romantic relationships within a cultural context

Career choices and professional relationships- developing trust, mutual respect, mindfulness, appreciation for diversity and open communication.

Understanding the role of adjustments in relationships- myths, misconceptions and factors influencing adjustment patterns.

Unit-V Family Dynamics   (16 Lectures)

Understanding Family Dynamics- Definition, function and scope

Factors that shape roles, relationships and family dynamics (family size, age composition, structure, social and financial status, gender and ordinal position, power, hierarchy and patriarchy, employment) and how these dynamics shape individual personality and behavior.

Change and evolution of the family - Family life cycle and stages

Changing roles and dynamics through significant life events: romantic relationships, partner selection, marriage, childbirth, parenting, career trajectories and economic status, health issues, loss of loved ones.

Gender norms and roles in family dynamics

Interpersonal communication within families: Managing expectations (family/self/society), self-goals, adjustments and negotiations.

Forms of family crisis: Marriage, divorce/separation, remarriage, financial instability, poor work-family balance, illness, death, childlessness, child abuse/neglect, family violence, peer pressure, addiction, rape, suicide, unemployment, natural disasters, epidemics and wars.

Family cohesion- the role of effective communication, compassion, perspective-taking, role distribution, positive conflict resolution, and teamwork.

Agencies offering support: Marriage and family therapists, Family courts, Child guidance clinics, counseling and rehabilitation centers.

Recommended Readings:

1. Arnett, J.J. (2005). Youth, cultures and societies in transition: The challenge of growing up in a globalized world. In F. Gale & S. Fahey. (Eds.), Youth in Transition – The challenges of generational change in Asia (pp 22-35). Bangkok: Regional Unit for Social and Human Sciences in Asia and the Pacific.
2. Baron, R. A., Byrne, D., &Branscombe, N. R. (2006). Social psychology. ND: Pushp Print Services.
3. Chaudhary, N., & Shukla, S. (2019). Family, identity, and the individual in India. In G. Misra (Ed.), Psychology: Volume 2: Individual and the social: Processes and issues (pp.143-189). New Delhi, India: Oxford University Press.
4. D'cruz, P., & Bharat, S. (2001). Beyond joint and nuclear: The Indian family revisited. Journal of Comparative Family Studies, 32(2), 167-194.
5. Duck, S. (1998). Human relationships. ND: Sage.
6. Ganguly-Scrase, R. (2007). Victims and agents: Young people's understanding of their social world in an urban neighbourhood in India. Young, 15, 321-341.
7. Gardiner, H.W., Mutter, J.D. &Kosmitzki, C. (1998). Lives across cultures: cross-cultural human development. Boston: Allyn and Bacon.
8. Gudykunst, W. B., & Toomey, S. T. (1998). Culture and interpersonalcommunication. ND: Sage.
9. Mines, M. (1998). Conceptualizing the person: Hierarchical society and Individual autonomy in India. American Anthropologist, 90(3), 568-579.

10.   Pestonjee, D. M.
(1992). Stress and coping: The Indian experience. New Delhi: Sage
11.   Weiten, W., &
Llyod, M. A. (2004). Psychology applied to modern life. Singapore: Thompson Asia Pvt. Ltd.

OR AMJ 1 C:
TEXTILE DESIGN AND ILLUSTRATION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description
Design and development of textiles is the key to the fashion world. This course aims to develop innovative approaches to design by understanding the fundamentals of design. It emphasizes on building a variety of skills, in combination with theoretical knowledge and practical application. It also focuses on knowledge and techniques needed to produce fashion drawings along with the vocabulary of clothing styles and accessories. It will lead to the development of students' intellectual abilities, creativity, independence, critical self-awareness, imagination and skills that will enhance global employment opportunities on completion of the course

Learning Objectives:
1. Understand the principles and elements of design.
2. Apply the principles and elements of design in textiles and fashion design.
3. Explore and learn sketching and drawing techniques to represent styles and fabrics in fashion.
4. Learns basic traditional media methods to develop creative and customized fashion illustrations
5. Design apparels and accessories for men, women and children.

Learning Outcomes:
Successful completion of this course will enable students to
1. Define and apply the principles and elements of design in textiles and fashion design.
2. Design and create visual compositions in fashion illustration and explains fashion apparel construction when illustrating garments.
3. Analyze fabrics and their tactile/visual qualities to render them appropriately.
4. Apply basic traditional media methods to develop creative and customized fashion illustrations

Course Content
Unit-I. Understanding Design   (10 Lectures)
   Design-its meaning and importance,
   Importance of good taste in design
   Designer – Textile designer and Fashion designer
   Challenges and opportunities for design and designers

Unit-II. Elements of Design and Its Co-relation   (12 Lectures)
   Point, Line, Colour, Plane, Volume, Space, Shape, Form, light, Texture, pattern

Unit-III. Principles of Design and Its Co-Relation

                                                                           (12 Lectures)
   Balance, Proportion and scale, Rhythm, Emphasis, Harmony, Contrast, Variety Law of area

Unit-IV. Line, Colour and Pattern in Design   (14 Lectures)
   Line and its expressiveness
   Types and composition
   Effect of lines to create rhythm and optical illusions Colour expression
   Colour wheel and its dimension Colour mixing and colour system Colour harmony and colour scheme Colour in different media
   Colour in fabric, texture and light Pattern
   Surface pattern and pattern group Repeat pattern

Unit-V. Human Body Proportions and Illustrating Fashion   **(12 Lectures)**

Balance and proportion in human body: average and fashion figures

Postures of male, female and children croquies and its significance: Front view, Back view, Side view and 3/4th view

Stylizing the croquie and its importance Understanding fabric textures and drapes

Recommended Readings:

1. Derrick, L. (2018) Fashion Sketchbook: Fashion Sketchbook with figure templates (Fashion Croquis), Create Space Independent Publishing Platform
2. Elaine, S. (2013) The Dynamics of Fashion. 4th Ed. New York: Bloomsbury publication.
3. Julia Y.,& Donna G., (2011), the Fashion Careers Guidebook: A Guide to Every Career in the Fashion Industry and How to Get It, Barron's Educational Series.
4. Linda,T.,(2010), Portfolio Presentation for Fashion Designers, 3rd Edition, Fairchild books, New York.
5. Mary,L.G.,(2008) , The Fairchild Encyclopedia of Menswear, Fairchild Publications, New York.
6. Michele W.B., Diane D., (2006), the Spec Manual, Fairchild Publications, New York.
7. Patrick, J. I. (2009) New Encyclopedia of Fashion Details: Over 1000 Fashion Details, London: B.T. Batsford.
8. Patrick, J. I. (1996) Fashion Design Illustration - men, London: B.T. Batsford.
9. Patrick, J. I. (2005) Fashion Design Illustration - men, London: B.T. Batsford
10. Patrick, J. I. (2003) Introduction to Fashion Design, London: B.T. Batsford
11. Sharon L. T. and Glazer, S.S. (2017), Illustrating Fashion, 4th Ed. New York: Fairchild Books. The Snap Fashion Sketch Book, Prentice Hall, NewJersey.
12. Stipelman, S. (2017) Illustrating Fashion, 4th Ed. New York: Fairchild Books.
13. Tate, S. L. & Glazer, B. (2007) The Snap Fashion Sketchbook, New Jersey: Prentice Hall.

III.   ADVANCED MAJOR COURSE- AMJ 2 A:
FOOD SERVICE MANAGEMENT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description

The course "Food Service Management" aims at creating a basic understanding of various aspects of managing a food service operation particularly in the hospital dietary food service. This creates an awareness on the fundamental principles and functions of management, and the tools which can be used for simplifying work for efficient use of manpower and time and managing material and other resources. The practical experience will give students hands on experience from food procurement to service which will enable them to acquire managerial skills and also opens avenues to build confidence in them to become entrepreneurs in the food service industry.

Learning objectives:
Understand the organization in a hospital dietary service.
1.   Gain knowledge on planning and organization of work in a dietary department.
2.   Comprehend the basic concepts in financial and personnel management.
3.   Know the different styles of food service. Develop managerial skills.

Learning outcomes:
After completion of the course the student will be able to
1.   Suggest an efficient design by effective allocation of space to ensure smooth work flow in a hospital dietary.
2.   Plan and organize food production and service in a hospital dietary by effective utilization of resources.
3.   Implement attributes of financial and personnel management. Acquire good managerial skills.

Course content

Unit I   (12 Lectures)
Scope and objectives of food service
Types - Commercial – Hotels, Restaurants, fast food outlets, cafeterias, snack bars, kiosks, vending machines.
Noncommercial – Hospitals, Nursing homes, Industrial canteens andchild care centres.
Transport – Air, rail, road and ship catering. Miscellaneous – outdoor, contract and function catering.
Evolution, Growth, Scope and Recent Trends in food service Industry.

Unit II   (12 Lectures)
Organization – Definition, types of organizational hierarchy suitable for a hospital dietary department. Physical plant – Planning space requirements in Receiving area, storage area, Preparation area and service area.

Unit III :   (12 Lectures)
Management – Principles of management; Functions of management – Planning, organizing, staffing, directing, coordinating, reporting and budgeting. Resources of management – Man, Money, Material, Machine, Method, Minute, Market. Tools of management – Organisation Chart, Job Description, Job Specification,Job Analysis, Work Simplification methods

Unit IV   (12 Lectures)
Food Service Systems – Conventional, Commissary, Ready prepare, Assembly Serve Systems
Food service - Types – centralized and decentralized service, Satellite service; Styles – Table service, Buffet, Banquet, Tray service and self service

Unit V : Financial and Personnel Management   (12 Lectures)
Financial management – Food cost, Labour cost, Overhead cost, Recipe costing, Menu Costing, Selling price, Break- even Analysis.
Personnel management – Man power planning, recruitment, selection, induction, training, performance appraisal, promotion and transfer.

Training Methods, Leadership, Communication in Food Service Operations Computer application in the management of hotel and hospital dietary department.

Recommended Readings

1.   June   Payne-Palacio, and Monica Theis (2016). Food service Management: Principles and Practices, 13th Edition Pub. Harlow: Pearson.
2.   Mary   B. Gregoire (2015). Food Service Organizations: A Managerial and Systems Approach, Prentice Hall.
3.   Walker.   J.R. (2006). Introduction to Hospitality Management, Dorling Kindersley (India) Pvt.ltd.
4.   Ramesh B Rudani. (2019). Principles of Management, Second Edition, Mc Graw hill.
5.   Kinton,   R., Cessarani, V and Foskett, D, (2000), The Theory of Catering, Hodderand Stoughton.
6.   Kiran   (2019), Production planning and control,1st edition, eBook, ISBN: 9780128189375.
7.   Kotler, P.(2019). Principles Of Marketing, 13th edition, Pearson.
8.   Prasad, L. M. (2019). Principles & practice of Management, Sultan Chand and sons.
9.   Dale,H.   B. (2019). Total quality Management. 5th edition. Pearson India Education Ltd.ISBN:978-93-530-6631-4.
10.   Paneerselvam, R. (2012). Production & Operation Management,3rd edition, PHI learning Pvt. Ltd.
11.   Sethi,   M. (2011). Institutional Food Management, New Age International (P) Limited, second edition

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OR AMJ 2 B:
GENDER, SOCIETY AND HUMAN DEVELOPMENT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description
The course introduces students to gender and related concepts, and enables an understanding of gender as a socially constructed concept. It explores critical questions about the meaning and implications of gender in society, and acquaints students with key issues, debates, and questions pertaining to gender.

Learning Objectives
1. Critically understand the situation of women and men in Indian society from multiple perspectives.
2. Learn about the concepts of gender, patriarchy, equality, equity, and feminism as well as the intersection of social class and caste to determine the status of women.
3. Recognize how social institutions are patriarchal.
4. Develop sensitivity regarding the socio-cultural, economic and political factors that shape life experiences in relation to gender
5. Learn about women's human rights and laws related to women in India.
6. Learn about different gender identities and sexual orientations- masculinities, LGBTQIA in the Indian context

Learning Outcomes
1. Describe basic concepts of gender and relevance of gender studies as an academic discipline.
2. Describe theories and concepts of gender and development.
3. Analyse human rights in terms of gender equality and gender equity.
4. Critically analyse existing laws and the legal system through a gender lens.
5. Analyse how gender is constructed in different types of media.

Course Content
Unit-I Gender: A Social Construction   (12 Lectures)
Differences between sex and gender – biological determinism Key gender concepts and definitions
Gender socialization in family and society
Patriarchal institutions and key areas of patriarchal control Caste, class and gender intersectionality in India
Gender identities and sexual orientations (femininity, masculinity, LGBTQIA)
Status of women – historical and contemporary perspectives
Introduction to women's studies/ gender studies as a discipline

Unit-II Gender and Development: Approaches and Strategies   (12 Lectures)
Concept of gender and development – indicators of human and gender development – equality and equity
Orientation to theories of women, gender and development (WID, WAD and GAD) Human Development Index (HDI), Gender Development Index (GDI), Gender Inequality Index (GII), and Gender Empowerment Measure
Gender budgeting and gender auditing
Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs)

Unit-III Gender, Rights and Laws   (12 Lectures)
Girls, women, and human rights UDHR, UN-CEDAW and UN-CRC
Constitutional provisions accorded to women

Legal aspects related to women: PCPNDT Act, PWDVA, Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) act, Indecent Representation of Women (Prohibition) Act, The Dowry Prohibition Act.
Overview of laws related to marriage, divorce and property inheritance. The Women's Reservation Bill

Unit-IV Role of Media in Social Construction of Gender   (12 Lectures)

Social construction of gender reality by contemporary media
Media and perpetuation of gender stereotypes: rhetoric of the image, narrative Mainstream media and gender
Representation of women in media in political, cultural and social landscape
Researching and analyzing media from a gender perspective: in broadcast, print, new media. Gender and media ethics
Gender and ICTs

Unit -V Gender, Health and Empowerment   (12 Lectures)

Gender discrimination and under nutrition
Epidemiology of menstruation and menstrual disorder, health indicators and gender gap
Socioeconomic inequality and women's health
Biological and psychological determinants of women's health (all in brief)
Gender inequality in labor market: segmented labor market and occupational segregation Gendered jobs and social inequality
Sex segregation at work place (in brief)

Recommended Readings:

1. Ambedkar, B.R. (1917). Caste in India: Their mechanism, genesis and development. New Delhi: Critical Quest.
2. Bhasin, K. (1993). What is patriarchy? New Delhi: Kali for Women.
3. Bhasin, K. (2003). Exploring masculinity. New Delhi: Women Unlimited.
4. Bhasin, K. (2000). Understanding gender. New Delhi. Kaali for Women.
5. Chakravarti, U. (2018). Gendering caste: Through a feminist lens. New Delhi: Sage.
6. Chatterjee, P. (2002). Community, gender and violence. Delhi: Permanent Black.
7. Das, B. (2009). Gender issues in development. Jaipur: Rawat Publications.
8. Goel, A, Kaur, A and Sultana, A. (2006). Violence against women: Issues and perspectives. New Delhi: Deep& Deep Publishers.
9. Jain, J., & Rai, S. (Eds.). (2002). Films and feminism: Essays in Indian cinema. Jaipur: Rawat Publications.
10. Dasgupta, S., Sinha, D., & Chakravarti, S. (2011). Media, gender, and popular culture in India: Tracking change and continuity. New Delhi: Sage Publishing India.
11. Kannabiran, K. (Ed.). (2013). Women and law: Critical feminist perspectives. New Delhi: Sage.
12. Kumar, S. (2019). LGBT Community in India: A study. New Delhi: Educreation Publishing
13. National Law School. Vols. I to IV Gender, human rights and the law.
14. Thomas, S. E. (2019). Gender, human rights and law. Volume - 6
15. Bangalore: Centre for Women and the Law, National Law School of India University
16. Websites of Government of India and National Commission for Women for Laws and Constitutional provisions accorded to women
    a. http://ncw.nic.in/important-links/List-of-Laws-Related-to-Women
    b. https://www.india.gov.in/sites/upload_files/npi/files/coi_part_full.pdf
17. Websites of

United Nations and UNDP, OHCHR to get the details of UDHR, UN CEDAW, UNCRC, MDGs and SDGs.

a.   https://www.un.org/en/universal-declaration-human-rights/

b.   https://www.un.org/womenwatch/daw/cedaw/text/econvention.htm

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OR AMJ 2 C:
DYEING, PRINTING AND FINISHING OF TEXTILES

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Description
After the manufacturing of textiles, value addition is required. Dyeing printing and finishing of the textiles are the prime methods of value addition to the textiles. This course deals with the basics of the Dyeing, printing and finishing along with the influence of chemicals and auxiliaries on the end products. It further describes different types of dyeing, printing and finishing and explains the procedure of doing it on different fabrics to obtain required results This will help in using reasonably priced dyes and dyeing procedure and operating according to ecological requirements and carrying out in the shortest possible time.

Learning Objectives:
1.	Introduce basics of dyeing, printing and finishing
2.	Inculcate the knowledge of auxiliaries and chemicals used for dyeing and printing
3.	Enhance the understanding of the relation between the dyes, pigments and fabrics.
4.	Acquaint students with the importance of finishing of textiles
5.	Develop the skills in doing dyeing and printing of textiles
6.	Reproducing the required shade from batch to batch.

Learning Outcomes:
Ssuccessful completion of this course will enable students to
1.	Describe the basics of dyeing, printing and finishing.
2.	Examine the knowledge of auxiliaries and chemicals used for dyeing and printing
3.	Explain the relation between the dyes, pigments and fabrics.
4.	Recommend the finishing for textiles
5.	Dye and print textiles.
6.	Reproduce the required shade from batch to batch.

Course content
**Unit-I. Introduction of Dyeing and Printing					(12 Lectures)**
	History of dyeing and printing
	Terms related to colour- Dye, pigment, light, hue, value, intensity
	Colour wheel and schemes, Digital colour models: CMYK. RGB, Colour matching system
	Directional and non-directional printing
	Motifs types: Geometric, floral and novelty

**Unit-II. Basics of Dyeing and Printing					(12 Lectures)**
	Classification of dyes Classification of Printing
	Difference between dyes and pigments
	Preparation of fabrics before dyeing and printing designing, scouring, bleaching, mercerization, carbonization Heat setting: processing method

**Unit-III. Dyeing							(12 Lectures)**
	Classification of dyes. Auxiliaries and machineries used for dyeing Methods for dyeing
	Factors affecting dyeing, dyeing of cotton, wool and silk Dyeing of viscose and polyester
	Natural dyeing methods and limitations After treatments

**Unit-IV. Printing							(12 Lectures)**
	Preparation of print paste and printing table Pigments and dyes used
	Direct style of printing Resist style of printing Discharge style of printing Novel techniques of printing
	Fixation and after treatment processes Dyes for digital textile printing

**Unit-V. Finishes							(12 Lectures)**
	Classification: Physical, Chemical and Functional Objectives of textile finishing
	Factors affecting the finishing of textiles: fibre, weave, physical properties, end use, susceptibility to chemical modification.
	Finishes for achieving different texture Finishes for enhancing specific characteristics

Recommended Readings:

1.   Chavan, R.B. (1979). Textile Printing (Book of Papers) Department of Textile Technology, IIT New Delhi.
2.   Giles, G.H. (1974) Laboratory Course in Dyeing Hart & Clough; Bradford; England Kale
3.   D.G. (1976) Principles of Cotton Printing. Maharaja Brothers Ahmedabad.
4.   Saraiya, N.S. & Gupta P.C. Technology and Management of Printing.
5.   Shenai, V.A. (1979). Chemistry of Dyes and Principles of Dyeing. Sevak Publications Mumbai
6.   Trotman E.R. (1975). Dyeing and Chemical Technology of Textile Fibre. Charles Griffin & Co. Ltd., London
7.   Wynne Andrea (1997). Textiles. The Motivate Series Mcmillain Education Ltd., London.
8.   Vilensky L.D. & Gohil E.P. G. (1987) Textile Science, An explanation of fiber properties. CBS Publishers & Distribution, Delhi.

IV.   ADVANCED MAJOR COURSE- AMJ 3 A/ B/ C:
PRACTICALS-VII A:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Part I
1. Microbiological Examination of different food samples
2. Bacteriological Analysis of Water
3. Assessment of surface sanitation by swab/rinse method
4. Assessment of personal hygiene
5. Biochemical tests for identification of bacteria
6. Scheme for the detection of food borne pathogens
7. Detection of common adulterant in food:
    a) Khesari flour in besan
    b) Vanaspati in Ghee/Butter.
    c) Dried papaya seeds in black pepper,
    d) Metanil yellow in turmeric or colored sweet products
    e) Artificially foreign matter in tea (dust/leaves).

Part II
1.   Visit to a commercial and a non-commercial food service institution.
2.   Practice work simplification techniques in the laboratory.
3.   Prepare costing sheet for recipes and menus.
4.   Organize a food sale - Plan the menu, resources and execute production and sale and estimate profit or loss.

Reference Books
1. Mann, F.G. & Saunders, B.C. *Practical Organic Home Science,* Pearson Education (2009)
2. Furniss, B.S., Hannaford, A.J., Smith, P.W.G., Tatchell, A.R. *Practical Organic Home Science, 5th Ed.,* Pearson (2012)
3. Mahtab, S, Bamji S, Kamala Krishnasamy,.Brahmam G.N.V, *Text Book of Human Nutrition,* Third Edition, Oxford and IBH Publishing Co. P. Ltd., New Delhi, 2012.
4. Srilakshmi, B., Dietetics, New Age International (P) Ltd., New Delhi, 2013.
5. Swaminathan, M., *Advanced Textbook on Food and Nutrition*, Vol. 1, Second Edition, Bangalore Printing and Publishing Co. Ltd., Bangalore, 2012.
6. *Dietary Guidelines for Indians,* ICMR, National Institute of Nutrition.

OR AMJ 3 B:
PRACTICALS-VII B:

Marks: Pr (ESE: 3Hrs) =100	**Pass Marks: Pr (ESE) = 40**

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
Part I
1. Group discussion/role play/simulations on interpersonal relationships
2. Conduct workshops on: cultural variations in interpersonal relationships, family dynamics, verbal vs non-verbal communication, and social networking.
3. Plan an interaction with a counselor or therapists working in the area of interpersonal conflicts (in the family family/peer group/parent-child dyad/workplace).
4. Conduct a workshop on enhancing family cohesion and conflict resolution
5. Select a form of family crisis or stress. Describe ways of preventing and managing the crisis.
6. Create posters about ways to improve interpersonal communication skills and patters of relating to enhance resiliency in relationships.

Part II

1. Analysis of gender differentials using development indicators
2. Gender based analysis of media with special reference to portrayal of women
3. Case studies for programs and campaign for women's development.
4. Analyze the achievements of MDGs
5. Analyze the progress of SDGs
6. Critically engage with Laws and Acts for Women in India
7. Observe the representation of masculinity in Indian movies
8. Submit report after visiting local Women's organization and LGBTQAI organizations

Recommended Readings:
1. Arnett, J.J. (2005). Youth, cultures and societies in transition: The challenge of growing up in a globalized world. In F. Gale & S. Fahey. (Eds.), Youth in Transition – The challenges of generational change in Asia (pp 22-35). Bangkok: Regional Unit for Social and Human Sciences in Asia and the Pacific.
2. Baron, R. A., Byrne, D., & Branscombe, N. R. (2006). Social psychology. ND: Pushp Print Services.
3. Chaudhary, N., & Shukla, S. (2019). Family, identity, and the individual in India. In G. Misra (Ed.), Psychology: Volume 2: Individual and the social: Processes and issues (pp.143-189). New Delhi, India: Oxford University Press.
4. D'cruz, P., & Bharat, S. (2001). Beyond joint and nuclear: The Indian family revisited. Journal of Comparative Family Studies, 32(2), 167-194.
5. Duck, S. (1998). Human relationships. ND: Sage.
6. Ganguly-Scrase, R. (2007). Victims and agents: Young people's understanding of their social world in an urban neighbourhood in India. Young, 15, 321-341.
7. Gudykunst, W. B., & Toomey, S. T. (1998). Culture and interpersonal communication. ND: Sage
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OR AMJ 3 C:
PRACTICALS-VII C:

Marks: Pr (ESE: 3Hrs) =100   **Pass Marks: Pr (ESE) = 40**

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:

Part I
1. Introduction of flat sketches, garment features and accessories: types of silhouettes, skirts, trousers, necklines, collars, sleeves, coats and jackets, footwear, handbags.
2. Factors to be considered when designing for children, women and men- formal wear, casual wear, night wear, sportswear, ethnic wear, wedding wear
3. Drawing average and fashion figures: stick, block and flesh
4. Observation of people and live sketching in different postures
5. Converting photographic poses from magazines into fashion illustration
6. Exploring medias to create fabric textures
7. Rendering of fabric swatches and fabric drapes using different colour medias
8. Visit to fashion museum / virtual tour of a fashion museum.
9. Visiting designers' boutique / designer's website
10. Preparation of an album of garment features for designing of Apparels.
11. Preparation of an album of accessories suitable for different occasion.
12. Observation of people in different situations and live sketching of styles worn
13. Designing of apparel and accessories for men as per the given brief.
14. Designing of apparel and accessories for women as per the given brief.
15. Designing of apparel and accessories for children as per the given brief.
16. Portfolio development

Part II
1. Preparation of fabric for dyeing and printing
   a.   Scouring, desizing, bleaching
2. Dyeing: Dyeing of yarn and fabric with different classes of dyes by varying the temperatures, %shade and M: L ratio.
   a.   Dyeing of cotton yarn and fabric with direct dyes, vat and reactive dyes.
   b.   Dyeing of silk, wool and nylon yarn and fabrics with basic and acid dyes.
   c.   Dyeing of polyester yarn and fabric with disperse dyes.
3. Making designs for
   a. Blocks, stencil and screen
4. Preparation of
   a. Blocks, stencil and screen
5. Printing of fabrics using:
   i.   Direct style - block, stencil and screen
   ii.   Resist style - Tie &Dye, Batik
6. Application of starch by varying concentration and material
   a.   Natural starch
   b.   Synthetic starch
7. Printing on garments by different styles
8. Product development

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Recommended Readings:

1. Derrick, L. (2018) Fashion Sketchbook: Fashion Sketchbook with figure templates (Fashion Croquis), Create Space Independent Publishing Platform
2. Elaine, S. (2013) The Dynamics of Fashion. 4th Ed. New York: Bloomsbury publication.
3. Linda, T., (2010), Portfolio Presentation for Fashion Designers, 3rd Edition, Fairchild books, New York.
4. Mary, L.G., (2008), The Fairchild Encyclopedia of Menswear, Fairchild Publications, New York.
5. Michele W.B., Diane D., (2006), the Spec Manual, Fairchild Publications, New York.
6. Patrick, J. I. (2009) New Encyclopedia of Fashion Details: Over 1000 Fashion Details, London: B.T. Batsford.
7. Patrick, J. I. (2005) Fashion Design Illustration - men, London: B.T. Batsford
8. Patrick, J. I. (2003) Introduction to Fashion Design, London: B.T. Batsford
9. Sharon L. T. and Glazer, S.S. (2017), Illustrating Fashion, 4th Ed. New York: Fairchild Books. The Snap Fashion Sketch Book, Prentice Hall, New Jersey.
10. Stipelman, S. (2017) Illustrating Fashion, 4th Ed. New York: Fairchild Books.
11. Tate, S. L. & Glazer, B. (2007) The Snap Fashion Sketchbook, New Jersey: Prentice Hall.

COURSES OF STUDY FOR FYUGP IN **"HOME SCIENCE" MINOR**

MINOR COURSE-1A   **(SEM-I)**

XXXIII.   MINOR COURSE- MN 1A:
INTRODUCTORY HOME SCIENCE

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Description
This course will give a basic understanding of overall domain of Hone Science as a discipline. It will deal with the basic knowledge of all the five branches or area of specialisation under the subject Home Science as an applied science

Course Objectives
1.   To   make students enable to understand the domains if Home Science as a Subject
2.   To   make students aware of basics of Nutrition for a healthy life.
3.   To make an understanding of Life and Human Development
4.   To   develop understanding of resources their best utilisation, textiles and their uses, Home Science extension education system for better community outreach programme

Course Outcome
On successful completion of course
1.   Students   will develop a basic understanding of Home Science as Subjects.
2.   Students   will develop knowledge and understanding about health & nutrition, Human Development and its need, textiles & their uses, family resources and extension education system in order to achieve the aimed SDC by 2030.

Course Content
Unit I- Foods and Nutrition   **(09 Lectures)**
Basic understanding of Foods, Nutrition, Health and its relationship, terminologies
Function of Food, Food Groups as source of various nutrients. Macro and micronutrients, water. Principles of meal planning, RDA. A brief knowledge of nutrition during infancy, childhood, adolescence, adulthood, old age and special condition (pregnancy, lactation, calamities, disaster

Unit II- Human Development   **(09 Lectures)**
Definition, Introduction and importance of Human Development. Pre-natal development, birth and neonates, stages and factors affecting pre-natal development. Various developments during Infancy, Childhood, Adolescence, Adulthood, old age, (Physical, Mental, Social, Emotional)

Unit III- Family Resource Management   **(09 Lectures)**
Concept, Universality, and Scope of management, approaches to management
Family as resource, Meaning, classification and characteristics of resources, factor affecting utilisation of resources, maximising use of resources and resource conservation. Family as resource, availability and management of resources by an individual/family- money, time, energy, space. Event planning and execution.

Unit IV- Textiles and Clothing   **(09 Lectures)**
Textile fibers, its properties, classification, a brief comparative study of production, properties, uses of major natural (cotton, wool, silk, linen, jute) and manmade fiber (Nylon, Polyester, acrylic)
Basic concept of yarn and fabric manufacturing process. Reason of wearing clothes, factors affecting selection of cloth/ apparel. Stain removal of major stains

Unit V- Home Science Extension Education   **(09 Lectures)**
Definition, concept, nature, philosophy and principles of Home science extension education
Methods and media of community outreach; Audio visual aids- concept, classification, characteristics
and scope. Relationship between communication, extension and development.

Recommended Readings:

1.   Srilakshmi
    (2007). Food Science, 4th Edition. New Age International Ltd.
2.   Wardlaw   and
    Insel MG, Insel PM (2004). Perspectives in Nutrition, Sixth Edition. Mosby.
3.   Chadha R and
    Mathur P (eds). Nutrition: A Lifecycle Approach. Orient Blackswan, New Delhi. 2015
4.   Santrock, J. W.
    (2007). A topical approach to life-span development. New Delhi: Tata McGraw- Hill.
5.   Singh, A. (Ed).
    2015. Foundations of Human Development: A life span approach. New Delhi: Orient BlackSwan.
6.   Patri and Patri
    (2002); Essentials of Communication. Greenspan Publications
7.   Rao V.S. and
    Narayana P.S., Principles and Practices of Management, 2007, Konark Pub. Pvt. Ltd.
8.   Corbman, P.B.,
    (1985) Textiles- Fiber to Fabric (6th Edition), Gregg Division/McGraw Hill Book Co.
9.   Sekhri   S.,
    (2013) Textbook of Fabric Science: Fundamentals to Finishing, PHI Learning, Delhi
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XXXIV.   MINOR COURSE- MN 1A PR:
MINOR PRACTICALS-1A PR

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

Practicals:
1. Cultural practices related to pregnancy and infancy
2. Methods of study children- interview, observation, narratives
3. Planning and preparation of diet for infant, children, pregnant and lactating women
4. Planning and executing Birthday party/ fresher's party
5. Stain removal- Haldi, Curry, nailpolish, ball point ink, paint/warnish/ polish
6. Preparation of chart and poster to educate Mothers for caring their new born babies

Recommended Readings:
1. Srilakshmi (2007). Food Science, 4th Edition. New Age International Ltd.
2. Wardlaw and Insel MG, Insel PM (2004). Perspectives in Nutrition, Sixth Edition. Mosby.
3. Chadha R and Mathur P (eds). Nutrition: A Lifecycle Approach. Orient Blackswan, New Delhi. 2015
4. Santrock, J. W. (2007). A topical approach to life-span development. New Delhi: Tata McGraw- Hill.
5. Singh, A. (Ed). 2015. Foundations of Human Development: A life span approach. New Delhi: Orient BlackSwan.
6. Singh, A. (Ed). 2015. Foundations of Human Development: A life span approach. New Delhi: Orient BlackSwan.
7. Patri and Patri (2002); Essentials of Communication. Greenspan Publications
8. Rao V.S. and Narayana P.S., Principles and Practices of Management, 2007, Konark Publishers Pvt. Ltd.
9. Corbman, P.B., (1985) Textiles- Fiber to Fabric (6th Edition), Gregg Division/McGraw Hill Book Co., US.
10. Sekhri S., (2013) Textbook of Fabric Science: Fundamentals to Finishing, PHI Learning, Delhi
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MINOR COURSE-1B   (SEM-III)

XXXV.   MINOR COURSE- MN 1B:
NUTRITION: A LIFESPAN APPROACH

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Description
The course deals with basic understanding of nutritional requirements of various age groups. In order to meet the nutritional requirement, it also gives concept of balanced diet, meal planning, recommended nutritional requirements, nutritional assessment etc.

Course Objective
1.   To develop an understanding of importance of Nutrition and nutritional requirement through every phases of life
2.   To learn the basics of meal planning to ensure the complete nutrition,

Course Outcome
1.   On successful completion of course students will be able to identify the nutritional need of any age group
2.   Will be able to plan, prescribe the proper diet to meet the RDA of any age group or category of community
3.   Will develop an understanding of meeting the nutritional need by alternative food group or sources.

Course Content
Unit I: Principles of Meal Planning   **(10 Lectures)**
Balanced diet, Food groups, Food exchange list , Factors effecting meal planning and food related behaviour. Dietary guidelines for Indians and food pyramid

Unit II: Nutrient Requirements   **(08 Lectures)**
Concept of Dietary Reference Intakes. Overview of methods for assessment of nutrient needs

Unit III: Nutrition for Adulthood and Old Age   **(09 Lectures)**
Adult: Nutrient requirements for adult man and woman, RDA, nutritional guidelines, nutritional concerns, diet and lifestyle related diseases and their prevention. Elderly – Physiological changes in elderly, RDA, nutritional guidelines, nutritional and health concerns in old age and their management, factors contributing to longevity

Unit IV: Nutrition During Pregnancy and Lactation   **(09 Lectures)**
Pregnancy – Physiological changes in pregnancy, RDA, nutritional guidelines, nutritional needs, effect of nutritional status on pregnancy outcome, optimal weight gain and its components, nutrition related problems in pregnancy and ways to control them. Lactation – Physiology of lactation, RDA and nutritional needs of a nursing mother, nutritional guidelines

Unit V: Nutrition During Childhood   **(09 Lectures)**
Growth and development, growth reference/ standards, RDA, nutritional guidelines, nutritional concerns and healthy food choices - Infants - Preschool children - School children - Adolescents

Recommended Readings:
1.   Khanna   K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd.
2.   Wardlaw GM, Hampi JS, DiSilvestro RA (2004). Perspectives in Nutrition, 6th edition. McGraw Hill.
3.   ICMR   (2011) Dietary Guidelines for Indians. Published by National Institute of Nutrition, Hyderabad.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

4. ICMR (2010) Recommended Dietary Allowances for Indians. Published by National Institute of Nutrition, Hyderabad. 105

5. Chadha R and Mathur P eds. (2015) Nutrition: A Lifecycle Approach. Orient Blackswan. New Delhi.

6. Seth V and Singh K (2006). Diet Planning through the Life Cycle: Part 1 Normal Nutrition. A Practical Manual. Elite Publishing House Pvt. Ltd. New Delhi.

7. Gopalan C, Rama Sastri BV, Balasubramanian SC (1989) Nutritive Value of Indian Foods. National Institute of Nutrition, ICMR, Hyderabad.

XXXVI.　　MINOR COURSE- MN 1B PR:
MINOR PRACTICALS-1B PR

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) 30 Hours

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment　　　　　　= 15 marks
Practical record notebook　= 05 marks
Viva-voce　　　　　　= 05 marks

Practicals:

1. **Introduction to Meal Planning**
   Use of food exchange list
2. **Planning and Preparation of Diets and Dishes for**
   - Young adult
   - Pregnant and Lactating woman
   - Preschool child
   - School age child and adolescents
   - Elderly
3. **Planning Complementary Foods for Infants and Toddlers**

Recommended Readings:

1. Khanna K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd.
2. Wardlaw GM, Hampi JS, DiSilvestro RA (2004). Perspectives in Nutrition, 6th edition. McGraw Hill.
3. ICMR (2011) Dietary Guidelines for Indians.Published by National Institute of Nutrition, Hyderabad.
4. ICMR (2010) Recommended Dietary Allowances for Indians. Published by National Institute of Nutrition, Hyderabad. 105
5. Chadha R and Mathur P eds.(2015) Nutrition: A Lifecycle Approach. Orient Blackswan. New Delhi.
6. Seth V and Singh K (2006). Diet Planning through the Life Cycle: Part 1 Normal Nutrition. A Practical Manual. Elite Publishing House Pvt. Ltd. New Delhi.
7. Gopalan C, Rama Sastri BV, Balasubramanian SC (1989) Nutritive Value of Indian Foods. National Institute of Nutrition, ICMR, Hyderabad.

MINOR COURSE-1C   **(SEM-V)**

XXXVII.   MINOR COURSE- MN 1C:
CURRENT CONCERNS IN PUBLIC HEALTH NUTRITION

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course description
The focus of this course is to identify health and nutrition problems and integrating nutritional services with medical and social services within the community. This course will also provide basic knowledge and skills relevant to the practice of community nutrition, the role of nutrition in health promotion and perspectives for resolving community nutrition problems, Needs for assessment issues and national and state community nutrition programs, determinants of health outcomes, measurement of nutrition and health status, food and nutrition policy, legislative issues and management of community programs.

Course objectives:
1.   To know the basics of public health nutrition
2.   To understand the need of prioritizing nutrition issues
3.   To assess the nutritional and Health Status of an individual and the community.
4.   To learn nutritional programmes and policies to overcome malnutrition
5.   To understand various national and International nutritional organizations for combating malnutrition
6.   To apply ICT in the formulation of community nutrition education programme

Course outcomes:
1.   The concepts and knowledge required for the delivery of community nutrition services will be applied to program planning, intervention and program evaluation
2.   Gaining knowledge on nutritional programmes and policies overcoming malnutrition
3.   Understanding the national, international and voluntary nutritional organizations to combat malnutrition
4.   Able to organize community nutrition education programme with the application of computers.
5.   Apply immunological intervention programmes to overcome epidemic of communicable diseases.

Course Content
Unit I: Nutritional Problems Affecting the Community   (15 Lectures)
Aetiology, prevalence, clinical features and preventive strategies of-
Undernutrition - Protein energy malnutrition: Severe Acute Malnutrition and Moderate Acute Malnutrition, Nutritional Anaemias, Vitamin A Deficiency, Iodine Deficiency Disorders
Over nutrition – obesity, coronary heart disease, diabetes
Fluorosis

Unit lI: Strategies for Improving Nutrition and Health Status of the Community   (5 Lectures)
Appropriate interventions involving different sectors such as Food, Health and Education

Unit III: Unit III: Nutrition Policy and Programmes   (15 Lectures)
National Nutrition Policy
Integrated Child Development Services (ICDS) Scheme, Mid-day Meal Programme (MDMP), National programmes for prevention of Anaemia, Vitamin A deficiency, Iodine Deficiency Disorders Unit

Unit IV: Food and Nutrition Security   (10 Lectures)
Concept, components, determinants and approaches
Overview of Public Sector programmes for improving food and nutrition security

Recommended Readings:
1.   Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite Publishing House Pvt. Ltd. New Delhi.

2.   Park K (2011).
Park's Textbook of Preventive and Social Medicine, 21st Edition. M/s Banarasidas Bhanot Publishers, Jabalpur,
India.
3.   Bamji   MS,
Krishnaswamy K and Brahmam GNV (Eds) (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH
Publishing Co. Pvt. Ltd. New Delhi.
4.   Gibney   MJ
(2005). Public Health Nutrition.
5.   Vir S. (2011)
Public Health Nutrition in developing countries. Vol 1 and 2
6.   ICMR   (1989)
Nutritive Value of Indian Foods. National Institute of Nutrition, Indian Council of Medical Research,
Hyderabad.
7.   ICMR   (2011)
Dietary Guidelines for Indians – A Manual. National Institute of Nutrition, Indian Council of Medical Research,
Hyderabad.
8.   Bamji   MS,
Krishnaswamy K and Brahmam GNV (Eds) (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH
Publishing Co. Pvt. Ltd. New Delhi

XXXVIII.   MINOR COURSE- MN 1C PR:
MINOR PRACTICALS-1C PR

Marks: Pr (ESE: 3Hrs) = 25	**Pass Marks: Pr (ESE) = 10**

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:

1. Planning and evaluation of low cost nutritious recipes for preschoolers, school age children, adolescents, pregnant and nursing mothers.
2. Planning and evaluation of low calorie nutritious recipes for weight management.
3. Planning and conducting a food demonstration.
4. Visit to an ongoing nutrition programme.

Recommended Readings:

1. Wadhwa A and Sharma S (2003). Nutrition in the Community-A Textbook. Elite Publishing House Pvt. Ltd. New Delhi.
2. Park K (2011). Park's Textbook of Preventive and Social Medicine, 21st Edition. M/s Banarasidas Bhanot Publishers, Jabalpur, India.
3. Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
4. Gibney MJ (2005). Public Health Nutrition.
5. Vir S. (2011) Public Health Nutrition in developing countries. Vol 1 and 2
6. ICMR (1989) Nutritive Value of Indian Foods. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
7. ICMR (2011) Dietary Guidelines for Indians – A Manual. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.
8. Bamji MS, Krishnaswamy K and Brahmam GNV (Eds) (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi

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MINOR COURSE-1D   **(SEM-VII)**

XXXIX.   MINOR COURSE- MN 1D:
CARE AND WELL-BEING IN HUMAN DEVELOPMENT

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Description
Course deals with basic concept of Human development, factors affecting development and its relation with wellbeing. It also aims to develop understanding about programe and policies for promoting human development.

Course Objective
1.   To develop basic understanding and knowledge of Human development and factor affecting it
2.   To   enable   to have idea and knowledge of policies and programs related to Human development

Course Outcome
1.   On   completion of this course students will be well acquainted with knowledge for uplifting general population through better understanding of knowledge of human development

Course Content
Unit I: Care and Human Development   **(10 Lectures)**
        Definition, concepts & relevance of care
        Vulnerable periods in life that require care
        Principles & components of care

Unit II: Well-being and Human Development   **(10 Lectures)**
        Concept of well-being-- physical, psychological, spiritual
        Life crises and well-being • Factors & experiences that promote well-being

Unit III: Care & well-being at different stages of life   **(10 Lectures)**
        Childhood years • Adolescence • Adulthood and old age
        Well-being of caregivers

Unit IV: Policies, Services & Programs   **(15 Lectures)**
        School health programs
        Nutrition & health for all
        Counselling & yoga

Recommended Readings:
1.   IGNOU. (2011). Positive psychology-2, MCFT-006 Applied social Psychology. New Delhi: IGNOU. 111
2.   Santrock,   J.W. (2007). Life Span Development (3rd ed.). New Delhi: Tata McGraw-Hill.
3.   Seligman, M.E.P. (2002). Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfillment. New York: Free Press.
4.   Sriram,   R. (2004). Ensuring infant and maternal health in India. In J. Pattnaik (Ed.). Childhood in South Asia: A critical look at issues, policies and programs. Conn .USA: Information Age.
5.   Singhi, P.(1999). Child health & well-being: Psychosocial care within & beyond hospital walls. In T.S. Saraswathi (Ed.).Culture, socialization and human development. New Delhi: Sage.

XL. MINOR COURSE- MN 1D PR:
   MINOR PRACTICALS-**1D PR**

Marks: Pr (ESE: 3Hrs) = 25	**Pass Marks: Pr (ESE) = 10**

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

Practicals:

1. Observations of children (1 infant, 1 toddler) to understand their care needs
2. Interview of a mother of a school-going child to understand her perspective of care and child's well-being
3. Interaction with two adolescents (male, female) to explore their perspectives on well-being
4. Visit to a senior citizens' home to study their care and well-being
5. Lecture/workshop by a counselor on significance of counseling
6. Participation in yoga/ self-development session

Recommended Readings:

1. IGNOU. (2011). Positive psychology-2, MCFT-006 Applied social Psychology. New Delhi: IGNOU. 111
2. Santrock, J.W. (2007). Life Span Development (3rd ed.). New Delhi: Tata McGraw-Hill.
3. Seligman, M.E.P. (2002). Authentic happiness: Using the new positive psychology to realize your potential for lasting fulfillment. New York: Free Press.
4. Sriram, R. (2004). Ensuring infant and maternal health in India. In J. Pattnaik (Ed.). Childhood in South Asia: A critical look at issues, policies and programs. Conn. USA: Information Age.
5. Singhi, P. (1999). Child health & well-being: Psychosocial care within & beyond hospital walls. In T.S. Saraswathi (Ed.). Culture, socialization and human development. New Delhi: Sage.

FYUGP

PHYSICS HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented from 3rd Semester of Academic Session 2022-26

& From 1st Semester of Session 2023-27 Onwards

UNIVERSITY DEPARTMENT OF PHYSICS
RANCHI UNIVERSITY, RANCHI

Basic Science Building
Morabadi, Ranchi,
Jharkhand - 834008
E-mail : pgphy.ru@gmail.com

Ref. No. : Phy P.G. ....　　　　　　Date : 31/05/2023

Members of the "Board of Studies" in Physics of R.U. Ranchi for finalizing the four year undergraduate programme (FYUGP) syllabi from 2023 – 27 as per NEP 2020.

1. Chairman:

Dr. Sanjay Kumar Dey, Associate Professor
and Head University Department of Physics, R. U. Ranchi　31/05/2023

2. Internal Members:

(1) Dr. Rajiv Asthana, Associate Professor
Department of Physics, Gossner College, Ranchi　31/5/2023

(2) Dr. Swarat Choudhary, Associate Professor
Department of Physics, St. Xaviers College, Ranchi　31.5.23

(3) Dr. Sunil Kumar Singh, Assistant Professor (SS)
University Department of Physics, Ranchi University, Ranchi　31/05/2023

(4) Dr. Arun Kumar, Assistant Professor (SS)　Arun Kumar
University Department of Physics, Ranchi University, Ranchi　31/05/2023

(5) Dr. Raj Kumar Singh, Assistant Professor
University Department of Physics, Ranchi University, Ranchi　RajKrSingh 31.5.2023

(6) Dr. Binay Prakash Akhoury, Assistant Professor　BPAkhoury
Department of Physics, S.S.Memorial College, Ranchi　31.05.23

3. External Members:

(1) Professor (Dr.) S. Chatterjee, Former Professor of Physics, RKDF University, Ranchi
and Presently V.C, of RKDF University, Ranchi　8/1/2023

(2) Prof. N. N. Ojha
Former Head, Department of Physics, DSPMU, Ranchi　31-05.2023.

4. Alumnus:

Professor (Dr.) Satyendra Narayan Singh,
Former H.o.D. of Physics, Ranchi University, Ranchi.
Ex-V.C. of N.P.U, Medininagar　31/05/2022

15/07/2023
DIRECTOR
IQAC, RANCHI UNIVERSITY
RANCHI-834 001

31/05/2023
Head
University Department of Physics
Ranchi University, Ranchi

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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Table of Content

Students are Instructed to

Refer Syllabus of Allied/ Opted Subjects from R.U. Website

HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1ˢᵗ of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:
  - u)Odd Semester: **From first Monday of August to third Saturday of December**
  - v)Even Semester: **From first Monday of January to third Saturday of May**
- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
  - ➢ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
  - ➢ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
  - ➢ Bachelor's Degree after a 3-year (6 semesters) programme of study,
  - ➢ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
  - ➢ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

  - u) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.
    One credit for Theory   = 15 Hours of Teaching i.e., 15 Credit Hours
    One credit for Practicum   = 30 Hours of Practical work i.e., 30 Credit Hours

  - v) For credit determination, instruction is divided into three major components:
        Hours (L) – Classroom Hours of one-hour duration.
    Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
    Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.
- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

c.   The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

ci.   No student will be detained in odd Semesters (I, III, V & VII).

cii.   To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

ciii. To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

civ.   To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

cv.   However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

cvi.   Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

cvii. To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year.

cviii. A student has to pass in minimum 3 papers out of the total 4 papers.

cix.   It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result of the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)													
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)													
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree													
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4
Exit Point: Bachelor's Degree with Hons. /Hons. with Research												**160**	**224**

Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME   2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	AEC-1	Language and Communication Skills (MIL 1 - Hindi/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Hindi)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4

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IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2
	VAC-2	Value Added Course-2	2
	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4

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	RC/	Research Internship/Field Work/Dissertation	12/
		OR	
	AMJ-1	Advanced Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	AMJ-2	Advanced Major paper-2 (Disciplinary/Interdisciplinary Major)	4
	AMJ-3	Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**160**

NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	xxi. Discipline/ Interdisciplinary courses and xxii. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64
Minor	xxi. Discipline/ Interdisciplinary courses and xxii. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9

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Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

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Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Double Major Courses		Credits
	Code	Papers	
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:
AEC   Ability Enhancement Courses
SEC   Skill Enhancement Courses
IAP   Internship/Apprenticeship/ Project
MDC   Multidisciplinary Courses
MJ   Major Disciplinary/Interdisciplinary Courses
DMJ   Double Major Disciplinary/Interdisciplinary Courses
MN   Minor Disciplinary/Interdisciplinary Courses
AMJ   Advanced Major Disciplinary/Interdisciplinary Courses
RC   Research Courses

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AIMS OF BACHELOR'S DEGREE PROGRAMME IN PHYSICS

The broad aims of bachelor's degree programme in Physics are:

The aim of bachelor's degree programme in Physics is intended to provide:

(xii)   Broad and balance knowledge in Physics in addition to understanding of key Physical concepts, principles, and theories.

(xiii)   To develop students' ability and skill to acquire expertise over solving both theoretical and applied Physics problems.

(xiv)   To provide knowledge and skill to the students' thus enabling them to undertake further studies in Physics in related areas or multidisciplinary areas that can be helpful for self-employment/entrepreneurship.

(xv)   To provide an environment that ensures cognitive development of students in a holistic manner. A complete dialogue about Physics and its significance is fostered in this framework, rather than mere theoretical aspects

(xvi)   To provide the latest subject matter, both theoretical as well as practical, such a way to foster their core competency and discovery learning. A Physics graduate as envisioned in this framework would be sufficiently competent in the field to undertake further discipline-specific studies, as well as to begin domain-related employment.

(xvii)   To mold a responsible citizen who is aware of most basic domain-independent knowledge, including critical thinking and communication.

(xviii) To enable the graduate, prepare for national as well as international competitive examinations, especially UGC-CSIR NET, GATE, JAM, JEST, and UPSC Civil Services Examination.

(xix)   To enable student, seek their career in the field of Research, Applied Physics, Energy, Technology, Geophysics and meteorology, Space and Astronomy, Radiation Physics, Instrumentation, Oceanography and such many fields with a further specialization in the same.

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PROGRAM LEARNING OUTCOMES

The broad aims of bachelor's degree programme in Physics are:

The student graduating with the Degree Honours/Research in Physics would be able to:

(xii)   **Core competency:** Students will acquire core competency in the subject Physics, and in allied subject areas.

(xiii)   Systematic and coherent understanding of the fundamental concepts in Physics and other related allied Physics subjects.

(xiv)   Students will be able to use the evidence based comparative Physics approach to explain the scientific and technological problems.

(xv)   The students will be able to understand the laws of nature.

(xvi)   Students will be able to understand the basic principle of equipment, instruments used in the Physics laboratory.

(xvii)   Students will be able to demonstrate the experimental techniques and methods of their area of specialization in Physics.

(xviii)   **Disciplinary knowledge and skill:** A graduate student are expected to be capable of demonstrating comprehensive knowledge and understanding of both theoretical and experimental/applied Physics knowledge in various fields of interest like Mathematical Physics, Thermal and Statistical Physics, Electromagnetism, Waves and Optics, Analog and Digital Electronics, Modern Physics, Quantum Mechanics, Solid State Physics, Nuclear and Particle Physics, Classical Dynamics, Experimental Techniques, Devices and Instruments, etc.

(xix)   **Skilled communicator:** The course curriculum incorporates basics and advanced training in order to make a graduate student capable of expressing the subject through technical writing as well as through oral presentation.

(xx)   **Critical thinker and problem solver:** The course curriculum also includes components that can be helpful to graduate students to develop critical thinking ability by way of solving problems/numerical using basic Physics knowledge and concepts.

(xxi)   **Sense of inquiry:** It is expected that the course curriculum will develop an inquisitive characteristic among the students through appropriate questions, planning and reporting experimental investigation.

(xxii)   **Team player:** The course curriculum has been designed to provide opportunity to act as team player by contributing in laboratory, field-based situation and industry.

(xxiii)   **Skilled project manager:** The course curriculum has been designed in such a manner as to enable a graduate student to become a skilled project manager by acquiring knowledge about Physics project management, writing, planning, study of ethical standards and rules and regulations pertaining to scientific project operation.

(xxiv)   **Digitally literate:** The course curriculum has been so designed to impart a good working knowledge in understanding and carrying out data analysis, use of library search tools, and use of simulation software and related computational work.

(xxv)   **Ethical awareness/reasoning:** A graduate student requires to understand and develop ethical awareness/reasoning which the course curriculum adequately provide.

(xxvi)   **Lifelong learner:** The course curriculum is designed to inculcate a habit of learning continuously through use of advanced ICT technique and other available techniques/books/journals for personal academic growth as well as for increasing employability opportunity.

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SEMESTER WISE COURSES IN PHYSICS MAJOR-1 FOR FYUGP   __2022 onwards__

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	\<Courses\> Code	Papers	\<Examination Structure\> Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	Basic Mathematical Physics & Mechanics	4	25	75	---
II	MJ-2	Electromagnetism	4	25	75	---
	MJ-3	Lab I-Mechanics and Electromagnetism	4	---	---	100
III	MJ-4	Waves and Optics	4	25	75	---
	MJ-5	Lab II-Waves And Optics	4	---	---	100
IV	MJ-6	Mathematical Physics	4	25	75	---
	MJ-7	Thermal and Statistical Physics	4	25	75	---
	MJ-8	Lab III-Mathematical, Thermal and Statistical Physics	4	---	---	100
V	MJ-9	Analog and Digital Electronics	4	25	75	---
	MJ-10	Elements of Modern Physics	4	25	75	---
	MJ-11	Lab IV-Electronics and Modern Physics	4	---	---	100
VI	MJ-12	Quantum Mechanics and Applications	4	25	75	---
	MJ-13	Solid State Physics	4	25	75	---
	MJ-14	Nuclear and Particle Physics	4	25	75	---
	MJ-15	Lab V-Quantum and Solid State Physics	4	---	---	100
VII	MJ-16	Classical Dynamics	4	25	75	---
	MJ-17	Advance Mathematical Methods In Physics	4	25	75	---
	MJ-18	Advance Quantum Mechanics-I and Advance Solid State Physics	4	25	75	---
	MJ-19	Lab VI-Optics And Laser	4	---	---	100
VIII	MJ-20	Spectroscopy	4	25	75	---
	AMJ-1	Advanced Quantum Mechanics-Ii	4	25	75	---
	AMJ-2	Advanced Nuclear Physics	4	25	75	---
	AMJ-3	Lab VII-General Electronics, Atomic and Nuclear Physics	4	---	---	100
	or RC-1	Research Methodology	4	25	75	---

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	RC-2	Project Dissertation/ Research Internship/ Field Work	8	---	---	200
		Total Credit	**92**			

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Skill Enhancement Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	Electrical Circuits and Network Skills	3	---	75	---
II	SEC-2	Basic Instrumentation Skills	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	**9**			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Minor Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	Mechanics	4	15	60	25
III	MN-1B	Electricity and Magnetism	4	15	60	25
V	MN-1C	Thermal and Statistical Physics	4	15	60	25
VII	MN-1D	Waves and Optics	4	15	60	25
		Total Credit	**16**			

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INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There will be Only One Semester Internal Examination in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

U. (SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

V. (SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Conversion of Attendance into score may be as follows:

Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

AE.   (ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

AF.   (ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

AG.   (ESE 100 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark

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each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

Subject/ Code

F.M. =10   **Time**=1Hr.   Exam Year

General Instructions:
li.   **Group A** carries very short answer type compulsory questions.
lii.   **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
liii. Answer in your own words as far as practicable.
liv.   Answer all sub parts of a question at one place.
lv.   Numbers in right indicate full marks of the question.

Group A

31.   [5x1=5]

li.   ....
lii.   ....
liii.   ....
liv.   ....
lv.   ....

Group B

32. ....   [5]
33. ....   [5]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **20 Marks**:

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Subject/ Code

F.M. =20	**Time**=1Hr.	Exam Year

General Instructions:
li. **Group A** carries very short answer type compulsory questions.
lii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
liii. Answer in your own words as far as practicable.
liv. Answer all sub parts of a question at one place.
lv. Numbers in right indicate full marks of the question.

Group A

41.   [5x1=5]

       li.   ....
       lii.   ....
       liii.   ....
       liv.   ....
       lv.   ....

42. ....   [5]

Group B

43. ....   [10]
44. ....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION
Question format for **50 Marks**:

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Subject/ Code

<u>**F.M.** =50</u>   <u>**Time**=3Hrs.</u>   <u>Exam Year</u>

General Instructions:
xix. **Group A** carries very short answer type **compulsory** questions.
xx. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
xxxiii.   Answer in your own words as far as practicable.
xxxiv.   Answer all sub parts of a question at one place.
xxxv.   Numbers in right indicate full marks of the question.

<u>**Group A**</u>

61.   [5x1=5]

li.   ....
lii.   ....
liii.   ....
liv.   ....
lv.   ....

<u>**Group B**</u>

62. ....   [15]
63. ....   [15]
64. ....   [15]
65. ....   [15]
66. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

<u>Question format for **60 Marks**</u>:

Subject/ Code

<u>**F.M.** =60</u>   <u>**Time**=3Hrs.</u>   <u>Exam Year</u>

General Instructions:
xxi. **Group A** carries very short answer type **compulsory** questions.
xxii. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
xxxiii.   Answer in your own words as far as practicable.
xxxiv.   Answer all sub parts of a question at one place.
xxxv.   Numbers in right indicate full marks of the question.

<u>**Group A**</u>

81.   [5x1=5]

li.   ....
lii.   ....
liii.   ....
liv.   ....
lv.   ....

82. ....   [5]
83. ....   [5]

<u>**Group B**</u>

84. ....   [15]
85. ....   [15]
86. ....   [15]
87. ....   [15]
88. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

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Question format for **75 Marks**:

Subject/ Code

F.M. = 75   **Time**=3Hrs.   <u>Exam Year</u>

General Instructions:
xxi. **Group A** carries very short answer type **compulsory** questions.
xxii. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xxxiii.   Answer in your own words as far as practicable.
xxxiv.   Answer all sub parts of a question at one place.
xxxv.   Numbers in right indicate full marks of the question.

Group A

91.   [5x1=5]

         li.   ....
         lii.   ....
         liii.   ....
         liv.   ....
         lv.   ....

92. ....   [5]
93. ....   [5]

Group B

94. ....   [15]
95. ....   [15]
96. ....   [15]
97. ....   [15]
98. ....   [15]
99. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

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Subject/ Code

F.M. = 100	**Time**=3Hrs.	Exam Year

General Instructions:
xxi. **Group A** carries very short answer type **compulsory** questions.
xxii. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xxxiii.   Answer in your own words as far as practicable.
xxxiv.   Answer all sub parts of a question at one place.
xxxv.   Numbers in right indicate full marks of the question.

Group A

11.   [10x1=10]

li.	....	vi.	....
lii.	....	vii.	....
liii.	....	viii.	....
liv.	....	ix.	....

22. ..lv................   x   ....   [5]
23. ....   [5]

Group B

64. ....   [20]
65. ....   [20]
66. ....   [20]
67. ....   [20]
68. ....   [20]
69. ....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

SEMESTER I

XX.   MAJOR COURSE –MJ 1:
BASIC MATHEMATICAL PHYSICS & MECHANICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:

On successful completion of this course the student should know:

1.   Revise the knowledge of calculus. These basic mathematical structures are essential in solving problems in various branches of Physics as well as in engineering.
2.   Learn the curvilinear coordinates which have applications in problems with spherical and cylindrical symmetries.
3.   In the laboratory course, learn the fundamentals of the C and C++ programming languages and their applications in solving simple physical problems involving differentiations, integrations, differential equations as well as finding theroots of equations.
4.   Understand laws of motion and their application to various dynamical situations, notion of inertial frames and concept of Galilean invariance. He / she will learn the concept of conservation of energy, momentum, angular momentum and apply them to basic problems.
5.   Understand the principles of elasticity through the study of Young Modulus and modulus of rigidity.
6.   Understand simple principles of fluid flow and the equations governing fluid dynamics.
7.   Apply Kepler's law to describe the motion of planets and satellite in circular orbit,through the study of law of Gravitation.
8.   Explain the phenomena of simple harmonic motion and the properties of systemsexecuting such motions.
9.   Describe how fictitious forces arise in a non-inertial frame, e.g., why a person sitting ina merry-go-round

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experiences an outward pull.
10.   Describe special relativistic effects and their effects on the mass and energy of amoving object.
11.   appreciate the nuances of Special Theory of Relativity (STR)
12.   In the laboratory course, the student shall perform experiments related to mechanics (compound pendulum), rotational dynamics (Flywheel), elastic properties (YoungModulus and Modulus of Rigidity) and fluid dynamics (verification of Stokes law, Searle method) etc.

Skills to be learned:
1.   Training in calculus will prepare the student to solve various mathematical problems.
2.   He / she shall develop an understanding of how to formulate a physics problem and solve given mathematical equation risen out of it.
3.   Learn the concepts of elastic in constant of solids and viscosity of fluids.
4.   Develop skills to understand and solve the equations centralforce problem.
5.   Acquire basic knowledge of oscillation.
6.   About inertial and non-inertial systems and special theory of relativity

Course Content:
The emphasis of course is on applications in solving problems of interest to physicists.The students are to be examined entirely on the basis of problems, seen and unseen.

Calculus:
Recapitulation: Limits, continuity, average and instantaneous quantities, differentiation. Plotting functions, Intuitive ideas of continuous, differentiable, etc. functions and plotting of curves. Approximation: Taylor and binomial series. **(2 Lectures)**

First Order and Second Order Differential equations: First Order Differential Equations and Integrating Factor. Homogeneous Equations with constant coefficients. Wronskian and general solution. Particular Integral.
(6 Lectures)

Vector Calculus:
Vector Differentiation: Directional derivatives and normal derivative. Gradient of a scalar field and its geometrical interpretation. Divergence and curl of a vector field. Del and Laplacian operators. Vector identities.
(9 Lectures)

Vector Integration: Line, surface and volume integrals of Vector fields. Flux of a vector field. Gauss' divergence theorem, Green's and Stokes Theorems and theirapplications (no rigorous proofs).   **(6 Lectures)**

Orthogonal Curvilinear Coordinates:
Orthogonal Curvilinear Coordinates. Derivation of Gradient, Divergence, Curl and Laplacian in Cartesian, Spherical and Cylindrical Coordinate Systems.   **(7 Lectures)**

Elasticity: Elastic constants and interrelation between Elastic constants. Twisting torque on a Cylinder or Wire and Twisting couple.   **(3 Lectures)**

Flexure of Beam: Bending of beam, Cantilever.   **(3 Lectures)**

Surface Tension: Ripples and Gravity waves, Determination of surface tension by Jaeger's and Quinke's methods. Temperature dependance of surface tension.   **(6 Lectures)**

Fluid Motion: Kinematics of Moving Fluids: Poiseuille's Equation for Flow of a Liquid through a Capillary Tube and corrections.   **(2 Lectures)**

Central Force Motion: Motion of a particle under a central force field. Two-body problem and its reduction to one-body problem and its solution. Kepler's Laws. Satellite in circular orbit and applications. Geosynchronous orbits. Weightlessness. Basic idea of global positioning system (GPS).   **(3 Lectures)**

Oscillations: Simple Harmonic Oscillations. Differential equation of SHM and its solution. Kinetic energy, potential energy, total energy and their time-average values. Damped oscillation. Forced oscillations:

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Transient and steady states; Resonance, sharpness of resonance; power dissipation and Quality Factor.
(4 Lectures)

Special Theory of Relativity: Michelson-Morley Experiment and its outcome. Postulates ofSpecial Theory of Relativity. Lorentz Transformations. Simultaneity and order of events. Lorentz contraction. Time dilation. Relativistic transformation of velocity, frequency and wave number. Relativistic addition of velocities. Variation of mass with velocity. Massless Particles. Mass- energy Equivalence. Relativistic Doppler effect.
(9 Lectures)

Reference Books:
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2. Mathematical Physics, P. K. Chattopadhyaya, 2/e, New Age International Publisher
3. An introduction to ordinary differential equations, E.A. Coddington, 2009, PHI learning
4. Differential Equations, George F. Simmons, 2007, McGraw Hill.
5. Mathematical Tools for Physics, James Nearing, 2010, Dover Publications.
6. Mathematical methods for Scientists and Engineers, D.A. McQuarrie, 2003, Viva Book
7. Advanced Enggg. Mathematics, D.G. Zill and W.S. Wright, 5 Ed., 2012, Jones andBartlett Learning
8. Mathematical Physics, Goswami, 1st edition, Cengage Learning
9. Engineering Mathematics, S.Pal and S.C. Bhunia, 2015, Oxford University Press
10. Advanced Engineering Mathematics, Erwin Kreyszig, 2008, Wiley India.
11. Essential Mathematical Methods, K.F.Riley & M.P.Hobson, 2011, Cambridge Univ. Press.
12. Mathematical Physics, H.K. Dass and R. Verma, S. Chand & Company.
13. An introduction to Mechanics, D. Kleppner, R.J. Kolenkow, 1973, McGraw-Hill.
14. Mechanics, Berkeley Physics, vol.1, C.Kittel, W.Knight, et.al. 2007, Tata McGraw-Hill.
15. Physics, Resnick, Halliday and Walker 8/e. 2008, Wiley.
16. Analytical Mechanics, G.R. Fowles and G.L. Cassiday. 2005, Cengage Learning
17. Feynman Lectures, Vol. I, R.P.Feynman, R.B.Leighton, M.Sands, 2008, Pearson Education
18. Undergraduate Mechanics, Arun Kumar, J. P. Agarwal and Nutan Lata, Pragati Prakashan
19. Introduction to Special Relativity, R. Resnick, 2005, John Wiley and Sons.

Additional Books for Reference
1. Mechanics, D.S. Mathur, S. Chand and Company Limited, 2000
2. University Physics. F.W Sears, M.W Zemansky, H.D Young 13/e, 1986, Addison Wesley
3. Physics for scientists and Engineers with Modern Phys., J.W. Jewett, R.A. Serway, 2010,Cengage Learning
4. Theoretical Mechanics, M.R. Spiegel, 2006, Tata McGraw Hill.

XXI. SKILL ENHANCEMENT COURSE- SEC 1:
ELECTRICAL CIRCUITS AND NETWORK SKILLS

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objectives:
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

Course Contents:

Basic Electricity Principles:
Voltage, Current, Resistance, and Power. Ohm's law. Series, parallel, and series-parallel combinations. AC Electricity and DC Electricity. Familiarization with multimeter, voltmeter and ammeter.   **(5 Lectures)**

Understanding Electrical Circuits:
Main electric circuit elements and their combination. Rules to analyze DC sourced electrical circuits. Current and voltage drop across the DC circuit elements. Single-phase and three-phase alternating current sources. Rules to analyze AC sourced electrical circuits. Real, imaginary and complex power components of AC source. Power factor. Saving energy and money.   **(5 Lectures)**

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Electrical Drawing and Symbols:
Drawing symbols. Blueprints. Reading Schematics. Ladder diagrams. Electrical Schematics. Power circuits. Control circuits. Reading of circuit schematics. Tracking the connections of elements and identify current flow and voltage drop.   **(5 Lectures)**

Generators and Transformers: **(5 Lectures)**
DC Power sources. AC/DC generators. Inductance, capacitance, and impedance. Operation of transformers.
Electric Motors:
Single-phase, three-phase & DC motors. Basic design. Interfacing DC or AC sources to control heaters & motors. Speed & power of ac motor.   **(6 Lectures)**
Solid-State Devices:
Resistors, inductors and capacitors. Diode and rectifiers. Components in Series or in shunt. Response of inductors and capacitors with DC or AC sources   **(5 Lectures)**

Electrical Protection:
Relays. Fuses and disconnect switches. Circuit breakers. Overload devices. Ground-fault protection. Grounding and isolating. Phase reversal. Surge protection. Interfacing DC or AC sources to control elements (relay protection device)   **(6 Lectures)**
Electrical Wiring:
Different types of conductors and cables. Basics of Wiring-Star and delta connection. Voltage drop and losses across cables and conductors. Instruments to measure current, voltage, power in DC and AC circuits. Insulation. Solid and stranded cable. Conduit. Cable trays. Splices: wirenuts, crimps, terminal blocks, split bolts, and solder. Preparation of extension board.
(8 Lectures)

<div align="center">Laboratory Exercises:</div>

1. Use of multimeter, voltmeter and ammeter
2. To observe current and voltage drop across the DC circuit elements.
3. To track the connections of elements and identify current flow and voltage drop.
4. To observe the working of transformer under no load and full load condition
5. Use of diode as half wave, full wave and bridge rectifier
6. To observe the response of inductor and capacitor with DC or AC sources
7. To understand the importance of interfacing DC or AC sources to relay protection device
8. To prepare an extension board with more than one input terminal (3 pin socket) and check its working
Reference Books:
1.   A text book in Electrical Technology - B L Theraja - S Chand & Co.
2.   A text book of Electrical Technology - A K Theraja
3.   Performance and design of AC machines - M G Say ELBS Edn.

SEMESTER II

<div align="center">

XLI.   MAJOR COURSE- MJ 2:
ELECTROMAGNETISM

</div>

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

<div align="right">(Credits: Theory-04) 60 Hours</div>

<u>**Course Learning Outcomes:**</u>
After going through the course, the student should be able to
   1.   Explain and differentiate the vector (electric fields, Coulomb's law) and scalar (electricpotential, electric potential energy) formalisms of electrostatics.
   2.   Apply Gauss's law of electrostatics to solve a variety of problems.

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3.   Articulate knowledge of electric current, resistance and capacitance in terms of electric field and electric potential.

4.   Describe the magnetic field produced by magnetic dipoles and electric currents.

5.   Explain Faraday-Lenz and Maxwell laws to articulate the relationship between electric and magnetic fields.

6.   Understand the dielectric properties, magnetic properties of materials and the phenomena of electromagnetic induction.

7.   Describe how magnetism is produced and list examples where its effects are observed.

8.   Apply Kirchhoff's rules to analyze AC circuits consisting of parallel and/or series combinations of voltage sources and resistors and to describe the graphical relationship of resistance, capacitor and inductor.

9.   Apply various network theorems such as Superposition, Thevenin, Norton, Reciprocity, Maximum Power Transfer, etc. and their applications in electronics, electrical circuit analysis, and electrical machines.

10.   In the laboratory course the student will get an opportunity to verify various laws in electricity and magnetism such as Lenz's law, Faraday's law and learn about the construction, working of various measuring instruments.

11.   Should be able to verify of various circuit laws, network theorems elaborated above, using simple electric circuits.

12.   Achieve an understanding of the Maxwell's equations, role of displacement current, gauge transformations, scalar and vector potentials, Coulomb and Lorentz gauge, boundary conditions at the interface between different media.

13.   Apply Maxwell's equations to deduce wave equation, electromagnetic field energy, momentum and angular momentum density.

14.   Analyse the phenomena of wave propagation in the unbounded, bounded, vacuum, dielectric, guided and unguided media.

15.   Understand the laws of reflection and refraction and to calculate the reflection and transmission coefficients at plane interface in bounded media.

16.   Plan and Execute 2-3 group projects for designing new experiments based on the Syllabi.

Skills to be learned:

1.   This course will help in understanding basic concepts of electricity and magnetism and their applications.

2.   Basic course in electrostatics will equips the student with required prerequisites to understand electrodynamics phenomena.

3.   Comprehend the role of Maxwell's equation in unifying electricity and magnetism.

4.   Derive expression for
   a.   Energy density
   b.   Momentum density
   c.   Angular momentum density of the electromagnetic field

5.   Learn the implications of Gauge invariance in EM theory in solving the wave equations and develop the skills to actually solve the wave equation in various media like
   a.   Vacuum
   b.   Dielectric medium
   c.   Conducting medium

6.   Derive and understand associated with the properties, EM wave passing through the interface between two media like
   a.   Reflection
   b.   Refraction
   c.   Transmission

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Course Content:
Electric Field and Electric Potential
Conservative nature of Electrostatic Field. Electrostatic Potential. Laplace's and Poisson equations. The Uniqueness Theorem. Potential and Electric Field of a dipole. Force and Torque on a dipole. Electrostatic energy of system of charges. Electrostatic energy of a charged sphere. Conductors in an electrostatic Field. Surface charge and force on a conductor. Capacitance of a system of charged conductors. Parallel-plate capacitor.

(6 Lectures)

Dielectric Properties of Matter: Electric Field in matter. Polarization, Polarization Charges. Electrical Susceptibility and Dielectric Constant. Capacitor (parallel plate, spherical, cylindrical) filled with dielectric. Displacement vector **D**. Relations between **E**, **P** and **D**. Gauss' Law in dielectrics.   **(5 Lectures)**

Magnetic Field: Magnetic force between current elements and definition of Magnetic Field **B**. Biot-Savart's Law and its simple applications: straight wire and circular loop. Current Loop as a Magnetic Dipole and its Dipole Moment (Analogy with Electric Dipole). Ampere's Circuital Law and its application to (1) Solenoid and (2) Toroid. Properties of **B**: curl and divergence. Vector Potential. Magnetic Force on (1) point charge (2) current carrying wire (3) between current elements. Torque on a current loop in a uniform Magnetic Field.
(10 Lectures)

Magnetic Properties of Matter: Magnetization vector (**M**). Magnetic Intensity (**H**). Magnetic Susceptibility and permeability. Relation between **B, H, M**. Ferromagnetism. B-H curve and hysteresis.   **(4 Lectures)**

Electrical Circuits: AC Circuits: Kirchhoff's laws for AC circuits. Complex Reactance and Impedance. Series LCR Circuit: (1) Resonance, (2) Power Dissipation and (3) Quality Factor, and (4) Band Width. Parallel LCR Circuit.   **(5 Lectures)**

Ballistic Galvanometer: Torque on a current Loop. Ballistic Galvanometer: Current and Charge Sensitivity. Electromagnetic damping. Logarithmic damping. CDR.   **(3 Lectures)**

Maxwell Equations: Review of Maxwell's equations. Displacement Current. Vector and Scalar Potentials. Gauge Transformations: Lorentz and Coulomb Gauge. Boundary Conditions at Interface between Different Media. Wave Equations. Plane Waves in Dielectric Media. Poynting Vector and Poynting Theorem. Electromagnetic (EM) Energy Density. Physical Concept of Electromagnetic Field Energy Density. **(10 Lect.)**

EM Wave Propagation in Unbounded Media: Plane EM waves through vacuum and isotropic dielectric medium, transverse nature of plane EM waves, refractive index and dielectric constant, wave impedance. Propagation through conducting media, relaxation time, skin depth. Wave propagation through dilute plasma, electrical conductivity of ionized gases, plasma frequency, refractive index, skin depth.   **(8 Lectures)**

EM Wave in Bounded Media: Boundary conditions at a plane interface between two media. Reflection & Refraction of plane waves at plane interface between two dielectric media-Laws of Reflection & Refraction. Fresnel's Formulae for perpendicular & parallel polarization cases, Brewster's law. Reflection & Transmission coefficients. Total internal reflection.   **(9 Lectures)**

Reference Books:
1. Electricity, Magnetism & Electromagnetic Theory, S. Mahajan and Choudhury, 2012, Tata McGraw
2. Concepts of Electromagnetic Theory, K. Mamta, Raj Kumar Singh and J. N. Prasad, 1st Edn 2021, Wiley/I. K. International Publishing House, New Delhi
3. Electricity and Magnetism, P. K. Chakraborty, New Age International Pvt. Ltd.
4. Electricity and Magnetism, Edward M. Purcell, 1986 McGraw-Hill Education
5. Introduction to Electrodynamics, D.J. Griffiths, 3rd Edn., 1998, Benjamin Cummings.
6. Feynman Lectures Vol.2, R.P. Feynman, R.B. Leighton, M. Sands, 2008, Pearson Education
7. Elements of Electromagnetics, M.N.O. Sadiku, 2010, Oxford University Press.
8. Electricity and Magnetism, J.H. Fewkes & J. Yarwood. Vol. I, 1991, Oxford Univ. Press.
9. Introduction to Electrodynamics, D.J. Griffiths, 3rd Ed., 1998, Benjamin Cummings.
10. Elements of Electromagnetics, M.N.O. Sadiku, 2001, Oxford University Press.

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11. Introduction to Electromagnetic Theory, T.L. Chow, 2006, Jones & Bartlett Learning
12. Fundamentals of Electromagnetics, M.A.W. Miah, 1982, Tata McGraw Hill
13. Electromagnetic field Theory, R.S. Kshetrimayun, 2012, Cengage Learning
14. Engineering Electromagnetic, Willian H. Hayt, 8th Edition, 2012, McGraw Hill.
15. Electromagnetic Field Theory for Engineers & Physicists, G. Lehner, 2010, Springer

XLII. MAJOR COURSE- MJ 3:
PRACTICALS-I: MECHANICS AND ELECTROMAGNETISM

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04)   **120 Hours**

Instruction to Question Setter for

<u>*End Semester Examination (ESE):*</u>
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practical:

1. Measurements of length (or diameter) using vernier caliper, screw gauge and travelling microscope.
2. To study the random error in observations of simple pendulum oscillations.
3. To study the Motion of Spring and calculate (a) Spring constant, (b) **g** and (c) Modulus ofrigidity.
4. To determine **g** and velocity for a freely falling body using Digital Timing Technique
5. To determine Coefficient of Viscosity of water by Capillary Flow Method (Poiseuille'smethod).
6. To determine the Young's Modulus of a Wire by Optical Lever Method.
7. To determine the Modulus of Rigidity of a Wire by Maxwell's needle.
8. To determine the elastic Constants of a wire by Searle's method.
9. To determine the value of g using Bar Pendulum.
10. To determine the value of g using Kater's Pendulum.
11. Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c) DC Current,
    a. (d) Capacitances, and (e) Checking electrical fuses.
12. To determine an unknown Low Resistance using Potentiometer.
13. To compare capacitances using De' Sauty's bridge.
14. To study response curve of a Series LCR circuit and determine its (a) Resonant frequency,
    a. (b) Impedance at resonance, (c) Quality factor Q, and (d) Band width.
15. To study the response curve of a parallel LCR circuit and determine its (a) Anti-resonant frequency and (b) Quality factor Q.

Reference Books

1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia PublishingHouse
2. A Text Book of Practical Physics, I.Prakash & Ramakrishna, 11th Ed., 2011, Kitab Mahal
3. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted1985, Heinemann Educational Publishers
4. Engineering Practical Physics, S.Panigrahi and B.Mallick, 2015, Cengage Learning.
5. A Laboratory Manual of Physics for undergraduate classes, D.P.Khandelwal, 1985, Vani Pub.
6. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia PublishingHouse.
7. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted1985, Heinemann Educational Publishers
8. A Text Book of Practical Physics, I.Prakash & Ramakrishna, 11th Ed., 2011, Kitab Mahal
9. Electromagnetic Field Theory for Engineers & Physicists, G. Lehner, 2010, Springer

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XLIII. SKILL ENHANCEMENT COURSE- SEC 2:
BASIC INSTRUMENTATION SKILLS

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objectives:

This course is to get exposure with various aspects of instruments and their usage through hands-on mode. Experiments listed below are to be done in continuation of the topics.

Course Contents:

Basic of Measurement:

Instruments accuracy, precision, sensitivity, resolution range etc. Errors in measurements and loading effects.
Multimeter: Principles of measurement of dc voltage and dc current, ac voltage, ac current and resistance. Specifications of a multimeter and their significance.   **(5 Lectures)**

Electronic Voltmeter:

Advantage over conventional multimeter for voltage measurement with respect to input impedance and sensitivity. Principles of voltage, measurement (block diagram only). Specifications of an electronic Voltmeter/ Multimeter and their significance. AC millivoltmeter: Type of AC millivoltmeters: Amplifier-rectifier, and rectifier- amplifier. Block diagram ac millivoltmeter**,** specifications and their significance.
(7 Lectures)

Cathode Ray Oscilloscope:

Block diagram of basic CRO. Construction of CRT, Electron gun, electrostatic focusing and acceleration (Explanation only– no mathematical treatment), brief discussion on screen phosphor, visual persistence & chemical composition. Time base operation, synchronization. Front panel controls. Specifications of a CRO and their significance. Use of CRO for the measurement of voltage (dc and ac frequency, time period. Special features of dual trace, introduction to digital oscilloscope, probes. Digital storage Oscilloscope: Block diagram and principle of working.   **(12 Lectures)**

Signal Generators and Analysis Instruments:

Block diagram, explanation and specifications of low frequency signal generators. pulse generator, and function generator. Brief idea for testing, specifications. Distortion factor meter, wave analysis.   **(6 Lectures)**

Impedance Bridges & Q-Meters:

Block diagram of bridge. working principles of basic (balancing type) RLC bridge. Specifications of RLC bridge. Block diagram & working principles of a Q- Meter. Digital LCR bridges.   **(5 Lectures)**

Digital Instruments:

Principle and working of digital meters. Comparison of analog & digital instruments. Characteristics of a digital meter. Working principles of digital voltmeter.   **(5 Lectures)**

Digital Multimeter:

Block diagram and working of a digital multimeter. Working principle of time interval, frequency and period measurement using universal counter/ frequency counter, time- base stability, accuracy and resolution.
                                                                                                        (5 Lectures)

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The test of lab skills will be of the following test items:
1. Use of an oscilloscope.
2. CRO as a versatile measuring device.
3. Circuit tracing of Laboratory electronic equipment,
4. Use of Digital multimeter/VTVM for measuring voltages
5. Circuit tracing of Laboratory electronic equipment,
6. Winding a coil / transformer.
7. Study the layout of receiver circuit.
8. Trouble shooting a circuit
9. Balancing of bridges

LABORATORY EXERCISES:
1. To observe the loading effect of a multimeter while measuring voltage across a
2. low resistance and high resistance.
3. To observe the limitations of a multimeter for measuring high frequency voltage
4. and currents.
5. To measure Q of a coil and its dependence on frequency, using a Q- meter.
6. Measurement of voltage, frequency, time period and phase angle using CRO.
7. Measurement of time period, frequency, average period using universal counter/ frequency counter.
8. Measurement of rise, fall and delay times using a CRO.
9. Measurement of distortion of a RF signal generator using distortion factor meter.
10. Measurement of R, L and C using a LCR bridge/ universal bridge.

Open Ended Experiments:
1. Using a Dual Trace Oscilloscope
2. Converting the range of a given measuring instrument (voltmeter, ammeter)

Reference Books:
1. A text book in Electrical Technology - B L Theraja - S Chand and Co.
2. Performance and design of AC machines - M G Say ELBS Edn.
3. Digital Circuits and systems, Venugopal, 2011, Tata McGraw Hill.
4. Logic circuit design, Shimon P. Vingron, 2012, Springer.
5. Digital Electronics, Subrata Ghoshal, 2012, Cengage Learning.
6. Electronic Devices and circuits, S. Salivahanan & N. S.Kumar, 3rd Ed., 2012, Tata Mc-Graw Hill
7. Electronic circuits: Handbook of design and applications, U.Tietze, Ch.Schenk, 2008, Springer
8. Electronic Devices, 7/e Thomas L. Floyd, 2008, Pearson India
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SEMESTER III

XLIV. MAJOR COURSE- MJ 4:
WAVES AND OPTICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
This course will enable the student to
1. Recognize and use a mathematical oscillator equation and wave equation, and derive these equations for certain systems.
2. Apply basic knowledge of principles and theories about the behavior of light and the physical environment to conduct experiments.
3. Understand the principle of superposition of waves, so thus describe the formation of standing waves.
4. Explain several phenomena we can observe in everyday life that can be explained as wave phenomena.
5. Use the principles of wave motion and superposition to explain the Physics of polarisation, interference and diffraction.
6. Understand the working of selected optical instruments like biprism, interferometer, diffraction grating, and holograms.
7. In the laboratory course, student will gain hands-on experience of using various optical instruments and making finer measurements of wavelength of light using Newton Rings experiment, Fresnel Biprism etc. Resolving power of optical equipment can be learnt firsthand.
8. The motion of coupled oscillators, study of Lissajous figures and behaviour of transverse, longitudinal waves can be learnt in this laboratory course.

Skills to be learned:
1. He / she shall develop an understanding of various aspects of harmonic oscillations and waves specially.
    a. Superposition of collinear and perpendicular harmonic oscillations
    b. Various types of mechanical waves and their superposition.
2. This course in basics of optics will enable the student to understand various optical phenomena, principles, workings and applications optical instruments.

Course Content:

Wave Motion: Plane and Spherical Waves. Longitudinal and Transverse Waves. Plane Progressive (Travelling) Waves. Wave Equation. Particle and Wave Velocities. Differential Equation. Pressure of a Longitudinal Wave. Energy Transport. Intensity of Wave. Water Waves: Ripple and Gravity Waves.

(4 Lectures)

Velocity of Waves: Velocity of Transverse Vibrations of Stretched Strings. Velocity of Longitudinal Waves in a Fluid in a Pipe. Newton's Formula for Velocity of Sound. Laplace's Correction.

(6 Lectures)

Superposition of Collinear and two perpendicular Harmonic oscillations: Linearity and Superposition Principle. Superposition of two collinear oscillations having (1) equal frequencies and (2) different frequencies (Beats). Superposition of N collinear Harmonic Oscillations with (1) equal phase differences and (2) equal frequency differences. Graphical and Analytical Methods. Lissajous Figures with equal an unequal frequency and their uses. **(5 Lectures)**

Superposition of Two Harmonic Waves: Standing (Stationary) Waves in a String: Fixed and Free Ends. Analytical Treatment. Phase and Group Velocities. Changes with respect to Position and Time. Energy of Vibrating String. Transfer of Energy. Normal Modes of Stretched Strings. Plucked and Struck Strings.

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Melde's Experiment. Longitudinal Standing Waves and Normal Modes. Open and Closed Pipes. Superposition of N Harmonic Waves.
(7 Lectures)

Interference: Temporal and Spatial Coherence. Division of amplitude and wavefront. Young's double slit experiment. Lloyd's Mirror and Fresnel's Biprism. Phase change on reflection: Stokes' treatment. Interference in Thin Films: parallel and wedge-shaped films. Fringes of equal inclination (Haidinger Fringes); Fringes of equal thickness (Fizeau Fringes). Newton's Rings: Measurement of wavelength and refractive index.   **(9 Lectures)**

Interferometer: Michelson Interferometer-(1) Idea of form of fringes (No theory required),
 (2) Determination of Wavelength, (3) Wavelength Difference, (4) Refractive Index, and (5)Visibility of Fringes. Fabry-Perot interferometer.   **(4 Lectures)**

Fraunhofer diffraction: Single slit, Double slit. Multiple slits, Diffraction grating. Circular aperture. Resolving Power of telescope and grating.   **(8 Lectures)**

Fresnel Diffraction: Fresnel's Assumptions. Fresnel's Half-Period Zones for Plane Wave. Explanation of Rectilinear Propagation of Light. Theory of a Zone Plate: Multiple Foci of a Zone Plate. Fresnel's Integral, Fresnel diffraction pattern of a straight edge, a slit and a wire.   **(7 Lectures)**

Polarization of Electromagnetic Waves: Description of Linear, Circular and Elliptical Polarization. Propagation of E.M. Waves in Anisotropic Media. Fresnel's Formula. Uniaxial and Biaxial Crystals. Light Propagation in Uniaxial Crystal. Double Refraction. Polarization by Double Refraction. Nicol Prism. Ordinary & extraordinary refractive indices. Production & detection of Plane, Circularly and Elliptically Polarized Light. Phase Retardation Plates: Quarter-Wave and Half-Wave Plates. Babinet Compensator and its Uses Analysis of Polarized Light   **(7 Lectures)**

Rotatory Polarization: Optical Rotation. Biot's Laws for Rotatory Polarization. Fresnel's Theory of optical rotation. Calculation of angle of rotation. Experimental verification of Fresnel's theory. Specific rotation. Laurent's half-shade polarimeter.   **(3 Lectures)**

Reference Books:
1. Waves: Berkeley Physics Course, vol. 3, Francis Crawford, 2007, Tata McGraw-Hill.
2. Fundamentals of Optics, F.A. Jenkins and H.E. White, 1981, McGraw-Hill
3. Concepts of Electromagnetic Theory, K. Mamta, Raj Kumar Singh and J. N. Prasad, 1/e, 2021, Wiley/I. K. International Publishing House, New Delhi
4. Optics, Ajoy Ghatak, 2008, Tata McGraw Hill
5. The Physics of Vibrations and Waves, H. J. Pain, 2013, John Wiley and Sons.
6. Fundamental of Optics, A. Kumar, H.R. Gulati and D.R. Khanna, 2011, R. ChandPublications.
7. Electromagnetic Theory, Chopra & Agarwal, Kedarnath Ramnath & Co.

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XLV. MAJOR COURSE- MJ 5:
PRACTICALS-II   : WAVES AND OPTICS

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
1. Familiarization with: Schuster`s focusing; determination of angle of prism.
2. To determine refractive index of the Material of a prism using sodium source.
3. To determine the dispersive power and Cauchy constants of the material of a prism usingmercury source.
4. To determine wavelength of sodium light using Fresnel Biprism.
5. To determine wavelength of sodium light using Newton's Rings.
6. To determine wavelength of (1) Na source and (2) spectral lines of Hg source using planediffraction grating.
7. To determine dispersive power and resolving power of a plane diffraction grating.
8. To verify the law of Malus for plane polarized light.
9. To determine the specific rotation of sugar solution using Polarimeter.
10. To study diffraction due to straight edge.

Reference Books:
1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, AsiaPublishing House
2. A Text Book of Practical Physics, I. Prakash & Ramakrishna, 11th Ed., 2011, Kitab Mahal
3. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition,reprinted 1985, Heinemann Educational Publishers
4. A Laboratory Manual of Physics for undergraduate classes, D.P.Khandelwal, 1985, VaniPub.

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XLVI. SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

A Common Syllabus for FYUGP   (Credits: Theory-03) **45 Hours**

Instruction to Question Setter for
End Semester Examination (ESE):
There will be **objective type test** consisting of **Seventy-five questions of 1 mark each**. *Students are required to mark their answer on* **OMR Sheet** *provided by the University.*

Course Objectives:
The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

U. INTRODUCTION TO COMPUTER SYSTEM

1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU)   **(3 Lecture)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer   **(4 Lecture)**

3. Operating system: What is an Operating System, Operating System Examples, Functions of Operating System(Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting
(6 Hours)
4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages   **(4 Hours)**

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails.   **(6 Hours)**

V. MICROSOFT OFFICE 2016 AND LATEST VERSIONS
6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents
        (7 Hours)

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation, slide show, Master Slides, Creating photo album, Rehearse timing and record narration   **(5 Hours)**

9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning   **(4 Hours)**

Reference Books
82.   Nishit Mathur, Fundamentals of Computer, APH publishing corporation (2010)
83.   Neeraj Singh, Computer Fundamentals (Basic Computer), T Balaji, (2021)
84.   Joan Preppernau, Microsoft Power Point 2016 step by step, Microsoft press (2015)

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85.   Douglas E Corner, The Internet Book 4th Edition, prentice –Hall (2009)
86.   Steven Welkler, Office 2016 for beginners, Create Space Independent Publishing Platform (2016)
87.   Wallace Wang, Microsoft Office 2019, Wiley (January 2018)
88.   Noble Powell, Windows 11 User Guide For Beginners and Seniors, ASIN, (October 2021)

SEMESTER IV

XLVII.   MAJOR COURSE- MJ 6:
MATHEMATICAL PHYSICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
1.   Learn the Fourier analysis of periodic functions and their applications in physicalproblems such as vibrating strings etc.
2.   Learn about the special functions, such as the Hermite polynomial, the Legendre polynomial, the Laguerre polynomial and Bessel functions and their differential equations, applications in various physical problems such as in quantum mechanics which they will learn in future courses in detail.
3.   Learn the beta, gamma and the error functions and their applications in doing integrations.
4.   Acquire knowledge of methods to solve partial differential equations with the examples of important partial differential equations in Physics.
5.   Apply the Scilab software in curve fittings, in solving system of linear equations, generating and plotting special functions such as Legendre polynomial and Bessel functions, solving first and second order ordinary and partial differential equations.
6.   Learn about the Fourier transform, the inverse Fourier transform, their properties and their applications in physical problems. They are also expected to learn the Laplace transform, the inverse Laplace transforms, their properties and their applications in solving physical problems.
7.   In the laboratory course, the students should apply their C++/Scilab programming language to solve the following problems:
    a.   Solution 1st and 2nd order ordinary differential equations with appropriate boundary conditions,
    b.   Evaluation of the Fourier coefficients of a given periodic function,
    c.   Plotting the Legendre polynomials and the Bessel functions of different orders and interpretations of the results, Least square fit of a given data to a graph

Skills to be learned:
1.   Training in mathematical tools like calculus, integration, series solution approach, special function will prepare the student to solve ODE, PDE's which model physicalphenomena.
2.   He / she shall develop an understanding of how to model a given physical phenomenon such as pendulum motion, rocket motion, stretched string, etc., into set of ODE's, PDE's and solve them.
3.   These skills will help in understanding the behavior of the modeled system/s.

Course Content:
The emphasis of the course is on applications in solving problems of interest to physicists. Students are to be examined on the basis of problems, seen and unseen.

Fourier Series: Periodic functions. Orthogonality of sine and cosine functions, Expansion of periodic functions in a series of sine and cosine functions and determination of Fourier coefficients. Complex representation of Fourier series. Expansion of functions with arbitrary period. Expansion of non-periodic functions over aninterval. Even and odd functions and their Fourier expansions and its applications
        (8 Lectures)

Frobenius Method and Special Functions: Frobenius method and its applications to differentialequations. Legendre, Bessel, Hermite and Laguerre Differential Equations. Properties of Legendre Polynomials:

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Rodrigues Formula, Generating Function, Orthogonality. Simplerecurrence relations. Expansion of function in a series of Legendre Polynomials. Bessel Functions of the First Kind: Generating Function, simple recurrence relations. Zeros of Bessel Functions ($Jo(x)$ and $J1(x)$) and Orthogonality.   **(14 Lectures)**

Some Special Integrals: Beta and Gamma Functions and Relation between them. Expression of Integrals in terms of Gamma Functions. Error Function (Probability Integral)   **(2 Lectures)**

Partial Differential Equations: Solutions to partial differential equations, using separation of variables: Laplace's Equation in problems of rectangular, cylindrical and spherical symmetry. Wave equation and its solution for vibrational modes of a stretched string**.   (4 Lectures)**

Complex Analysis: Brief Revision of Complex Numbers and their Graphical Representation. Euler's formula, de Moivre's theorem, Roots of Complex Numbers. Functions of Complex Variables. Analyticity and Cauchy-Riemann Conditions. Examples of analytic functions. Singular functions: poles, order of singularity. Integration of a function of a complex variable. Cauchy's Inequality. Cauchy's Integral formula. Simply and multiply connected region. Laurent and Taylor's expansion. Residues and Residue Theorem. Application in solving Definite Integrals.   **(14 Lectures)**

Integrals Transforms: Fourier Transforms: Fourier Integral theorem. Fourier Transform. Examples. Fourier transform of trigonometric, Gaussian, finite wave train & other functions. Representation of Dirac delta function as a Fourier Integral. Fourier transform of derivatives, Inverse Fourier transform, Properties of Fourier transforms (translation, change of scale, complex conjugation, etc.). Three dimensional Fourier transforms with examples. Application of Fourier Transforms to differential equations: One dimensional Wave andDiffusion/Heat Flow Equations.   **(9 Lectures)**

Laplace Transforms: Laplace Transform (LT) of Elementary functions. Properties of LTs: Change of Scale Theorem, Shifting Theorem. LTs of 1st and 2nd order Derivatives and Integralsof Functions, Derivatives and Integrals of LTs. LT of Unit Step function, Periodic Functions. Convolution Theorem. Inverse LT. Application of Laplace Transforms to 2^{nd}order Differential Equations: Damped Harmonic Oscillator, Simple Electrical Circuits.   **(9 Lectures)**

Reference Books:
1.   Mathematical Methods for Physics and Engineers, K.F Riley, M.P. Hobson and
       S. J. Bence, 3rd ed., 2006, Cambridge University Press
2.   Complex Variables, A.S. Fokas & M.J. Ablowitz, 8th Ed., 2011, Cambridge Univ. Press
3.   First course in complex analysis with applications, D.G. Zill and P.D. Shanahan,1940, Jones & Bartlett
4.   Computational Physics, D.Walker, 1st Edn., 2015, Scientific International Pvt. Ltd.
5.   A Guide to MATLAB, B.R.Hunt, R.L.Lipsman, J.M. Rosenberg, 2014, 3rd Ed^n , Cambridge Univ. Press
 6.   Simulation of ODE/PDE Models with MATLAB, OCTAVE and SCILAB: Scientific and Engineering Applications:
                   A.V. Wouwer, P. Saucez, C.V. Fernández. 2014 Springer
7.   Scilab by example: M. Affouf 2012, ISBN: 978-1479203444
8.   Scilab (A free software to Matlab): H.Ramchandran, A.S.Nair. 2011 S.Chand & Company
9.   Scilab Image Processing: Lambert M. Surhone. 2010 Betascript Publishing
10.   www.scilab.in/textbook_companion/generate_book/291
11.   Mathematics for Physicists, P. Dennery and A.Krzywicki, 1967, Dover Publications
12.   Complex Variables, A.S.Fokas & M.J.Ablowitz, 8th Ed., 2011, Cambridge Univ. Press
13.   Complex Variables, A.K. Kapoor, 2014, Cambridge Univ. Press
14.   Complex Variables and Applications, J.W.Brown & R.V.Churchill, 7th Ed. 2003, TataMcGraw-Hill
15.   First course in complex analysis with applications, D.G. Zill and P.D. Shanahan, 1940, Jones& Bartlett
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XLVIII.   MAJOR COURSE- MJ 7:
THERMAL AND STATISTICAL PHYSICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
1. Comprehend the basic concepts of thermodynamics, the first and the second law of thermodynamics, the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations.
2. Learn about Maxwell's thermodynamic relations.
3. Learn the basic aspects of kinetic theory of gases, Maxwell-Boltzman distribution law, equitation of energies, mean free path of molecular collisions, viscosity, thermal conductivity, diffusion and Brownian motion.
4. Learn about the real gas equations, Van der Waal equation of state, the Joule- Thompson effect.
5. Understand the concepts of microstate, macrostate, ensemble, phase space, thermodynamic probability and partition function.
6. Understand the combinatoric studies of particles with their distinguishably or indistinguishably nature and conditions which lead to the three different distribution laws e.g. Maxwell-Boltzmann distribution, Bose-Einstein distribution and Fermi-Dirac distribution laws of particles and their derivation.
7. To apply classical statistical mechanics to derive the law of equipartition of energy and specific heat.
8. Understand Gibbs paradox, equipartition of energy & concept of negative temp. in two level system.
9. Learn to derive classical radiation laws of black body radiation. Wiens law, Rayleigh Jeans law, ultraviolet catastrophe. Saha ionization formula.
10. Learn to calculate the macroscopic properties of degenerate photon gas using BE distribution law, understand Bose-Einstein condensation law and liquid Helium. Bose derivation of Plank's law
11. Understand the concept of Fermi energy and Fermi level, calculate the macroscopic properties of completely and strongly degenerate Fermi gas, electronic contribution to specific heat of metals.
12. Understand the application of F-D statistical distribution law to derive thermodynamic functions of a degenerate Fermi gas, electron gas in metals and their properties.
13. Calculate electron degeneracy pressure and ability to understand the Chandrasekhar mass limit, stability of white dwarfs against gravitational collapse.
14. Use Computer simulations to study:
    a. Planck's Black Body Radiation Law and compare with the Wien's Law and Raleigh -Jean's Law in appropriate temperature region.
    b. Specific Heat of Solids by comparing, Dulong-Petit, Einstein's and Debye's Lawsand study their temperature dependence
15. Compare the following distributions as a function of temperature for various energiesand the parameters of the distribution functions:
    a. Maxwell-Boltzmann distribution   b. Bose-Einstein distribution
    b. Fermi-Dirac distribution
16. Do 3-5 assignments given by the course instructor to apply the methods of Statisticalmechanics to simple problems in Solid State Physics and Astrophysics

Skills to be learned:
1. Thermodynamical concepts, principles.
2. Learn the basic concepts & definition of physical quantities in classical statistics andclassical distribution law.
3. Learn the application of classical statistics to theory of radiation.
4. Comprehend the failure of classical statistics and need for quantum statistics.
5. Learn the application of quantum statistics to derive and understand.
    a. Bose Einstein statistics and its applications to radiation.
    b. Fermi-Dirac statistic and its applications to quantum systems.

Course Content:
THERMAL PHYSICS
Introduction to Thermodynamics: Zeroth Law and First Law of thermodynamics and its differential form. Internal energy. Reversible and Irreversible process with examples. Interconversion of Work and Heat. Carnot's Theorem. Heat Engines. Carnot's Cycle, Carnot engine & efficiency.   **(4 Lectures)**

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Entropy: Concept of entropy, Clausius theorem, Clausius inequality, Second Law of Thermodynamics in terms of Entropy. Entropy of a perfect gas. Entropy Changes in Reversible and Irreversible processes with examples. Principle of Increase of Entropy. Entropy of the Universe. Temperature–Entropy diagrams for Carnot's Cycle. Third Law of Thermodynamics. Unattainability of Absolute Zero.
(5 Lectures)

Thermodynamic Potentials: Thermodynamic Potentials: Internal Energy, Enthalpy, Helmholtz Free Energy, Gibb's Free Energy. Their Definitions, Properties and Applications. Cooling due to adiabatic demagnetization, First and second order Phase Transitions with examples. (**5 Lectures)**

Maxwell's Thermodynamic Relations: Derivations and applications of Maxwell's Relations, Maxwell's Relations:(1) Clausius Clapeyron equation, (2) Values of Cp-Cv, TdS Equations, (4) Joule-Kelvin coefficient for Ideal and Van der Waal Gases, **(5 Lectures)**

Kinetic Theory of Gases
Molecular Collisions: Mean Free Path. Collision Probability. Estimates of Mean Free Path. Transport Phenomenon in Ideal Gases: (1) Viscosity, (2) Thermal Conductivity and (3) Diffusion. Brownian Motion and its Significance. **(4 Lectures)**

Real Gases: Behavior of Real Gases: Deviations from the Ideal Gas Equation. The Virial Equation. Critical Constants. Boyle Temperature. Van der Waal's Equation of State for Real Gases. Values of Critical Constants. Law of Corresponding States. P-V diagrams. Free Adiabatic Expansion of a Perfect Gas. Joule-Thomson Porous Plug Experiment. Joule-Thomson Effect for Real and Van der Waal Gases. Temperature of Inversion. Joule-Thomson Cooling. **(6 Lectures)**

STATISTICAL PHYSICS
Classical Statistics: Macrostate & Microstate, Elementary Concept of Ensemble, Phase Space, Entropy and Thermodynamic Probability, Maxwell-Boltzmann Distribution Law, Partition Function, Thermodynamic Functions of an Ideal Gas, Classical Entropy Expression, Gibbs Paradox, Sackur Tetrode equation, Law of Equipartition of Energy (with proof) – Applications to Specific Heat and its Limitations, Thermodynamic Functions of a Two-Energy Levels System, Negative Temperature. **(9 Lectures)**

Quantum Theory of Radiation: Spectral Distribution of Black Body Radiation. Inadequacy of classical radiation theory. Planck's Quantum Postulates. Planck's Law of Black body Radiation: Deduction of (1) Wien's Distribution Law, (2) Rayleigh-Jeans Law, (3) Stefan-Boltzmann Law, (4) Wien's Displacement law from Planck's law. **(8 Lectures)**

Bose-Einstein Statistics: B-E distribution law, Thermodynamic functions of a strongly Degenerate Bose Gas, Bose Einstein condensation, properties of liquid He (qualitative description), Radiation as a photon gas and Thermodynamic functions of photon gas. Bose derivation of Planck's law. **(7 Lectures)**

Fermi-Dirac Statistics: Fermi-Dirac Distribution Law, Thermodynamic functions of a Completely and strongly Degenerate Fermi Gas, Fermi Energy, Electron gas in a Metal, Specific Heat of Metals, Relativistic Fermi gas, White Dwarf Stars, Chandrasekhar Mass Limit **(7 Lectures)**

Reference Books:
1. Heat and Thermodynamics, M.W. Zemansky, Richard Dittman, 1981, McGraw-Hill.
2. Heat and Thermodynamics, P. K. Chakraborty, New Age International Pvt.
3. A Treatise on Heat, Meghnad Saha, and B.N.Srivastava, 1958, Indian Press
4. Thermal Physics, S. Garg, R. Bansal and Ghosh, 2nd Edition, 1993, Tata McGraw-Hill
5. Modern Thermodynamics with Statistical Mechanics, Carl S. Helrich, 2009, Springer.
6. Thermodynamics, Kinetic Theory & Statistical Thermodynamics, Sears & Salinger. 1988,Narosa.
7. Concepts in Thermal Physics, S.J. Blundell and K.M. Blundell, 2nd Ed., 2012, OxfordUniversity Press
8. Thermal Physics, A. Kumar and S.P. Taneja, 2014, R. Chand Publications.

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9.   Thermal Physics, B.K. Agrawal, Lok Bharti Publications.

10. Statistical Mechanics, R.K. Pathria, Butterworth Heinemann: 2nd Ed., 1996, OxfordUniversity Press.

11. Statistical Physics, Berkeley Physics Course, F. Reif, 2008, Tata McGraw-Hill

12. Statistical and Thermal Physics, S. Lokanathan and R.S. Gambhir. 1991, Prentice Hall

13. Thermodynamics, Kinetic Theory and Statistical Thermodynamics, Francis W. Sears andGerhard L. Salinger, 1986, Narosa.

14. Modern Thermodynamics with Statistical Mechanics, Carl S. Helrich, 2009, Springer

15. An Introduction to Statistical Mechanics & Thermodynamics, R.H. Swendsen, 2012, OxfordUniv. Press

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XLIX. MAJOR COURSE- MJ 8:
PRACTICALS-III MATHEMATICAL, THERMAL AND STATISTICAL PHYSICS

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:

The aim of this Lab is to use the computational methods to solve physical problems. Course will consist of lectures (both theory and practical) in the Lab. Evaluation done not on the programming but on the basis of formulating the problem

Topics	Description with Applications
Introduction to Numerical computation software Scilab	Introduction to Scilab, Advantages and disadvantages, Scilab environment, Command window, Figure window, Edit window, Variables and arrays, Initialising variables in Scilab, Multidimensional arrays, Subarray, Special values, Displaying output data, data file, Scalar and array operations, Hierarchy of operations, Built in Scilab functions, Introduction to plotting, 2D and 3D plotting (2), Branching Statements and program design, Relational & logical operators, the while loop, for loop, details of loop operations, break & continue statements, nested loops, logical arrays and vectorization (2) User defined functions, Introduction to Scilab functions, Variable passing in Scilab, optional arguments, preserving data between calls to a function, Complex and Character data, string function, Multidimensional arrays (2) an introduction to Scilab file processing, file opening and closing, Binary I/o functions, comparing binary and formatted functions, Numerical methods and developing the skills of writing a program (2).
Curve fitting, Least square fit, Goodness of fit, standard deviation	Ohms law to calculate R, Hooke's law to calculate spring Constant
Inverse of a matrix, Eigen vectors, eigen values problems	System of algebraic equation
Generation of Special functions usingUser defined functions in Scilab	Generating and plotting Legendre PolynomialsGenerating and plotting Bessel function

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Solution of ODE First order Differential equation Euler,modified Euler and Runge-Kutta second order methods Second order differential equationFixed difference method Partial differential equations	First order differential equation • Radioactive decay • Current in RC, LC circuits with DC source • Newton's law of cooling • Classical equations of motion Second order Differential Equation • Harmonic oscillator (no friction) • Damped Harmonic oscillator • Forced Harmonic oscillator • Transient and • Steady state solution

Use C/C++/Scilab/Matlab/other numerical simulations for solving the problems based on Statistical Mechanics like

• Solve the differential equations: dy/dx = e^{-x} with y = 0 for x = 0

$$\frac{dy}{dx} + e^{-x}y = x^2$$

$$\frac{d^2y}{dt^2} + 2\frac{dy}{dt} = -y$$

$$\frac{d^2y}{dt^2} + e^{-t}\frac{dy}{dt} = -y$$

• Fourier series: Program to sum $\sum_{n=1}^{\infty} 0.2^n$
Evaluate the Fourier coefficients of a given periodic function (square wave)
• Frobenius method and Special functions:

• $\int_{-1}^{1} Pn(\mu)Pm(\mu)\,d\mu = \delta n, m$
Plot *Pn(x), jv(x)* Show recursion relation

• Calculation of error for each data point of observations recorded in experiments donein previous semesters (choose any two).
• Evaluation of trigonometric functions e.g. *sin θ,* Given Bessel's function at N points find its value at an intermediate point. Complex analysis: Integrate $1/(x^2+2)$ numerically and check with computer integration.
• Compute the nth roots of unity for *n* = 2, 3, and 4.
• Find the two square roots of −5+12*j*.
• Solve Kirchoff's Current law for any node of an arbitrary circuit using Laplace's transform.
• Solve Kirchoff's Voltage law for any loop of an arbitrary circuit using Laplace's transform.
• Perform circuit analysis of a general LCR circuit using Laplace's transform.
• Plot Planck's law for Black Body radiation and compare it with Raleigh-Jeans Law at high temperature and low temperature.
• Plot Specific Heat of Solids (a) Dulong-Petit law, (b) Einstein distribution function, (c) Debyedistribution function for high temperature and low temperature and compare them for these cases.
• Plot the following functions with energy at different temperatures

Maxwell-Boltzmann distribution, Fermi-Dirac distribution, Bose-Einstein distribution
1. To determine the Coefficient of Thermal Conductivity of Cu by Searle's Apparatus.
2. To determine the Coefficient of Thermal Conductivity of a bad conductor by Lee's disc method.
3. To determine   the Temperature Coefficient of Resistance by Platinum   Resistance Thermometer (PRT).
4. To study the variation of Thermo-Emf of a Thermocouple with Difference of Temperature ofits Two

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Junctions.

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Reference Books:

1. Mathematical Methods for Physics and Engineers, K.F Riley, M.P. Hobson and S. J.Bence, 3rd ed., 2006, Cambridge University Press
2. Mathematics for Physicists, P. Dennery and A. Krzywicki, 1967, Dover Publications
3. Simulation of ODE/PDE Models with MATLAB®, OCTAVE and SCILAB: Scientific and Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernández. 2014 Springer ISBN: 978-3319067896
4. A Guide to MATLAB, B.R. Hunt, R.L. Lipsman, J.M. Rosenberg, 2014, 3rd Edn.,Cambridge University Press
5. Scilab by example: M. Affouf, 2012. ISBN: 978-1479203444
6. Scilab (A free software to Matlab): H.Ramchandran, A.S.Nair. 2011 S.Chand & Company
7. Scilab Image Processing: Lambert M. Surhone. 2010 Betascript Publishing
8. https://web.stanford.edu/~boyd/ee102/laplace_ckts.pdf
9. ocw.nthu.edu.tw/ocw/upload/12/244/12handout.pdf
10. A Laboratory Manual of Physics for undergraduate classes, D. P. Khandelwal,1985, Vani Pub.
11. Advanced Practical Physics for students, B. L. Flint and H.T. Worsnop, 1971, Asia PublishingHouse
12. A Text Book of Practical Physics, I.Prakash & Ramakrishna, 11th Ed., 2011, Kitab Mahal
13. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted1985, Heinemann Educational Publishers
14. Elementary Numerical Analysis, K.E.Atkinson, 3rd E d n . 2 0 0 7, Wiley India Edition
15. Statistical Mechanics, R.K. Pathria, Butterworth Heinemann: 2nd Ed., 1996, OxfordUniversity Press.
16. Introduction to Modern Statistical Mechanics, D. Chandler, Oxford University Press, 1987
17. Thermodynamics, Kinetic Theory and Statistical Thermodynamics, Francis W. Sears andGerhard L. Salinger, 1986, Narosa.
18. Modern Thermodynamics with Statistical Mechanics, Carl S. Helrich, 2009, Springer
19. Statistical and Thermal Physics with computer applications, Harvey Gould and JanTobochnik, Princeton University Press, 2010.

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SEMESTER V

L.   MAJOR COURSE- MJ 9:
ANALOG AND DIGITAL ELECTRONICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
As the successful completion of the course the student is expected to be conversant with thefollowing.
1. Secure first-hand idea of different components including both active and passive components to gain an insight into circuits using discrete components and also to learn about integrated circuits.
2. About analog systems and digital systems and their differences, fundamental logic gates, combinational as well as sequential and number systems.
3. Synthesis of Boolean functions, simplification and construction of digital circuits by employing Boolean algebra.
4. Sequential systems by choosing Flip-Flop as a building bock- construct multivibrators, counters to provide a basic idea about memory including RAM, ROM and also about memory organization.
5. In the laboratory he is expected to construct both combinational circuits and sequential circuits by employing NAND as building blocks and demonstrate Adders, Subtractors, Shift Registers, and multivibrators using 555 ICs. He is also expected to use µP 8085 todemonstrate the same simple programme using assembly language and execute the programme using a µP kit.
   At the end of the course the student is expected to assimilate the following and possessesbasic knowledge of the following.
6. N- and P- type semiconductors, mobility, drift velocity, fabrication of P-N junctions; forward and reverse biased junctions. Application of PN junction for different type of rectifiers and voltage regulators.
7. NPN and PNP transistors and basic configurations namely common base, common emitter and common collector, and also about current and voltage gain.
8. Biasing and equivalent circuits, coupled amplifiers and feedback in amplifiers and oscillators.
9. To characterize various devices namely PN junction diodes, LEDs, Zener diode, solar cells, PNP and NPN transistors. Also construct amplifiers and oscillators using discrete components. Demonstrate inverting and non-inverting amplifiers using op-amps.

Skills to be learned:
1. Learn the basics of IC and digital circuits, and difference between analog and digitalcircuits. Various logic GATES and their realization using diodes and transmitters.
2. Learn fundamental of Boolean algebra and their role in constructing digital circuits.
3. Learn about combinatorial and sequential systems by building block circuits toconstruct multivibrators and counters.
4. Learn basic concepts of semiconductor diodes and their applications to rectifiers.
5. Learn about junction transistor and their applications. Learn about different types of amplifiers including operational amplifier.(Op-Amp) and their applications. Learn about sinusoidal oscillators of various types and A/D conversion.

Course Content:
ANALOG ELECTRONICS:
Two-terminal Devices and their Applications: Rectifier Diode: Half-wave Rectifiers. Centre-tapped and Bridge Full-wave Rectifiers, Calculation of Ripple Factor and Rectification Efficiency, C-filter, Zener Diode and Voltage Regulation. Principle and structure of LEDs, Photodiode and Solar Cell.   **(4 Lectures)**

Bipolar Junction Transistors: n-p-n and p-n-p Transistors. Characteristics of CB, CE and CC Configurations. Current gains α and β, Relations between α and β. Load Line analysis of Transistors. DC Load line and Q-point. Physical mechanism of current flow, Active, Cutoff andSaturation Regions.   **(4 Lectures)**

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Amplifiers: Transistor Biasing and Stabilization Circuits. Fixed Bias and Voltage Divider Bias. Transistor as 2-port Network. h-parameter Equivalent Circuit. Analysis of a single-stage CE amplifier using Hybrid Model. Input and Output Impedance. Current, Voltage and Power Gains. Classification of Class A, B & C Amplifiers.
(5 Lectures)

Coupled Amplifier: Two stage RC-coupled amplifier and its freq. response.   **(3 Lectures)**

Feedback in Amplifiers: Effects of Positive and Negative Feedback on Input Impedance, Output Impedance, Gain, Stability, Distortion and Noise.   **(2 Lecture)**

Sinusoidal Oscillators: Barkhausen's Criterion for self-sustained oscillations. RC Phase shift oscillator, determination of Frequency. Hartley & Colpitts oscillators.   **(3 Lectures)**

Operational Amplifiers and Applications: Characteristics of an Ideal and Practical Op- Amp. (IC 741) Open-loop and Closed-loop Gain. Frequency Response. CMRR. Slew Rate and concept of Virtual ground. Inverting and non-inverting amplifiers, Adder, Subtractor, Differentiator, Integrator, Log amplifier.
(6 Lectures)

Conversion: Resistive network (Weighted and R-2R Ladder). Accuracy and Resolution. A/DConversion (successive approximation)   **(3 Lectures)**

DIGITAL ELECTRONICS:

Digital Circuits: Difference between analog and digital circuit, Binary Numbers. Decimal to Binary and Binary to Decimal Conversion. BCD, Octal and Hexadecimal numbers. AND, OR and NOT Gates, NAND and NOR Gates as Universal Gates. XOR and XNOR Gates.   **(5 Lectures)**

Boolean algebra: de Morgan's Theorems. Boolean Laws. Simplification of Logic Circuit using Boolean Algebra. Fundamental Products. Idea of Minterms and Maxterms. Conversion of   a Truth table into Equivalent Logic Circuit by (1) Sum of Products Method and (2) Karnaugh Map.   **(5 Lectures)**

Arithmetic Circuits: Binary Addition. Binary Subtraction using 2's Complement. Half and Full Adders. Half & Full Subtractors, 4-bit binary Adder/Subtractor.   **(4 Lectures)**

Sequential Circuits: SR, D, and JK Flip-Flops. Clocked (Level and Edge Triggered) Flip- Flops. Preset and Clear operations. Race-around conditions in JK Flip-Flop. M/S JK Flip-Flop. **(5 Lectures)**

Timers: Classification of ICs. Examples of Linear and Digital ICs, IC 555: Block diagram and applications: Astable multivibrator and Monostable multivibrator   **(3 Lectures)**

Shift registers: Serial-in-Serial-out, Serial-in-Parallel-out, Parallel-in-Serial-out and Parallel- in-Parallel-out Shift Registers (only up to 4 bits).   **(4 Lectures)**

Counters (4 bits): Ring Counter. Asynchronous counters, Decade Counter. Synchronous Counter.
(4 Lectures)

Reference Books:
1. Integrated Electronics, J. Millman and C.C. Halkias, 1991, Tata Mc-Graw Hill.
2. A first Course in Electronics, Khan & Dey, PHI, 1/e, 2006
3. Electronics: Fundamentals and Applications, J.D. Ryder, 2004, Prentice Hall.
4. Solid State Electronic Devices, B.G.Streetman & S.K.Banerjee, 6th Edn.,2009, PHI Learning
5. Electronic Devices & circuits, S.Salivahanan & N.S.Kumar, 3rd Ed., 2012, Tata Mc-Graw Hill
6. OP-Amps and Linear Integrated Circuit, R. A. Gayakwad, 4th edition, 2000, Prentice Hall
7. Basic Electronics, Arun Kumar, Bharati Bhawan, 1/e, 2007
8. Microelectronic circuits, A.S. Sedra, K.C. Smith, A.N. Chandorkar, 2014, 6th Edn., Oxford Univ Press.
9. Analog Systems and Applications, Nutan Lata, Pragati Prakashan
10. Electronic circuits: Handbook of design & applications, U.Tietze, C.Schenk,2008, Springer
11. Semiconductor Devices: Physics and Technology, S.M. Sze, 2nd Ed., 2002, Wiley India

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12. Microelectronic Circuits, M.H. Rashid, 2nd Edition, Cengage Learning
13. Electronic Devices, 7/e Thomas L. Floyd, 2008, Pearson India
14. Digital Computer Electronics, Malvino and Brown, 3/e, McGraw Hill Education
15. Digital Electronics G K Kharate ,2010, Oxford University Press
16. Digital Systems: Principles & Applications, R.J.Tocci, N.S.Widmer, 2001, PHI Learning
17. Logic circuit design, Shimon P. Vingron, 2012, Springer.
18. Digital Electronics, Subrata Ghoshal, 2012, Cengage Learning.
19. Digital Electronics, S.K. Mandal, 2010, 1st edition, McGraw Hill
20. Digital Systems and Applications, Nutan Lata, Pragati Prakashan, 1/e, 2019

LI.   MAJOR COURSE- MJ 10:
ELEMENTS OF MODERN PHYSICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
1. Understand the theory of quantum measurements, wave packets and uncertainty principle.
2. Understand the central concepts of quantum mechanics: wave functions, momentum andenergy operator, the Schrodinger equation, time dependent and time independent cases, probability density and the normalization techniques, skill development on problem solving e.g. one dimensional rigid box, tunneling through potential barrier, step potential, rectangular barrier.
3. Understanding the properties of nuclei like density, size, binding energy, nuclear forces and structure of atomic nucleus, liquid drop model and nuclear shell model and mass formula.
4. Ability to calculate the decay rates and lifetime of radioactive decays like alpha, beta, gamma decay. Neutrinos and its properties and role in theory of beta decay.
5. Understand fission and fusion well as nuclear processes to produce nuclear energy in nuclear reactor and stellar energy in stars.
6. Understand various interactions of electromagnetic radiation with matter. Electron positron pair creation.
7. Understand the spontaneous and stimulated emission of radiation, optical pumping and population inversion. Three level and four level lasers. Ruby laser and He-Ne laser in details. Basic lasing.
8. In the laboratory course, the students will get opportunity to perform the following experiments
9. Measurement of Planck's constant by more than one method.
10. Verification of the photoelectric effect and determination of the work Function of a metal.
11. Determination of the charge of electron and e/m of electron.
12. Determination of the ionization potential of atoms.
13. Determine the wavelength of the emission lines in the spectrum of Hydrogen atom.
14. Determine the absorption lines in the rotational spectrum of molecules.
15. Determine the wavelength of Laser sources by single and Double slit experiments
16. Determine the wavelength and angular spread of He-Ne Laser using plane diffraction grating.
17. Verification of the law of the Radioactive decay and determine the mean life time of a Radioactive Source, Study the absorption of the electrons from Beta decay. Study of the electron spectrum in Radioactive Beta decays of nuclei.
18. Plan and Execute 2-3 group projects in the field of Atomic, Molecular and Nuclear Physics in collaboration with other institutions, if, possible where advanced facilities areavailable.

Skills to be learned:
1. Comprehend the failure of classical Physics and need for quantum Physics.
2. Grasp the basic foundation of various experiments establishing the quantum Physics bydoing the experiments in laboratory and interpreting them.
3. Formulate the basic theoretical problems in one, two and three dimensional Physics and solve them.
4. Learning to apply the basic skills developed in quantum physics to various problems in
   a. Nuclear Physics   b. Atomic Physics   c. Laser Physics
5. Learn to apply basic quantum physics to Ruby Laser, He-Ne Laser

Course Content:
Quantum theory of Light: Planck's concept of light as a collection of photons; Photo-electric effect and Compton scattering. Wave particle duality, de Broglie wavelength and matter waves; Two-Slit experiment

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with electrons. Wave description of particles by wave packets. Group and Phase velocities and relation between them. Probability. Wave amplitude and wave functions. Davisson-Germer experiment. Discreteness of energy. Frank-Hertz Experiment.   **(14 Lectures)**

Quantum Uncertainty- Heisenberg uncertainty principle (Uncertainty relations involving Canonical pair of variables), gamma ray microscope thought experiment; Derivation from Wave Packets impossibility of a particle following a trajectory; Estimating minimum energy of a confined particle using uncertainty principle; Energy-time uncertainty principle- application to various physical problems.   **(5 Lectures)**

Matter waves and wave amplitude: Schrodinger equation for non-relativistic particles; Physical observables as operators, Position, Momentum and Energy operators; stationary states; Physical interpretation of a wave function, probabilities and normalization; Probability and probability current densities in one dimension.
                                                                                    (10 Lectures)
One dimensional infinitely rigid box- energy eigenvalues and eigenfunctions, normalization; Quantum mechanical scattering and tunnelling in one dimension- across a step potential & rectangular potential barrier.
                                                                                    (10 Lectures)

Atomic nucleus: General properties of nuclei. Nature of nuclear force, Nuclear radius and its relation with atomic weight. Nucleus as a Liquid drop, Semi-empirical mass formula of Weiszaker and its significance.
                                                                                    (6 Lectures)
Radioactivity: Stability of the nucleus; Law of radioactive decay; Mean life and half-life; Alpha decay; Beta decay- energy released, spectrum and Pauli's prediction of neutrino; Gamma rayemission, energy-momentum conservation: electron-positron pair creation by gamma photons in the vicinity of a nucleus.
                                                                                    (8 Lectures)

Fission and fusion- Mass deficit and generation of energy; Fission - nature of fragments and emission of neutrons. Nuclear reactor: slow neutrons interacting with Uranium 235; Fusion and thermonuclear reactions driving stellar energy (brief qualitative discussions).   **(3 Lectures)**

Lasers: Einstein's A and B coefficients. Metastable states. Spontaneous and Stimulated emissions. Optical Pumping and Population Inversion. Three-Level and Four-Level Lasers. Ruby Laser and He-Ne Laser.
                                                                                    (4 Lectures)

   Reference Books:
1. Concepts of Modern Physics, Arthur Beiser, 2002, McGraw-Hill.
2. Introduction to Modern Physics, Rich Meyer, Kennard, Coop, 2002, Tata McGraw Hill
3. Introduction to Quantum mechanics, Nikhil Ranjan Roy, 2016, Vikash Publishing House Pvt. Ltd.
4. Introduction to Quantum Mechanics, David J. Griffith, 2005, Pearson Education.
5. Physics for scientists and Engineers with Modern Physics, Jewett and Serway, 2010, CengageLearning.
6. Modern Physics, G.Kaur and G.R. Pickrell, 2014, McGraw Hill
7. Quantum Mechanics: Theory & Applications, A.K.Ghatak & S.Lokanathan, 2004, Macmillan

Additional Books for Reference
1. Modern Physics, J.R. Taylor, C.D. Zafiratos, M.A. Dubson, 2004, PHI Learning.
2. Theory and Problems of Modern Physics, Schaum`s outline, R. Gautreau and W. Savin, 2ndEdn, Tata McGraw-Hill Publishing Co. Ltd.
3. Quantum Physics, Berkeley Physics, Vol.4. E.H.Wichman, 1971, Tata McGraw-Hill Co.
4. Basic ideas and concepts in Nuclear Physics, K.Heyde, 3rd Edn., Institute of Physics Pub.
5. Six Ideas that Shaped Physics: Particle Behave like Waves, T.A.Moore, 2003, McGraw Hill
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LII.   MAJOR COURSE- MJ 11:
PRACTICALS-IV ELECTRONICS AND MODERN PHYSICS

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:

1. To study V-I characteristics of PN junction diode, and verification of diode equation.
2. To study the V-I characteristics of a Zener diode and its use as voltage regulator.
3. To study the characteristics of a Bipolar Junction Transistor in CE configuration.
4. To design an inverting amplifier using Op-amp (741,351) for dc voltage of given gain
5. To design non-inverting amplifier using Op-amp (741,351) and study its frequency response
6. Use of OP-Amp (741, 351) as an integrator and as a differentiator.
7. To measure (a) Voltage, and (b) Time period of a periodic waveform using CRO.
8. To design a NOT gate switch using a transistor.
9. To verify and design AND, OR, NOT and XOR gates using NAND gates.
10. Half Adder, Full Adder and 4-bit binary Adder.
11. To design an astable multivibrator of given specifications using 555 Timer.
12. Measurement of Planck's constant using black body radiation and photo-detector
13. Photo-electric effect: photo current versus intensity and wavelength of light; maximum energy of photo-electrons versus frequency of light
14. To determine the Planck's constant using LEDs of at least 4 different colours.
15. To determine the wavelength of laser source using diffraction of single slit.
16. To determine wavelength of He-Ne laser using plane diffraction grating

Reference Books:
1. Modern Digital Electronics, R.P. Jain, 4th Edition, 2010, Tata McGraw Hill.
2. Basic Electronics: A text lab manual, P.B. Zbar, A.P. Malvino, M.A. Miller, 1994, Mc-GrawHill.
3. Microprocessor Architecture Programming and appls. with 8085, R.S. Goankar, 2002,Prentice Hall.
4. Microprocessor 8085: Architecture, Programming and interfacing, A. Wadhwa, 2010, PHILearning.
5. Basic Electronics: A text lab manual, P.B. Zbar, A.P. Malvino, M.A. Miller, 1994, Mc-GrawHill.
6. OP-Amps and Linear Integrated Circuit, R. A. Gayakwad, 4th edition, 2000, Prentice Hall.
7. Electronic Principle, Albert Malvino, 2008, Tata Mc-Graw Hill.
8. Electronic Devices & circuit Theory, R.L. Boylestad & L.D. Nashelsky, 2009, Pearson
9. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia PublishingHouse
10. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted1985, Heinemann Educational Publishers
11. A Text Book of Practical Physics, I.Prakash & Ramakrishna, 11th Edn, 2011,Kitab Mahal

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SEMESTER VI

LIII. MAJOR COURSE- MJ 12:
QUANTUM MECHANICS AND APPLICATIONS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
This course will enable the student to get familiar with quantum mechanics formulation.
1. After an exposition of inadequacies of classical mechanics in explaining microscopic phenomena, quantum theory formulation is introduced through Schrodinger equation.
2. The interpretation of wave function of quantum particle and probabilistic nature of its location and subtler points of quantum phenomena are exposed to the student.
3. Through understanding the behavior of quantum particle encountering a i) barrier, ii) potential, the student gets exposed to solving non-relativistic hydrogen atom, for its spectrum and eigenfunctions.
4. Study of influence of electric and magnetic fields on atoms will help in understanding Stark effect and Zeeman Effect respectively.
5. The experiments using Sci-lab will enable the student to appreciate nuances involved in the theory.
6. This basic course will form a firm basis to understand quantum many body problems.
7. In the laboratory course, with the exposure in computational programming in the computer lab, the student will be in a position to solve Schrodinger equation for ground state energy and wave functions of various simple quantum mechanical one- dimensional and three-dimensional potentials.

Skills to be learned:
1. This course shall develop an understanding of how to model a given problem such asparticle in a box, hydrogen atom, hydrogen atom in electric fields.
2. Many electron atoms, L-S and J-J couplings.
3. These skills will help in understanding the different Quantum Systems in atomic andnuclear physics.

Course Content:
Time dependent Schrodinger equation: Postulates of Quantum mechanics, Time dependent Schrodinger equation and dynamical evolution of a quantum state; Properties of Wave Function. Interpretation of Wave Function. Probability and probability current densities in three dimensions; Conditions for Physical Acceptability of Wave Functions. Normalization. Linearity and Superposition Principles. Eigenvalues and Eigenfunctions. commutator of position and momentum operators; Expectation values of position and momentum. Wave Function of a Free Particle. **(6 Lectures)**

Time independent Schrodinger Equation-Hamiltonian, stationary states and energy eigenvalues; expansion of an arbitrary wavefunction as a linear combination of energy eigenfunctions; General solution of the time dependent Schrodinger equation in terms of linear combinations of stationary states; Application to spread of Gaussian wave-packet for a free particle in one dimension; wave packets, Position-momentum uncertainty principle. **(10 Lectures)**

General discussion of bound states in an arbitrary potential- continuity of wavefunction, boundary condition and emergence of discrete energy levels; application to one-dimensional problem-square well potential; Quantum mechanics of simple harmonic oscillator-energy levels and energy eigenfunctions using Frobenius method; Hermite polynomials; ground state, zero-point energy & uncertainty principle.
(12 Lectures)

Quantum theory of hydrogen-like atoms: Angular momentum operator and commutation relation between them. time independent Schrodinger equation in spherical polar coordinates; separation of variables for second order partial differential equation; angular momentum operator & quantum numbers; Radial wavefunctions

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from Frobenius method; shapes of the probability densities for ground & first excited states; Orbital angular momentum quantum numbers l and m; s, p, d... shells.   **(10 Lectures)**

Atoms in Electric & Magnetic Fields: Electron angular momentum. Space quantization. Electron Spin and Spin Angular Momentum. Larmor's Theorem. Spin Magnetic Moment. Stern- Gerlach Experiment. Zeeman Effect: Electron Magnetic Moment and Magnetic Energy, Gyromagnetic Ratio and Bohr Magneton. Normal and Anomalous Zeeman Effect. Paschen Back and Stark Effect (Qualitative Discussion only).   **(12 Lectures)**

Single and Many electron atoms: Pauli's Exclusion Principle. Symmetric & Antisymmetric Wave Functions. Periodic table. Fine structure. Spin orbit coupling. Spectral Notations for Atomic States. Total angular momentum. Vector Model. Spin-orbit coupling in atoms-L-S and J-J couplings. Hund's Rule.   **(10 Lectures)**

Reference Books:
1. A Text book of Quantum Mechanics, P.M.Mathews and K.Venkatesan, 2nd Ed., 2010,McGraw Hill
2. Introduction to Quantum Mechanics, Nikhil Ranjan Roy, 2016, Vikash Publishing House Pvt. Ltd.
3. Quantum Mechanics, Robert Eisberg and Robert Resnick, 2nd Edn., 2002, Wiley.
4. Quantum Mechanics, Leonard I. Schiff, 3rd Edn. 2010, Tata McGraw Hill.
5. Quantum Mechanics, G. Aruldhas, 2nd Edn. 2002, PHI Learning of India.
6. Quantum Mechanics, Bruce Cameron Reed, 2008, Jones and Bartlett Learning.
7. Quantum Mechanics: Foundations & Applications, Arno Bohm, 3rd Edn., 1993, Springer
8. Quantum Mechanics for Scientists & Engineers, D.A.B. Miller, 2008, Cambridge UniversityPress

Additional Books for Reference
1. Quantum Mechanics, Eugen Merzbacher, 2004, John Wiley and Sons, Inc.
2. Introduction to Quantum Mechanics, D.J. Griffith, 2nd Ed. 2005, Pearson Education
3. Quantum Mechanics, Walter Greiner, 4th Edn., 2001, Springer

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LIV.   MAJOR COURSE- MJ 13:
SOLID STATE PHYSICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
At the end of the course the student is expected to learn and assimilate the following.

1. A brief idea about crystalline and amorphous substances, about lattice, unit cell, miller indices, reciprocal lattice, concept of Brillouin zones and diffraction of X-rays bycrystalline materials.
2. Knowledge of lattice vibrations, phonons and in depth of knowledge of Einstein and Debye theory of specific heat of solids.
3. At knowledge of different types of magnetism from diamagnetism to ferromagnetism and hysteresis loops and energy loss.
4. Secured an understanding about the dielectric and ferroelectric properties of materials.
5. Understanding above the band theory of solids and must be able to differentiate insulators, conductors and semiconductors.
6. Understand the basic idea about superconductors and their classifications.
7. To carry out experiments based on the theory that they have learned to measure the magnetic susceptibility, dielectric constant, trace hysteresis loop. They will also employ to four probe methods to measure electrical conductivity and the hall set up to determinethe hall coefficient of a semiconductor.

Skills to be learned:

1. Learn basics of crystal structure and physics of lattice dynamics
2. Learn the physics of different types of material like magnetic materials, dielectricmaterials, metals and their properties.
3. Understand the physics of insulators, semiconductor and conductors with specialemphasis on the elementary band theory of semiconductors.
4. Comprehend the basic theory of superconductors. Type I and II superconductors, theirproperties and physical concept of BCS theory.

Course Content:
Crystal Structure: Solids: Amorphous and Crystalline Materials. Lattice Translation Vectors. Lattice with a Basis – Central and Non-Central Elements. Unit Cell. Miller Indices. Reciprocal Lattice. Types of Lattices. Brillouin Zones. Diffraction of X-rays by Crystals. Bragg's Law. Atomic and Geometrical Factor. **(12 Lectures)**

Elementary Lattice Dynamics: Lattice Vibrations and Phonons: Linear Mono-atomic and Diatomic Chains. Acoustical and Optical Phonons. Qualitative description of the Phonon Spectrum in Solids. Dulong and Petit's Law, Einstein and Debye theories of specific heat of solids. T^3 law   **(10 Lectures)**

Magnetic Properties of Matter: Dia-, Para-, Ferri- and Ferromagnetic Materials. Classical Langevin Theory of dia– and Paramagnetic Domains. Quantum Mechanical Treatment of Paramagnetism. Curie's law, Weiss's Theory of Ferromagnetism and Ferromagnetic Domains. Discussion of B-H Curve. Hysteresis and Energy Loss.   **(8 Lectures)**

Dielectric Properties of Materials: Polarization. Local Electric Field at an Atom. Depolarization Field. Electric Susceptibility. Polarizability. Clausius Mosotti Equation. Classical Theory of Electric Polarizability. Normal and Anomalous Dispersion. Cauchy and Sellmeir relations. Langevin-Debye equation. Complex Dielectric Constant.   **(8 Lectures)**

Ferroelectric Properties of Materials: Structural phase transition, Classification of crystals, Piezoelectric effect, Pyroelectric effect, Ferroelectric effect, Electrostrictive effect, Curie-Weiss Law, Ferroelectric domains, PE hysteresis loop   **(6 lectures)**

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Elementary band theory: Periodic potential and Bloch theorem. Kronig Penny model. Band Gap. Conductor, Semiconductor (P and N type) and insulator. Conductivity of Semiconductor, mobility, Hall Effect. Measurement ofconductivity (04 probe method) & Hall coefficient.   **(10 Lectures)**

Superconductivity: Experimental Results. Critical Temperature. Critical magnetic field. Meissner effect. Type I and type II Superconductors, Isotope effect. Idea of BCS theory (No derivation)   **(6 Lectures)**

Reference Books:

10. Introduction to Solid State Physics, Charles Kittel, 8th Edition, 2004, Wiley India Pvt. Ltd.
11. Introduction to Solid State Physics, Arun Kumar, PHI
12. Elements of Solid State Physics, J.P. Srivastava, 4th Edition, 2015, Prentice-Hall of India
13. Introduction to Solids, Leonid V. Azaroff, 2004, Tata Mc-Graw Hill
14. Solid State Physics, N.W. Ashcroft and N.D. Mermin, 1976, Cengage Learning
15. Solid-state Physics, H. Ibach and H. Luth, 2009, Springer
16. Solid State Physics, Rita John, 2014, McGraw Hill
17. Elementary Solid State Physics, 1/e M. Ali Omar, 1999, Pearson India
18. Solid State Physics, M.A. Wahab, 2011, Narosa Publications

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LV.   MAJOR COURSE- MJ 14:
NUCLEAR AND PARTICLE PHYSICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:

1. Learn the ground state properties of a nucleus – the constituents and their properties, mass number and atomic number, relation between the mass number and the radius and the mass number, average density, range of force, saturation property, stability curve, the concepts of packing fraction and binding energy, binding energy per nucleon vs. mass number graph, explanation of fusion and fission from the nature of the binding energy graph.

2. Know about the nuclear models and their roles in explaining the ground state properties of the nucleus –(i) the liquid drop model, its justification so far as the nuclear properties are concerned, the semi-empirical mass formula, (ii) the shell model, evidence of shell structure, magic numbers, predictions of ground state spin and parity, theoretical deduction of the shell structure, consistency of the shell structure with the Pauli exclusion principles.

3. Learn the basic aspects of nuclear reactions, the Q-value of such reaction and its derivation from conservation laws, the reaction cross-sections, the types of nuclear reactions, direct and compound nuclear reactions, Rutherford scattering by Coulomb potential.

4. Learn some basic aspects of interaction of nuclear radiation with matter- interaction of gamma ray by photoelectric effect, Compton scattering and pair production, energy loss due to ionization, Cerenkov radiation.

5. The students are expected to learn about the principles and basic constructions of particle accelerators such as the Van-de-Graff generator, cyclotron, synchrotron. They should know about the accelerator facilities in India.

6. Gain knowledge on the basic aspects of particle Physics – the fundamental interactions, elementary and composite particles, the classifications of particles: leptons, hadrons (baryons and mesons), quarks, gauge bosons. The students should know about the quantum numbers of particles: energy, linear momentum, angular momentum, isospin, electric charge, colour charge, strangeness, lepton numbers, baryon number and the conservation laws associated with them.

Skills to be learned:

1. Skills to describe and explain the properties of nuclei and derive them from various models of nuclear structure.

2. To understand, explain and derive the various theoretical formulation of nuclear disintegration like α decay, β decay and γ decays.

3. Develop basic understanding of nuclear reactions and decays with help of theoretical formulate and laboratory experiments.

4. Ability to understand, construct and operate simple detector systems for nuclear radiation and training to work with various types of nuclear accelerators.

5. Develop basic knowledge of elementary particles as fundamental constituent of matter, their properties, conservation laws during their interactions with matter.

Course Content:

General Properties of Nuclei: Constituents of nucleus and their Intrinsic properties, quantitative facts about mass, radii, charge density (matter density), binding energy, average binding energy and its variation with mass number, main features of binding energy versus mass number curve, N/A plot, angular momentum, parity, magnetic moment, electric moments, nuclear excites states.   **(8 Lectures)**

Nuclear Models: Liquid drop model approach, semi empirical mass formula and significance of its various terms, condition of nuclear stability, two nucleon separation energies, evidence for nuclear shell structure, nuclear magic numbers, basic assumption of shell model, concept of mean field, residual interaction, concept of nuclear force.   **(8 Lectures)**

Radioactive Decay: (a) Alpha decay: basics of α-decay processes, theory of α-emission, Gamow factor, Geiger Nuttall law, α-decay spectroscopy. (b) β-decay: energy kinematics for β-decay, positron emission, electron capture, neutrino hypothesis. (c) Gamma decay: Gamma rays emission & kinematics, internal conversion.   **(8 Lectures)**

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Nuclear Reactions: Types of Reactions, Conservation Laws, kinematics of reactions, Q-value, reaction rate, reaction cross section, Concept of compound and direct Reaction, resonance reaction, Coulomb scattering (Rutherford scattering).   **(8 Lectures)**

Interaction of Nuclear Radiation with matter: Energy loss due to ionization (Bethe-Bloch formula), energy loss of electrons, Cerenkov radiation. Gamma ray interaction through matter, photoelectric effect, Compton scattering, pair production, neutron interaction with matter.   **(8 Lectures)**

Nuclear Radiation Detectors: Behavior of ion pairs in electric field, Gas detectors: estimation of electric field, mobility of particle, for ionization chamber and GM Counter. Basic principle of Scintillation Detectors and construction of photo-multiplier tube (PMT). Semiconductor Detectors (Si and Ge) for charge particle and photon detection (concept of charge carrier and mobility), neutron detector.   **(8 Lectures)**

Particle Accelerators: Accelerator facility available in India: Van-de Graaff Generator (Tandem accelerator), Linear accelerator, Cyclotron, Synchrotrons.   **(4 Lectures)**

Particle Physics: Particle interactions; basic features, types of particles and its families. Symmetries and Conservation Laws: energy and momentum, angular momentum, Parity, Baryon number, Lepton number, Isospin, Strangeness and Charm, Concept of quark model, Color quantum number and gluons.   **(8 Lectures)**

Reference Books:
1. Nuclear Physics-An introduction, W. E. Burcham, 2/e, Longman Group Limited 1973
2. Introductory nuclear Physics by Kenneth S. Krane (Wiley India Pvt. Ltd., 2008).
3. Concepts of nuclear Physics by Bernard L. Cohen. (Tata McGraw Hill, 1998).
4. Introduction to the Physics of nuclei & particles, R.A. Dunlap. (Thomson Asia, 2004).
5. Introduction to High Energy Physics, D.H. Perkins, Cambridge Univ. Press
6. Introduction to Elementary Particles, D. Griffith, John Wiley & Sons
7. Quarks and Leptons, F. Halzen and A.D. Martin, Wiley India, New Delhi
8. Basic ideas and concepts in Nuclear Physics - An Introductory Approach by K. Heyde (IOP-Institute of Physics Publishing, 2004).
9. Radiation detection and measurement, G.F. Knoll (John Wiley & Sons, 2000).
10. Physics and Engineering of Radiation Detection, Syed Naeem Ahmed (Academic Press,Elsevier, 2007).
11. Theoretical Nuclear Physics, J.M. Blatt & V.F.Weisskopf (Dover Pub.Inc., 1991)

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LVI.   MAJOR COURSE- MJ 15:
PRACTICALS-V   QUANTUM AND SOLID STATE PHYSICS

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:

Use C/C++/Scilab/Matlab for solving the following problems based on QuantumMechanics like

1. Solve the s-wave Schrodinger equation for the ground state and the first excited state of thehydrogen atom:

$$\frac{d^2y}{dr^2} = A(r)u(r), A(r) = \frac{2m}{\hbar^2}[V(r) - E] \text{ where } V(r) = -\frac{e^2}{r}$$

Here, m is the reduced mass of the electron. Obtain the energy eigenvalues and plot the corresponding wavefunctions. Remember that the ground state energy of the hydrogen atom is ≈ -13.6 eV. Take e = 3.795 $(eVÅ)^{1/2}$, ħc = 1973 (eVÅ) and m = 0.511×10^6 eV/c².

2. Solve the s-wave radial Schrodinger equation for an atom:

$$\frac{d^2y}{dr^2} = A(r)u(r), A(r) = \frac{2m}{\hbar^2}[V(r) - E]$$

where m is the reduced mass of the system (which can be chosen to be the mass of an electron), for the screened coulomb potential $V(r) = -\frac{e^2}{r}e^{\frac{-r}{a}}$. Find the energy (in eV) of the ground state of the atom to an accuracy of three significant digits. Also, plot the corresponding wavefunction. Take e = 3.795 $(eVÅ)^{1/2}$, m = 0.511×10^6 eV/c², and a = 3 Å, 5 Å, 7 Å. In these units ħc = 1973 (eVÅ). The ground state energy is expected to be above -12 eV in all three cases.

3. Solve the s-wave radial Schrodinger equation for a particle of mass m:

$$\frac{d^2y}{dr^2} = A(r)u(r), A(r) = \frac{2m}{\hbar^2}[V(r) - E]$$

For the anharmonic oscillator potential $V(r) = \frac{1}{2}kr^2 + \frac{1}{3}br^3$

for the ground state energy (in MeV) of particle to an accuracy of three significant digits. Also, plot the corresponding wave function. Choose m= 940 MeV/c², k= 100MeV fm⁻², b= 0, 10, 30 MeV fm⁻³ In these units, cħ= 197.3 MeV fm. The ground state energy I expected to lie between 90 and 110 MeV for all three cases.

4. Solve the s-wave radial Schrodinger equation for the vibrations of hydrogen molecule:

$$\frac{d^2y}{dr^2} = A(r)u(r), A(r) = \frac{2\mu}{\hbar^2}[V(r) - E]$$

Where μ is the reduced mass of the two-atom system. For the Morse potential

$$V(r) = D\left(e^{-2\alpha r'} - e^{-\alpha r'}\right), r' = \frac{r-r_0}{r}$$

Find the lowest vibrational energy (in MeV) of the molecule to an accuracy of threesignificant digits. Also plot the corresponding wave function. Take: m = 940×10^6 eV/C², D = 0.755501 eV, α = 1.44, ro = 0.131349 Å

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5.   Estimate the energy gap of a semiconductor using a PN junction.
6.   Measurement of susceptibility of paramagnetic solution (Quinck`s Tube Method)
7.   To measure the Magnetic susceptibility of Solids.
8.   To determine the Coupling Coefficient of a Piezoelectric crystal.
9.   To measure the Dielectric Constant of a dielectric Materials with frequency
10.   To draw the BH curve of Fe using Solenoid & determine energy loss from Hysteresis.
11.   To measure the resistivity of a semiconductor (Ge) with temperature by four-probe method (room temperature to 150 °C) and to determine its band gap.
12.   To determine the Hall coefficient of a semiconductor sample.

Reference Books:

1. Schaum's outline of Programming with C++. J.Hubbard, 2000,McGraw-Hill Publication
2. Numerical Recipes in C: The Art of Scientific Computing, W.H. Pressetal., 3rd Edn., 2007,Cambridge University Press.
3. An introduction to computational Physics, T.Pang, 2nd Edn.,2006, Cambridge Univ. Press
4. Simulation of ODE/PDE Models with MATLAB®, OCTAVE and SCILAB: Scientific &Engineering Applications: A. Vande Wouwer, P. Saucez, C. V. Fernández.2014 Springer.
5. Scilab (A Free Software to Matlab): H. Ramchandran, A.S. Nair. 2011 S. Chand & Co.
6. A Guide to MATLAB, B.R. Hunt, R.L. Lipsman, J.M. Rosenberg, 2014, 3rd Edn., CambridgeUniversity Press
7. Scilab Image Processing: L. M. Surhone.2010 Betascript Publishing ISBN:978-6133459274
8. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia PublishingHouse.
9. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted1985, Heinemann Educational Publishers.
10. A Text Book of Practical Physics, I. Prakash & Ramakrishna, 11th Ed., 2011, Kitab Mahal
11. Elements of Solid State Physics, J.P. Srivastava, 2nd Ed., 2006, Prentice-Hall of India.

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SEMESTER VII

LVII. MAJOR COURSE- MJ 16:
CLASSICAL DYNAMICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
1. Revise the knowledge of the Newtonian, the Lagrangian and the Hamiltonian formulations of classical mechanics and their applications in appropriate physical problems. Learn about the small oscillation problems.
2. Recapitulate and learn the special theory of relativity- postulates of the special theory of relativity, Lorentz transformations on space-time and other four vectors, four-vector notations, space-time invariant length, length contraction, time dilation, mass-energy relation, Doppler effect, light cone and its significance, problems involving energy- momentum conservations. Learn the basics of fluid dynamics, streamline and turbulent flow, Reynolds's number, coefficient of viscosity and Poiseuille's equation.
3. Review the retarded potentials, potentials due to a moving charge, Lienard Wiechert potentials, electric and magnetic fields due to a moving charge, power radiated, Larmor's formula and its relativistic generalization.

Skills to be learned:
1. Learn to define generalised coordinates, generalised velocities, generalised force and write Lagrangian for mechanical system in terms of generalised coordinates.
2. Learn to derive Euler-Lagrange equation of motion and solve them for simple mechanical systems.
3. Learn to write Hamiltonian for mechanical systems and derive and solve Hamilton's equation of motion for simple mechanical systems. Formulate the problem of small amplitude oscillation and solve them to obtain normal modes of oscillation and their frequencies in simple mechanical systems.
4. Develop the basic concepts of special theory of relativity and its applications to dynamical systems of particles.
5. Develop the methods of relativistic kinematics of one and two particle system and its application to two particle decay and scattering.

Course Content:
Classical Mechanics of Point Particles: Review of Newtonian Mechanics; Application to the motion of a charge particle in external electric and magnetic fields- motion in uniform electric field, magnetic field- gyro-radius and gyrofrequency, motion in crossed electric and magnetic fields. Generalized coordinates and velocities, Hamilton's principle, Lagrangian and the Euler- Lagrange equations, one-dimensional examples of the Euler-Lagrange equations- one- dimensional Simple Harmonic Oscillations and falling body in uniform gravity; applications to simple systems such as coupled oscillators Canonical momenta & Hamiltonian. Hamilton's equations of motion. Applications: Hamiltonian for a harmonic oscillator, solution of Hamilton's equation for Simple Harmonic Oscillations; particle in a central force field- conservation of angular momentum and energy.   **(22 Lectures)**

Small Amplitude Oscillations: Minima of potential energy and points of stable equilibrium, expansion of the potential energy around a minimum, small amplitude oscillations about the minimum, normal modes of oscillations example of N identical masses connected in a linear fashion to (N -1) - identical springs.

(10 Lectures)

Special Theory of Relativity: Postulates of Special Theory of Relativity. Lorentz Transformations. Minkowski space. The invariant interval, light cone and world lines. Space- time diagrams. Time -dilation, length contraction and twin paradox. Four-vectors: space-like, time-like and light-like. Four-velocity and acceleration. Metric and alternating tensors. Four- momentum and energy-momentum relation. Doppler effect

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from a four-vector perspective. Concept of four-force. Conservation of four-momentum. Relativistic kinematics. Application to two-body decay of an unstable particle.   **(18 Lectures)**

Fluid Dynamics: Density and pressure P in a fluid, an element of fluid and its velocity, continuity equation and mass conservation, stream-lined motion, laminar flow, Poiseuille's equation for flow of a liquid through a pipe, Navier-Stokes equation, qualitative description of turbulence, Reynolds number.   **(10 Lectures)**

Reference Books:
1. Classical Mechanics, H.Goldstein, C.P. Poole, J.L. Safko, 3rd Edn. 2002, Pearson Education.
2. Intoduction to Classical mechanics, Nikhil Ranjan Roy, 2016, Vikash Publishing House Pvt. Ltd.
3. Mechanics, L. D. Landau and E. M. Lifshitz, 1976, Pergamon.
4. Classical Electrodynamics, J.D. Jackson, 3rd Edn., 1998, Wiley.
5. The Classical Theory of Fields, L.D Landau, E.M Lifshitz, 4th Edn., 2003, Elsevier.
6. Introduction to Electrodynamics, D.J. Griffiths, 2012, Pearson Education.
7. Classical Mechanics, J. C. Upadhyaya, Himalay Publishing House
8. Classical Mechanics, P.S. Joag, N.C. Rana, 1st Edn., McGraw Hall.
9. Classical Mechanics, R. Douglas Gregory, 2015, Cambridge University Press.
10. Classical Mechanics: An introduction, Dieter Strauch, 2009, Springer.
11. Solved Problems in classical Mechanics, O.L. Delange and J. Pierrus, 2010, Oxford Press

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LVIII. MAJOR COURSE- MJ 17:
ADVANCE MATHEMATICAL METHODS IN PHYSICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
On successful completion of this course the student should know:
1.   Revise the knowledge of Mathematical Physics. These basic mathematical structures are essential in solving problems in various branches of Physics as well as in Engineering.
2.   Learn Green's function and its application to one, two, and three-dimensional problem.
3.   Understand Electrodynamics and Relativity and apply them to basic problems.

Skills to be learned:
1.   Training in Mathematical Physics will prepare the student to solve various mathematical problems.
2.   He / she shall develop an understanding of how to formulate a physics problem and solve given mathematical equation rising out of it.
3.   Learn the concepts of Electrodynamics and Relativity.
4.   Develop skills to solve the equations of central electrodynamics and Relativity force problem.
5.   Acquire basic knowledge of Advance Mathematical Physics.

Course Content:

Matrices and Tensors: Introduction of matrices through rotation of co-ordinate systems, Orthogonal, Hermitian, Unitary, Null and Unit matrices, Singular and Non-singular matrices, Inverse of a matrix, Trace of a matrix, Eigenvalues and Eigenvectors, Diagonalization. Tensorial character of physical entities, Covariant, Contravariant and Mixed tensors, Contraction, Quotient rule, Differentiation, Kronecker tensor, Pseudo-tensor, Symmetric and Anti symmetric tensors.   **(20 Lectures)**

Green's Function: Introduction Construction of the Green's function for 1d, 2d and 3d problems. Solution of some standard problems using Green's function technique.   **(10 Lectures)**

Electrodynamics and Relativity: Lorentz transformation as orthogonal transformation in 4- dimensions, 4-vectors and light cone, energy-momentum 4-vectors, Relativistic force equation, Covariance of Maxwell's equation. Transformation of electromagnetic fields, Solution of wave equation in covariant form, Field due to a charge moving with constant velocity, Radiation from oscillating dipole, Total power radiated from an accelerated charge, Larmor formula, Principle of equivalence, Principle of covariance, Covariant differentiation, Curvature tensor, field equation, Reduction to Newton's laws of gravitation.   **(30 Lectures)**

Books Suggested:
1.   Mathematical Methods for Physicists, G.BArfken, H.J.Waber, E.E. Harris, 2013, 7thEdn., Elsevier.
2.   Boas, M.L., "Mathematical Methods in Physical Sciences", Wiley International Editions.
3.   Group Theory and Quantum Mechanics, M.Timkham.
4.   Mathematical Physics: Das and Sharma.
5.   Mathematical Methods for Physicist & Engineers: Pipes & Harvel.
6.   Mathematical Tools for Physics, James Nearing, 2010, Dover Publications.
7.   Mathematical Methods for Scientists and Engineers: D.A.McQuarrie, 2003, Viva Book.
8.   Advanced Engineering Mathematics: D.G.Zill and W.S.Wright, 5-Ed, 2012, Jones and Bartlett Learning.
9.   Advanced Engineering Mathematics, Erwin Kreyszig, 2008, Wiley India.
10.   Essential Mathematical Methods, K.F.Riley & M.P.Hobson, 2011, Cambridge Univ. Press.
11.   Classical Electrodynamics, J.D.Jackson, 3rd Edn, 1988, Wiley.
12.   The Classical Theory of Fields, L.D.Landau, E.M.Lifshitz, 4th Edn. 2003, Elsevier.
13.   Electromagnetic Field Theory for Engineers & Physicsts, P.Lorrain & D.Corson, 1970.

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LIX.   MAJOR COURSE- MJ 18:
ADVANCE QUANTUM MECHANICS-I AND ADVANCE SOLID STATE PHYSICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:

On successful completion of this course the student should know:

5. Revise the knowledge of advance Quantum Mechanics and Solid State Physics.
6. Learn different Quantum Dynamics and apply them to solve standard Quantum mechanical problems.
7. Understand Invariance Principle and Conservation laws for linear momentum, angular momentum, energy and parity.

Skills to be learned:

1. Training in advance Quantum Mechanics and Solid State Physics will prepare the student to solve various mathematical problems.
2. He / she shall develop an understanding of how to formulate a physics problem and solve given mathematical equation rising out of it.
3. Learn the concepts of advance Quantum Mechanics and Solid State Physics.
4. Develop skills to understand and solve the equations of central advance Quantum Mechanics and Solid State Physics problem.
5. Acquire basic knowledge of Advance Mathematical Physics

Course Content:

ADVANCE QUANTUM MECHANICS-I

Mathematical Foundation of Quantum Mechanics: Vectors and Linear vector space, Closure property, Linear independence of vectors, Bases and dimensions. Some examples of linear vector spaces, Dirac's notations, Bra and Ket vectors, Combining bras with kets, Inner product and inner product space, Orthonormality of vectors, Completeness condition, Outer product, Hilbert spaces, Operator on a linear vector space, Algebra of linear operators. **(15 Lectures)**

Quantum Dynamics: The equation of motion- The Schrodinger; Applications to linear harmonic oscillator and the hydrogen atom. Linear harmonic oscillatorusing Creation and annihilation operator. **(10 Lectures)**

Angular Momentum: Commutation relations for angular momentum operators, Eigenvalues and eigenvectors, Pauli spin matrices and spin eigenvectors, Motion in a centrally symmetric field. **(5 Lectures)**

Invariance Principle and Conservation Laws: Space-time symmetries and conservation Laws forlinear momentum, Angular momentum, Energy and Parity. **(5 Lectures)**

SOLID STATE PHYSICS

Crystal Physics: Laue theory of X-ray diffraction, Geometrical structure factor and intensity of diffraction maxima. **(5 Lectures)**

Electronic Properties: Electron in a Periodic lattice, Band Theory, Tight Binding, Cellular and Pseudopotential method, Fermi surface, de Haas van Alphen Effect. **(10 Lectures)**

Magnetism: Exchange interaction, Heisenberg model and molecular field theory, spin waves andmagnons, Domains and Bloch Wall energy. **(6 Lectures)**

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Superconductivity: Basic properties of superconductors, BCS theory   (**4 Lectures**)

Books Suggested:

1. Mathews, P.M., &Venkatesan, K., "A Text Book of Quantum Mechanics", TMH.
2. Merzbacker, E., "Quantum Mechanics", John Wiley
3. Messiah, A., "Quantum Mechanics", North-Holland Publishing Co.
4. Schiff, L.I., "Quantum Mechanics", Tata McGraw-Hill, 3rd Edition 2010
5. Ghatak, A., Quantum Mechanics", Narosa Publishing House, New Delhi.
6. Agarwal, B. K., "Quantum Mechanics', PHI
7. Landau, L.D. & Lifshitz, E.M., "Quantum Mechanics", Pergman Press
8. Quantum Mechanics for Scientists and Engineers, D. A. B. Miller 2008, Cambridge University Press
9. Introductory Quantum Mechanics, Richard L. Liboff, Pearson Education, New Delhi.
10. Quantum Mechanics, B.H. Bransden and C.J.Joachin, Pearson Education, New Delhi.
11. Kittel,C., "Solid-State Physics",
12. Arun Kumar, "Introduction to Solid State Physics", PHI Learning
13. Aschroft, N.W. and Mermin, N. D., "Solid-State Physics"
14. Verma and Srivastava, Crystallography for Solid State Physics.
15. S. O. Pillai, "Solid State Physics", New Age International.

LX.   MAJOR COURSE- MJ 19:
PRACTICALS-VI: OPTICS AND LASER

Marks: Pr (ESE: 3Hrs) =100	**Pass Marks: Pr (ESE) = 40**

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:

1. Studies with Michelson's Interferometer.
   a. Determination of wavelength separation of sodium D-lines.
   b. Determination of thickness of mica sheet.
2. Studies with Fabre-Perot Etalon.
3. Studies with Edser-Butler Plate.
4. Studies of phenomena with polarized light:
   a. Verification of Brewster's law.
   b. Verification of Fresnel's law of reflection of plane polarized light.
   c. Analysis of elliptically polarized light using $\lambda/4$ plate and Babinet's compensator.
5. Verification of Rayleigh's criterion for the limit of resolution of spectral lines using
   a. prism spectrum and (b) grating spectrum.
6. Studies on Zeeman effect.
7. Experiments using He-Ne laser source:
   a. Determination of grating pitch using phenomena of self-imaging.
   b. Determination of wavelength with a vernier caliper.

SEMESTER VIII

LXI.   MAJOR COURSE- MJ 20:
SPECTROSCOPY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
On successful completion of this course the student should know:
a.   Revise the knowledge of Spectroscopy.
b.   Learn different spectroscopy Physics and apply them to solve standard spectroscopy problems.
c.   Understand Rotation of molecules, Born Oppenheimer approximation, Techniques and Instrumentation applications.

Skills to be learned:
a.   Training in Spectroscopy will prepare the student to solve various spectra problems.
b.   He / she shall develop an understanding of how to formulate a physics problem and solve given mathematical equation rising out of it.
c.   Learn the concepts of Spectroscopy including the concept of molecular spectra, resonance spectroscopy.
d.   Develop skills to understand and solve the equations of Lasers and Holography.
e.   Acquire basic knowledge of Spectroscopy.

Course Content:
Atomic Spectra: Quantum theory of Zeeman effect (normal and anamolous), Paschen-Back effect, Stark effect (linear and non-linear). Hyperfine structure of spectral lines, X-ray spectra characteristics and absorption.   **(8 Lectures)**

The Rotation of the Molecule: Rotational spectra-Rigid diatomic molecule, The intensities of spectral lines, Effect of isotopic substitution, the non-rigid rotator, Simple harmonic oscillator, The an-harmonic oscillator, Diatomic vibrating rotator, Born Oppenheimer approximation, Techniques and instrumentation applications.
(15 Lectures)

Molecular Spectra: Infrared and Raman spectra of diatomic molecules using an-harmonic oscillator,non-rigid rotator and vibrating rotator as models. Electronic states and electronic transitions in diatomic molecules, Frank Condon principle.   **(15 Lectures)**

Resonance Spectroscopy: Nature of spinning particle, Interaction between spin and a magnetic field, Larmor Precession, Theory of NMR, Chemical shift-relaxation Mechanism, experimental study of NMR, Theory and experimental study of NQR, Theory of ESR, Hyperfine structure and fine structure of ESR, Experimental studies and applications, Mossbauer spectroscopy, Principle-Isomer shift, Quadrupole effect, effect of magnetic field, Instrumentation applications.   **(15 Lectures)**

Laser and Holography: Modes of resonator and coherence length, The Nd, YAG laser, The Neodymium Glass laser, The CO_2 Laser, Organic Dye lasers, Semi-conductor Laser, Liquid Laser. Principle of Holography, Theory-practical applications including data storage.   **(7 Lectures)**

Books Suggested:
1.   Kuhn, "Atomic Spectctra".
2.   Ghatak & Loknathan, "Quantum Mechanics".
3.   Herzberg, Spectra of diatomic molecules

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4.   Elements of Spectroscopy: Gupta, Kumar and Sharma, Pragati Prakashan.
5.   Fundamentals of Molecular Spectroscopy: Colin and Elaine, TMH.
6.   Laser and Non-linear Optics: B. B. Laud, New Age Publications.

LXII. ADVANCED MAJOR COURSE- AMJ 1:
ADVANCED QUANTUM MECHANICS-II

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
On successful completion of this course the student should know:
a.   Revise the knowledge of advance Quantum Mechanics-II.
b.   Learn different Quantum Approximation methods and apply them to solve standard Quantum mechanical problems.
c.   Understand theory of scattering and relativistic quantum mechanics.

Skills to be learned:
a.   Training in advance Quantum Mechanics-II will prepare the student to solve various quantum problems.
b.   He / she shall develop an understanding of how to formulate a physics problem and solve given mathematical equation rising out of it.
c.   Learn the concepts of advance Quantum Mechanics-II.
d.   Develop skills to understand and solve the equations of central advance Quantum Mechanics-II.

Course Content:
Approximation Methods: The WKB approximation and its applications to one dimensional bound system, The vibrational method (Ritz method) and its application to linear harmonic oscillator, Stationary perturbation theory, non-degenerate and degenerate cases and applications to an-harmonic oscillator. Time-dependent perturbation theory, constant perturbation and Fermi Golden rule, harmonic perturbation (Einstein's A and B co-efficient).   **(26 Lectures)**

Theory of Scattering: Scattering amplitude and cross-section, Partial wave analysis, Born approximation.
(8 Lectures)

Identical Particles: Many particle Schrodinger equation, The Indistinguishability principle, Symmetric and anti-symmetric wave functions, Pauli exclusion principle.   **(13 Lectures)**

Relativistic Quantum Mechanics: Klein-Gordon equation for free particle, Dirac equation, Properties of Dirac matrices, Probability and current densities, Covariance of Dirac equation, Free particle solution and negative energy states, magnetic moment and spin of electron.   **(13 Lectures)**

Books Suggested:
1.   Thankappan, V.K., "Quantum Mechanics", Wiley Eastern
2.   Mathews, P.M., &Venkatesan, K., "A Text Book of Quantum Mechanics", TMH.
3.   Merzbacker, E., "Quantum Mechanics", John Wiley
4.   Messiah, A., "Quantum Mechanics", North-Holland Publishing Co.
5.   Schiff, L.I., "Quantum Mechanics", McGraw-Hill
6.   Ghatak, A., Quantum Mechanics", Narosa Publishing House, New Delhi.
7.   Agarwal, B. K., "Quantum Mechanics', PHI
8.   Landau, L.D. & Lifshitz, E.M., "Quantum Mechanics", Pergman Press
9.   Introduction to Quantum Mechanics by D. J. Griffiths. II Edn., pearson Education
Also the books recommended earlier in Quantum Mechanics Course – I

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LXIII. ADVANCED MAJOR COURSE- AMJ 2:
ADVANCED NUCLEAR PHYSICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Learning Outcomes:
On successful completion of this course the student should:
a.   Revise the knowledge of advance Nuclear Physics-1.
b.   Learn different aspects of advance nuclear physics, viz. nuclear radiation detectors, nuclear reactor theory etc.
c.   Understand the theory of nuclear reactor right from the fundamentals of nuclear fission and upto criticality of an infinite homogeneous reactor.

Skills to be learned:
a.   Training in advance nuclear physics-I will prepare the student to solve various nuclear reactor and detectors problems.
b.   He / she shall develop an understanding of how to formulate a physics problem and solve given mathematical equation rising out of it.
c.   Learn the concepts of advance nuclear physics-I.
d.   Develop skills to understand and solve the problems of advance nuclear physics-I.

Course Content:
Nuclear Radiation Detectors
Detection: Simple model of detector, energy measurement, position and time measurement.
Solid State Detectors: Surface barrier detectors, Scintillation counters: Organic and inorganic scintillators, Gamma Ray Scintillation Spectrometer.
High Energy Particle Detectors: General principles, Nuclear emulsions, Cloud chambers, Bubble chamber.   **(15 Lectures)**

Nuclear Reactor Theory
Fundamentals of Nuclear Fission: Fission fuels, Prompt and delayed neutrons, Chain reaction, Multiplication factor, Condition for criticality, Breading phenomena.
Diffusion of neutrons: Neutron current density, The equation of continuity, Fick's law, The diffusion equation, Measurement of diffusion parameters.   **(15 Lectures)**

Neutron Moderation: Moderation without absorption, Energy loss in elastic collisions, Average logarithmic energy decrement, slowing down power and moderating ratio of a medium. Slowing down densities, Moderation- Space dependent slowing down, Fermi's age theory, Moderation with absorption
(15 Lectures)

Criticality of an Infinite Homogenous Reactor: The critical equation, Optimum reactor shapes, Material and geometrical bucklings, Neutron balance in a thermal reactor, Four factor formula, Calculation of critical size and composition in simple cases   **(15 Lectures)**

Books Suggested:
1.   Segre, E., "Experimental Nuclear Physics", John Wiley
2.   Singru, R.M., "Introduction to Experimental Nuclear Physics", John Wiley & Sons, 1974.
3.   W.R. Leo, "Techniques for Nuclear and Particle Physics Experiments"
4.   Kapoor S.S and Ramamurthy V.S., "Nuclear Radiation Detectors", New Age International Publishers 1986.
5.   Syed Naeem Ahmed, "Physics and Engineering of Radiation Detection", Academic Press, Elsevier, 2007.
6.   Glasstone, S. and Edlund, M. C., "The Elements of Nuclear Reactor Theory", Van Nostrand Co., 1953.
7.   Stacey, W. M., "Nuclear Reactor Physics"

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8.   Lamarsh, J. R., "Introduction to Nuclear Reactor Theory', Addison Wesley, 1966

9.   Murray, L., "Introductions of Nuclear Engineering".

10.   Varma, J. "NUCLEAR Physics Experiments", New Age International Publishers 2001.

11.   Singru, R.M., "Introduction to Experimental Nuclear Physics" Wiley Eastern Pvt. Ltd.

LXIV. ADVANCED MAJOR COURSE- AMJ 3:
PRACTICALS-VII: GENERAL ELECTRONICS, ATOMIC AND NUCLEAR PHYSICS

Marks: Pr (ESE: 3Hrs) =100	**Pass Marks: Pr (ESE) = 40**

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:

1. 'e/m' measurement by Braun's tube and by Magnetron valve method.
2. 'e' measurement by Millikan oil drop apparatus.
3. Design and characteristics of passive attenuators (T- and π-types)
4. BJT based voltage amplifier: design and performance study with and without negative feedback.
5. JFET based voltage amplifier: design and performance study.
6. Half- and Full wave rectifier with and without filters
7. Series and shunt voltage regulators using Zener diode.
8. Characterization of Photo –resister.
9. Determine the plateau characteristics of the given GM counter.
10. Verification of Inverse Square Law for Gamma-rays.
11. To measure the absorption coefficient of gamma rays in Aluminum or Copper.
12. To plot the Gaussian or normal distribution curve for background radiation.
13. Determination of dead time of the GM Counter.

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COURSES OF STUDY FOR FYUGP IN **"PHYSICS" MINOR**

MINOR COURSE-1A   **(SEM-I)**

LXV. MINOR COURSE- MN 1A:
MECHANICS

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	**Pass Marks: Th (SIE + ESE) = 30**

(Credits: Theory-03) **45 Hours**

Course Learning Outcomes:
On successful completion of this course the student should be able to:
Understand laws of motion and their application to various dynamical situations, notion of inertial frames and concept of Galilean invariance. He / she will learn the concept of conservation of energy, momentum, angular momentum and apply them to basic problems.
1.   Understand the principles of elasticity through the study of Young Modulus and modulus of rigidity.
2.   Understand simple principles of fluid flow and the equations governing fluid dynamics.
3.   Apply Kepler's law to describe the motion of planets and satellite in circular orbit, through the study of law of Gravitation.
4.   Explain the phenomena of simple harmonic motion and the properties of systems executing such motions.
5.   Describe how fictitious forces arise in a non-inertial frame, e.g., why a person sitting in a merry-go-round experiences an outward pull. Describe special relativistic effects and their effects on the mass and energy of a moving object.
6.   Appreciate the nuances of Special Theory of Relativity (STR)
7.   In the laboratory course, the student shall perform experiments related to mechanics (compound pendulum), rotational dynamics (Flywheel), elastic properties (Young Modulus and Modulus of Rigidity) and fluid dynamics (verification of Stokes law, Searle method) etc.

Skills to be learned:
1.   Understand the analogy between translational and rotational dynamics, and application of both motions simultaneously in analyzing rolling with slipping.

Course Content:
Laws of Motion: Frames of reference. Newton's Laws of motion. Dynamics of a system of particles. Centre of Mass.   **(8 Lectures)**

Momentum and Energy: Conservation of momentum. Work and energy. Conservation of energy. **(5 Lectures)**

Rotational Motion: Angular velocity and angular momentum. Torque. Conservation of angular momentum.
(5 Lectures)

Gravitation: Newton's Law of Gravitation. Motion of a particle in a central force field (motion is in a plane, angular momentum is conserved, areal velocity is constant). Kepler's Laws (statement only). Satellite in circular orbit and applications. Geosynchronous orbits.   **(6 Lectures)**

Oscillations: Simple harmonic motion. Differential equation of SHM and its solutions. Kinetic and Potential Energy, Total Energy and their time averages. Damped oscillations.   **(6 Lectures)**

Elasticity: Hooke's law - Stress-strain diagram - Elastic moduli-Relation between elastic constants - Poisson's Ratio-Expression for Poisson's ratio in terms of elastic constants - Work done in stretching and work done in twisting a wire – Twisting couple on a cylinder - Determination of Rigidity modulus by static torsion – Torsional pendulum-   **(5 Lectures)**

Fluids: Surface Tension: Synclastic and anticlastic surface - Excess of pressure -Application to spherical and cylindrical drops and bubbles - variation of surface tension with temperature - Jaegar's method. Viscosity -

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Rate flow of liquid in a capillary tube - Poiseuille's formula - Determination of coefficient of viscosity of a liquid - Variations of viscosity of liquid with temperature-lubrication.   **(4 Lectures)**

Speed Theory of Relativity: Constancy of speed of light. Postulates of Special Theory of Relativity. Length contraction. Time dilation. Relativistic addition of velocities.   **(6 Lectures)**

Note: Students are not familiar with vector calculus. Hence all examples involve differentiation either in one dimension or with respect to the radial coordinate.

Reference Books:
1. University Physics. F.W. Sears, M.W. Zemansky and H.D. Young, 13/e, 1986. Addison-Wesley
2. Mechanics Berkeley Physics, v.1: Charles Kittel, et. al. 2007, Tata McGraw-Hill.
3. Physics – Resnick, Halliday & Walker 9/e, 2010, Wiley
4. University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.
5. A textbook of General Physics, Edser
6. Undergraduate Mechanics, Arun Kumar, J. P. Agarwal and Nutan Lata, Pragati Prakashan
7. Oscillations and waves, Satya Prakash.
8. A textbook of oscillation, waves and Acoustics, M. Ghosh and D. Bhattacharya

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LXVI. MINOR COURSE- MN 1A PR:
MINOR PRACTICALS-**1A PR**

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:
1. To determine the Young's Modulus of a bar by method of bending.
2. To determine the Elastic Constants of a Wire by Searle's method.
3. To determine g by Bar Pendulum.
4. To determine g by Kater's Pendulum.
5. To study the Motion of a Spring and calculate (a) Spring Constant (b) acceleration due to gravity (g).
6. To determine the modulus of rigidity of the material of given wire by dynamical method.
7. To determine the surface tension of water by rise in capillary tube.

Reference Books
1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House.
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers.
3. A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New Delhi.

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MINOR COURSE-1B   (SEM-III)

LXVII.   MINOR COURSE- MN 1B:
ELECTRICITY AND MAGNETISM

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	**Pass Marks: Th (SIE + ESE) = 30**

(Credits: Theory-03) **45 Hours**

Course Learning Outcomes:

On successful completion of this course the student should be able to:

1. Demonstrate Gauss law, Coulomb's law for the electric field, and apply it to systems of point charges as well as line, surface, and volume distributions of charges.
2. Explain and differentiate the vector (electric fields, Coulomb's law) and scalar (electric potential, electric potential energy) formalisms of electrostatics.
3. Apply Gauss's law of electrostatics to solve a variety of problems.
4. Articulate knowledge of electric current, resistance and capacitance in terms of electric field and electric potential.
5. Demonstrate a working understanding of capacitors.
6. Describe the magnetic field produced by magnetic dipoles and electric currents.
7. Explain Faraday-Lenz and Maxwell laws to articulate the relationship between electric and magnetic fields.
8. Understand the dielectric properties, magnetic properties of materials and the phenomena of electromagnetic induction.
9. Describe how magnetism is produced and list examples where its effects are observed.
10. Apply Kirchhoff's rules to analyze AC circuits consisting of parallel and/or series combinations of voltage sources and resistors and to describe the graphical relationship of resistance, capacitor and inductor.
11. Apply various network theorems such as Superposition, Thevenin, Norton, Reciprocity, Maximum Power Transfer, etc. and their applications in electronics, electrical circuit analysis, and electrical machines.
12. In the laboratory course the student will get an opportunity to verify various laws in electricity and magnetism such as Lenz's law, Faraday's law and learn about the construction, working of various measuring instruments.
13. Should be able to verify of various circuit laws, network theorems elaborated above, using simple electric circuits.

Skills to be learned:

1. This course will help in understanding basic concepts of electricity and magnetism and their applications.
2. Basic course in electrostatics will equips the student with required prerequisites to understand electrodynamics phenomena.

Course Content:

Vector Analysis: Scalar and Vector product, gradient, divergence, Curl and their significance, Vector Integration, Line, surface and volume integrals of Vector fields, Statement of Gauss-divergence theorem and Stoke's theorem of vectors.   **(10 Lectures)**

Electrostatics: Electric potential as line integral of electric field, potential due to a point charge, electric dipole, uniformly charged spherical shell and solid sphere. Calculation of electric field from potential. Capacitance of Parallel plate. Energy per unit volume in electrostatic field. Dielectric medium, Polarisation, Displacement vector. Gauss's theorem in dielectrics. Parallel plate capacitor completely filled with dielectric.
(15 Lectures)

Magnetism: Magnetostatics: Biot-Savart's law and its applications- straight conductor, circular coil, solenoid carrying current. Divergence and curl of magnetic field. Magnetic vector potential. Ampere's circuital law. Magnetic properties of materials: Magnetic intensity, magnetic induction, permeability, magnetic susceptibility. Brief introduction of dia-, para-and ferromagnetic materials.   **(10 Lectures)**

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Electromagnetic Induction: Faraday's laws of electromagnetic induction, Lenz's law, self and mutual inductance, L of single coil, M of two coils. Energy stored in magnetic field.   **(5 Lectures)**

Maxwell`s equations and Electromagnetic wave propagation: Equation of continuity of current, Displacement current, Maxwell's equations, Poynting vector, energy density in electromagnetic field, electromagnetic wave propagation through vacuum.   **(5 Lectures)**

Reference Books:

1. Electricity and Magnetism, Edward M. Purcell, 1986, McGraw-Hill Education
2. Concepts of Electromagnetic Theory, K. Mamta, Raj Kumar Singh and J. N. Prasad, 1/e,
3. 2021, Wiley/I. K. International Publishing House, New Delhi
4. Electricity & Magnetism, J.H. Fewkes & J.Yarwood. Vol. I, 1991, Oxford Univ. Press
5. Electricity and Magnetism, D C Tayal, 1988, Himalaya Publishing House.
6. University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.
7. D.J.Griffiths, Introduction to Electrodynamics, 3rd Edn, 1998, Benjamin Cummings.
8. Electricity and Magnetism, Chattopadhyaya and Rakshit
9. Electricity and Magnetism, Mahajan and Rangwala
10. Electricity and Magnetism, K. K. Tewary.

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LXVIII.   MINOR COURSE- MN 1B PR:
MINOR PRACTICALS-**1B PR**

Marks: Pr (ESE: 3Hrs) = 25	**Pass Marks: Pr (ESE) = 10**

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:

1. To compare capacitances using De' Sauty's bridge.
2. To study the Characteristics of a Series RC Circuit.
3. To study a series LCR circuit and determine its
   a. Resonant frequency,   b. Quality factor
4. To study a parallel LCR circuit and determine its
   a. Anti-resonant frequency and   b. Quality factor Q
5. To verify the Thevenin theorem.
6. To verify the Superposition and Maximum Power Transfer Theorems
7. To determine the resistance of given moving coil galvanometer by half deflection method
8. To determine the figure of merit of moving coil galvanometer.

Reference Books
1. Advanced Practical Physics for students, B.L. Flint & H.T. Worsnop, 1971, Asia Publishing House.
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
3. A Text Book of Practical Physics, I.Prakash & Ramakrishna, 11th Ed.2011, Kitab Mahal
4. Engineering Practical Physics, S. Panigrahi & B. Mallick,2015, Cengage Learning India Pvt. Ltd.

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MINOR COURSE-1C   (SEM-V)

LXIX. MINOR COURSE- MN 1C:
THERMAL PHYSICS AND STATISTICAL MECHANICS

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

<u>**Course Learning Outcomes:**</u>
On successful completion of this course the student should be able to:
14. Demonstrate laws of thermodynamics, thermodynamic potentials, kinetic theory of gases etc.
15. Explain and differentiate between various laws of thermodynamics, their applications.
16. Understand different thermodynamic processes.
17. Articulate knowledge of entropy and related theorem.
18. Demonstrate a working understanding of capacitors.
19. Describe the blackbody and blackbody radiations.
20. Explain Displacement law.
21. Understand the statistical behaviour of a thermodynamic system.
22. Should be able to verify of various thermodynamic statistical laws and the be able to identifying the systems following them.

<u>**Skills to be learned:**</u>
3. This course will help in understanding basic concepts of Thermal and Statistical Physics
4. Basic course in Thermal Physics and Statistical Physics will equips the student with required prerequisites to understand thermodynamical and statistical phenomena.

<u>**Course Content:**</u>
Laws of Thermodynamics: Zeroth Law of thermodynamics and temperature. First law and internal energy, conversion of heat into work, Various Thermodynamical Processes, Applications of First Law: General Relation between CP and CV, Work Done during Isothermal and Adiabatic Processes, Compressibility and Expansion Coefficient, Reversible and irreversible processes, Second law and Entropy, Carnot's cycle & theorem, Entropy changes in reversible & irreversible processes, Entropy-temperature diagrams, Third law of thermodynamics, Unattainability of absolute zero.
                    (15 Lectures)

Thermodynamical Potentials: Enthalpy, Gibbs, Helmholtz and Internal Energy functions, Maxwell's relations and applications Joule- Thompson Effect, Clausius- Clapeyron Equation, Expression for (CP – CV), CP/CV, TdS equations.   **(8 Lectures)**

Kinetic Theory of Gases: Derivation of Maxwell's law of distribution of velocities and its experimental verification, Mean free path (Zeroth Order), Transport Phenomena: Viscosity, Conduction and Diffusion (for vertical case), Law of equipartition of energy (no derivation) & its applications to specific heat of gases; monoatomic and diatomic gases.   **(8 Lectures)**

Theory of Radiation: Blackbody radiation, Spectral distribution, Concept of Energy Density, Derivation of Planck's law, Deduction of Wien's distribution law, Rayleigh- Jeans Law, Stefan Boltzmann Law and Wien's displacement law from Planck's law.   **(5 Lectures)**

Statistical Mechanics: Maxwell-Boltzmann law - distribution of velocity – Quantum statistics - Phase space - Fermi-Dirac distribution law - electron gas - Bose-Einstein distribution law - photon gas - comparison of three statistics.   **(9 Lectures)**

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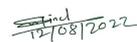
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1.   Thermal Physics, S. Garg, R. Bansal and C. Ghosh, 1993, Tata McGraw-Hill.
2.   A Treatise on Heat, Meghnad Saha, and B.N. Srivastava, 1969, Indian Press.
3.   Thermodynamics, Enrico Fermi, 1956, Courier Dover Publications.
4.   Thermodynamics, Kinetic theory & Statistical thermodynamics, F.W.Sears and G.L. Salinger. 1988, Narosa
5.   University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.
6.   Heat and Thermodynamics, A. B. Gupta and H. P. Roy.
7.   Heat and Thermodynamics, P. K. Chakraborty.
8.   Statistical Mechanics, R.K. Pathria, Butterworth Heinemann: 2nd Ed., 1996, Oxford University Press.
9.   Statistical Physics, Berkeley Physics Course, F. Reif, 2008, Tata McGraw-Hill
10. Statistical and Thermal Physics, S. Lokanathan and R.S. Gambhir. 1991, Prentice Hall
11. Statistical Mechanics, K. Huang.

LXX.   MINOR COURSE- MN 1C PR:
MINOR PRACTICALS-1C PR

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:

1.   Measurement of Planck's constant using black body radiation.
2.   To determine Stefan's Constant.
3.   To determine the coefficient of thermal conductivity of Cu by Searle's Apparatus.
4.   To determine the coefficient of thermal conductivity of a bad conductor by Lee disc method.
5.   To determine the temperature co-efficient of resistance by Platinum resistance thermometer.
6.   To study the variation of thermo emf across two junctions of a thermocouple with temperature.
7.   To record and analyze the cooling temperature of a hot object as a function of time using a
8.   thermocouple

Reference Books:
1.   Advanced Practical Physics for students, B.L.Flint & H.T.Worsnop, 1971, Asia Publishing House.
2.   A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New
3.   Delhi.
4.   A Laboratory Manual of Physics for Undergraduate Classes, D.P.Khandelwal, 1985, Vani Publication.

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MINOR COURSE-1D   **(SEM-VII)**

LXXI. MINOR COURSE- MN 1D:
WAVES AND OPTICS

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Learning Outcomes:
This course will enable the student to
1. Apply basic knowledge of principles and theories about the behaviour of light and the physical environment to conduct experiments. Understand the principle of superposition of waves, so thus describe the formation of standing waves.
2. Explain several phenomena we can observe in everyday life that can be explained as wave phenomena.
3. Use the principles of wave motion and superposition to explain the Physics of polarization, interference and diffraction
4. Understand the working of selected optical instruments like interferometer,diffraction grating, and holograms.
5. In the laboratory course, student will gain hands-on experience of using various optical instruments and making finer measurements of wavelength of light using Newton Rings experiment, Fresnel Biprism etc. Resolving power of optical equipment can be learnt firsthand.
6. The motion of coupled oscillators, study of Lissajous figures and behaviour of transverse, longitudinal waves can be learnt in this laboratory course.

Skills to be learned:
1. He / she shall develop an understanding of various aspects of harmonic oscillations andwaves specially.
   a. Superposition of collinear and perpendicular harmonic oscillations
   b. Various types of mechanical waves and their superposition.
2. This course in basics of optics will enable the student to understand various opticalphenomena, principles, workings and applications optical instruments.

Course Content:
Wave Motion- General: Transverse waves on a string. Travelling and standing waves on a string. Normal Modes of a string. Group velocity, Phase velocity. Plane waves. Spherical waves, Wave intensity. **(5 Lectures)**

Superposition of Two Collinear Harmonic oscillations: Linearity & Superposition Principle. Oscillations having equal frequencies and (2) Oscillations having different frequencies(Beats). **(5 Lectures)**

Superposition of Two Perpendicular Harmonic Oscillations: Graphical and Analytical Methods. Lissajous Figures with equal an unequal frequency and their uses. **(2 Lectures)**

Sound: Simple harmonic motion - forced vibrations and resonance - Fourier's Theorem -Application to saw tooth wave and square wave - Intensity and loudness of sound - Decibels - Intensity levels - musical notes - musical scale. Acoustics of buildings: Reverberation and time of reverberation - Absorption coefficient - Sabine's formula - measurement of reverberation time, Acoustic aspects of halls and auditoria. **(9 Lectures)**

Wave Optics: Electromagnetic nature of light. Definition and Properties of wave front. Huygens Principle. **(3 Lectures)**

Interference: Young's Double Slit experiment. Interference in Thin Films: parallel and wedge-shaped films. Newton's Rings: measurement of wavelength and refractive index **(5 Lectures)**

Michelson's Interferometer: Idea of form of fringes (no theory needed), Determination of wavelength, Wavelength difference, Refractive index, and Visibility of fringes. **(4 Lectures)**

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Diffraction: Fraunhofer diffraction- Single slit; Double Slit. Multiple slits and Diffraction grating. Fresnel Diffraction: Half-period zones. Zone plate. Fresnel Diffraction pattern of a straight edge. Resolving power of telescope and grating.   **(7 Lectures)**

Polarization: Transverse nature of light waves. Plane polarized light – production and analysis. Circular and elliptical polarization.   **(5 Lectures)**

Reference Books:
1. Fundamentals of Optics, F.A Jenkins and H.E White, 1976, McGraw-Hill
2. Principles of Optics, B.K. Mathur, 1995, Gopal Printing
3. Concepts of Electromagnetic Theory, K. Mamta, Raj Kumar Singh and J. N. Prasad, 1/e 2021, Wiley/I. K. International Publishing House, New Delhi
4. Fundamentals of Optics, H.R. Gulati and D.R. Khanna, 1991, R. Chand Publications
5. University Physics. F.W. Sears, M.W. Zemansky and H.D. Young. 13/e, 1986. Addison-Wesley

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LXXII.   MINOR COURSE- MN 1D PR:
MINOR PRACTICALS-1D PR

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) 30 Hours

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:

1. Familiarization with Schuster`s focusing; determination of angle of prism.
2. To determine the Refractive Index of the Material of a Prism using Sodium Light.
3. To determine Dispersive Power of the Material of a Prism using Mercury Light
4. To determine the value of Cauchy Constants.
5. To determine the Resolving Power of a Prism.
6. To determine wavelength of sodium light using Newton's Rings.
7. To determine the wavelength of Laser light using Diffraction of Single Slit.
8. To determine wavelength of (1) Sodium and (2) Spectral lines of the Mercury light usingplane diffraction Gratin
9. To determine the Resolving Power of a Plane Diffraction Grating.

Reference Books:
1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, AsiaPublishing House.
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition,reprinted 1985, Heinemann Educational Publishers

3.   A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, KitabMahal, New Delhi.

FYUGP

CHEMISTRY HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented from 3rd Semester of Academic Session 2022-26

& From 1st Semester of Session 2023-27 Onwards

AK SINGH COLLEGE ,JAPLA, PALAMU

UNIVERSITY DEPARTMENT OF CHEMISTRY

Ranchi University, Ranchi-834008 (Jharkhand)

Ref No. :.................   Date :.......................

Members of Board of Studies of NEP FYUGP Syllabus
to be Implemented from 3rd Semester of Academic session 2022-26 & Onwards

1. **Chairman:**
   Dr. Anil Kumar Delta
   Associate Professor & Head, University Department Chemistry,
   Ranchi University, Ranchi

2. **External Member:**
   i. **Prof (Dr.) Sanjoy Misra**
   Professor (Rtd.) & Ex-H.O.D.
   University Department Chemistry, R.U., Ranchi

   ii. **Dr. Khurshid Akhtar**
   Associate Professor & H.O.D., Dr. Shyama Prasad Mukherjee University, Ranchi

3. **Internal Members:**
   i. **Dr. Neeta Sinha**
   Assistant Professor, University Department of Chemistry, R.U., Ranchi

   ii. **Dr. Smriti Singh**
   Assistant Professor, University Department of Chemistry, R.U., Ranchi

   iii. **Dr. Guru Charan Sahu**
   Assistant Professor, University Department of Chemistry, R.U., Ranchi

   iv. **Dr. Neelam**
   Assistant Professor, University Department of Chemistry, R.U., Ranchi

   v. **Dr. Neeraj**
   Assistant Professor, University Department of Chemistry, R.U., Ranchi

   vi. **Dr. U.R. Sen**
   Associate Professor & Head, Department of Chemistry, St. Xavier College, R.U., Ranchi

   vii. **Dr. S.K. Sengupta**
   Associate Professor & Head, Department of Chemistry, Gossner College, R.U., Ranchi

   viii. **Sri Subhankar Aich**
   Assistant Professor, Department of Chemistry, Marwari College, R.U., Ranchi

   ix. **Dr. Anil Kumar Pandey**
   Assistant Professor, Department of Chemistry, J.N. college, Dhurwa, R.U., Ranchi

   x. **Dr. Shilpi Singh**
   Assistant Professor, Department of Chemistry, Doranda College, College, R.U., Ranchi

   xi. **Dr. Reena Bhadani**
   Assistant Professor & Head, Department of Chemistry, Ranchi Women's College, R.U., Ranchi

DIRECTOR
IQAC, RANCHI UNIVERSITY
RANCHI-834 001

HEAD/CHAIRMAN
Department of Chemistry
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Table of Content

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Students are Instructed to

Refer Syllabus of Allied/ Opted Subjects from R.U. Website

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HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1st of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:
  - w) Odd Semester: **From first Monday of August to third Saturday of December**
  - x)Even Semester: **From first Monday of January to third Saturday of May**
- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester

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will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
    - ➢ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
    - ➢ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
    - ➢ Bachelor's Degree after a 3-year (6 semesters) programme of study,
    - ➢ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
    - ➢ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

w) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.

One credit for Theory   = 15 Hours of Teaching i.e., 15 Credit Hours
One credit for Practicum   = 30 Hours of Practical work i.e., 30 Credit Hours

x) For credit determination, instruction is divided into three major components:

Hours (L) – Classroom Hours of one-hour duration.
Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.

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- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

cx.   The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

cxi.   No student will be detained in odd Semesters (I, III, V & VII).

cxii.   To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

cxiii. To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

cxiv.   To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

cxv.   However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

cxvi.   Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

cxvii. To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 3 papers out of the total 4 papers.

cxviii. It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result of the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)													
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)													
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree													
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4

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	Exit Point: Bachelor's Degree with Hons. /Hons. with Research	160	224

Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

Principal
A.K. Singh College
Japla, Palamu

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COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME 2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	AEC-1	Language and Communication Skills (MIL 1 - Hindi/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Hindi)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4
IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2
	VAC-2	Value Added Course-2	2

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	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4
	RC/ AMJ-1 AMJ-2 AMJ-3	Research Internship/Field Work/Dissertation OR Advanced Major paper-1 (Disciplinary/Interdisciplinary Major) Advanced Major paper-2 (Disciplinary/Interdisciplinary Major) Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	12/ 4 4 4
		Total Credit	**160**

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NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	xxiii. Discipline/ Interdisciplinary courses and xxiv. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64
Minor	xxiii. Discipline/ Interdisciplinary courses and xxiv. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

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Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Double Major Courses		Credits
	Code	**Papers**	**Credits**
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:

AEC	Ability Enhancement Courses
SEC	Skill Enhancement Courses
IAP	Internship/Apprenticeship/ Project
MDC	Multidisciplinary Courses
MJ	Major Disciplinary/Interdisciplinary Courses
DMJ	Double Major Disciplinary/Interdisciplinary Courses
MN	Minor Disciplinary/Interdisciplinary Courses
AMJ	Advanced Major Disciplinary/Interdisciplinary Courses
RC	Research Courses

AIMS OF BACHELOR'S DEGREE PROGRAMME IN CHEMISTRY

The broad aims of bachelor's degree programme in Chemistry are:

The aim of bachelor's degree programme in chemistry is intended to provide:

(xx)   Broad and balance knowledge in chemistry in addition to understanding of key chemical concepts, principles, and theories.

(xxi)   To develop students' ability and skill to acquire expertise over solving both theoretical and applied chemistry problems.

(xxii)   To provide knowledge and skill to the students' thus enabling them to undertake further studies in chemistry in related areas or multidisciplinary areas that can be helpful for self-employment/entrepreneurship.

(xxiii) To provide an environment that ensures cognitive development of students in a holistic manner. A complete dialogue about chemistry, chemical equations and its significance is fostered in this framework, rather than mere theoretical aspects

(xxiv)   To provide the latest subject matter, both theoretical as well as practical, such a way to foster their core competency and discovery learning. A chemistry graduates as envisioned in this framework would be sufficiently competent in the field to undertake further discipline-specific studies, as well as to begin domain-related employment.

(xxv)   To mold a responsible citizen who is aware of most basic domain-independent knowledge, including critical thinking and communication.

(xxvi)   To enable the graduate, prepare for national as well as international competitive examinations, especially UGC-CSIR NET and UPSC Civil Services Examination.

PROGRAM LEARNING OUTCOMES

The broad aims of bachelor's degree programme in Chemistry are:

The student graduating with the Degree B.Sc. (Honours/Research) in Chemistry should be able to understand:

(xxvii) **Core competency:** Students will acquire core competency in the subject Chemistry, and in allied subject areas.

(xxviii) Systematic and coherent understanding of the fundamental concepts in Physical chemistry, Organic Chemistry, Inorganic Chemistry, Analytical Chemistry, and all other related allied chemistry subjects.

(xxix)   Students will be able to understand use the evidence based comparative chemistry approach to explain the chemical synthesis and analysis.

(xxx)   The students will be able to understand the characterization of materials.

(xxxi)   Students will be able to understand the basic principle of equipment, instruments used in the chemistry laboratory.

(xxxii) Students will be able to understand demonstrate the experimental techniques and methods of their area of specialization in Chemistry.

(xxxiii) **Disciplinary knowledge and skill:** A graduate student are expected to be capable of demonstrating comprehensive knowledge and understanding of both theoretical and experimental/applied chemistry knowledge in various fields of interest like Analytical Chemistry, Physical Chemistry, Inorganic Chemistry, Organic Chemistry, Material Chemistry, etc. Further, the student will be capable of using of advanced instruments and related soft-wares for in-depth characterization of materials/chemical analysis and separation technology.

(xxxiv) **Skilled communicator:** The course curriculum incorporates basics and advanced training in order to make a graduate student capable of expressing the subject through technical writing as well as through oral presentation.

(xxxv)   **Critical thinker and problem solver:** The course curriculum also includes components that can be helpful to graduate students to develop critical thinking ability by way of solving problems/numerical using basic chemistry knowledge and concepts.

(xxxvi) Sense of inquiry: It is expected that the course curriculum will develop an inquisitive characteristic among the students through appropriate questions, planning and reporting experimental investigation.

(xxxvii) **Team player:** The course curriculum has been designed to provide opportunity to act as team player by contributing in laboratory, field-based situation and industry.

(xxxviii)   **Skilled project manager:** The course curriculum has been designed in such a manner as to enabling a graduate student to become a skilled project manager by acquiring knowledge about chemistry project management, writing, planning, study of ethical standards and rules and regulations pertaining to scientific project operation.

(xxxix) **Digitally literate:** The course curriculum has been so designed to impart a good working knowledge in understanding and carrying out data analysis, use of library search tools, and use of chemical simulation software and related computational work.

(xl)   **Ethical awareness/reasoning:** A graduate student requires to understand and develop ethical awareness/reasoning which the course curriculum adequately provide.

(xli)   **Lifelong learner:** The course curriculum is designed to inculcate a habit of learning continuously through use of advanced ICT technique and other available techniques/books/journals for personal academic growth as well as for increasing employability opportunity.

SEMESTER WISE COURSES IN CHEMISTRY MAJOR-1 FOR FYUGP   **2022 onwards**

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	Atomic Structure, Chemical Bonding & Redox Reactions	4	25	75	---
II	MJ-2	Organic Basics and Hydrocarbons	4	25	75	---
	MJ-3	**Practical-I**	4	---	---	100
III	MJ-4	States of Matter & Concept of Equilibria	4	25	75	---
	MJ-5	**Practical-II**	4	---	---	100
IV	MJ-6	Functional Groups Containing X, O, S & N	4	25	75	---
	MJ-7	s, p, d, f-block Elements & Coordination Chemistry	4	25	75	---
	MJ-8	**Practical-III**	4	---	---	100
V	MJ-9	Chemical Thermodynamics & Applications	4	25	75	---
	MJ-10	Reaction Mechanisms in Organic Chemistry	4	25	75	---
	MJ-11	**Practical-IV**	4	---	---	100
VI	MJ-12	Analytical Chemistry	4	25	75	---
	MJ-13	Phase Equilibria, Chemical Kinetics & Surface Chemistry	4	25	75	---
	MJ-14	Organometallic and Bioinorganic Chemistry	4	25	75	---
	MJ-15	**Practical-V**	4	---	---	100
VII	MJ-16	Electrochemistry	4	25	75	---
	MJ-17	Polymer & Materials Chemistry	4	25	75	---
	MJ-18	Reaction Mechanisms & Electronic Spectra in Inorganic Chemistry	4	25	75	---
	MJ-19	**Practical-VI**	4	---	---	100
VIII	MJ-20	Molecular Spectroscopy & Photochemistry	4	25	75	---
	AMJ-1	Quantum & Nanochemistry	4	25	75	---
	AMJ-2	Heterocyclics & Biomolecules	4	25	75	---
	AMJ-3	**Practical-VII**	4	---	---	100
	or RC-1	Research Methodology	4	25	75	---
	RC-2	Project Dissertation/ Research Internship/ Field Work	8	---	---	200
		Total Credit	**92**			

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Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Skill Enhancement Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	Fuel & Pharmaceutical Chemistry	3	---	75	---
II	SEC-2	Green Chemistry	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	9			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Minor Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	Introductory Chemistry	4	15	60	25
III	MN-1B	Chemical Equilibria & Functional Groups	4	15	60	25
V	MN-1C	Chemistry of s- & p-Block Elements and States of Matter	4	15	60	25
VII	MN-1D	Chemistry of d- & f-Block Elements & Molecules of Life	4	15	60	25
		Total Credit	16			

INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There will be Only One Semester Internal Examination in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

W. (SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

X.   (SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Conversion of Attendance into score may be as follows:

Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

AH.   (ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

AI. (ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

AJ.(ESE 100 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

Subject/ Code

F.M. =10 　　　　　　　　　　　**Time**=1Hr. 　　　　　　　　　　　Exam Year

General Instructions:
lvi.　**Group A** carries very short answer type compulsory questions.
lvii.　**Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
lviii. Answer in your own words as far as practicable.
lix.　Answer all sub parts of a question at one place.
lx.　Numbers in right indicate full marks of the question.

Group A

34. 　　　　　　　　　　　　　　　　　　　　　　　　　　　　　[5x1=5]

　　　lvi.　　...............
　　　lvii.　　..............
　　　lviii.　　..............
　　　lix.　　..............
　　　lx.　　..............

Group B

35. ....　　　　　　　　　　　　　　　　　　　　　　[5]
36. ....　　　　　　　　　　　　　　　　　　　　　　[5]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **20 Marks**:

Subject/ Code

F.M. =20 　　　　　　　　　　　**Time**=1Hr. 　　　　　　　　　　　Exam Year

General Instructions:
lvi.　**Group A** carries very short answer type compulsory questions.
lvii.　**Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
lviii. Answer in your own words as far as practicable.
lix.　Answer all sub parts of a question at one place.
lx.　Numbers in right indicate full marks of the question.

Group A

45. 　　　　　　　　　　　　　　　　　　　　　　　　　　　　　[5x1=5]

　　　lvi.　　...............
　　　lvii.　　..............
　　　lviii.　　..............
　　　lix.　　..............
　　　lx.　　..............

46. ....　　　　　　　　　　　　　　　　　　　　　　[5]

Group B

47. ....　　　　　　　　　　　　　　　　　　　　　　[10]
48. ....　　　　　　　　　　　　　　　　　　　　　　[10]

Note: There may be subdivisions in each question asked in Theory Examination.

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FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION
Question format for **50 Marks**:

Subject/ Code

F.M. =50   **Time**=3Hrs.   Exam Year

General Instructions:
xxi. **Group A** carries very short answer type **compulsory** questions.
xxii. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
xxxvi.   Answer in your own words as far as practicable.
xxxvii.   Answer all sub parts of a question at one place.
xxxviii.   Numbers in right indicate full marks of the question.

Group A

67.   [5x1=5]

    lvi.   ....
    lvii.   ....
    lviii.   ....
    lix.   ....
    lx.   ....

Group B

68. ....   [15]
69. ....   [15]
70. ....   [15]
71. ....   [15]
72. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **60 Marks**:

Subject/ Code

F.M. =60   **Time**=3Hrs.   Exam Year

General Instructions:
xxiii.   **Group A** carries very short answer type **compulsory** questions.
xxiv. **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
xxxvi.   Answer in your own words as far as practicable.
xxxvii.   Answer all sub parts of a question at one place.
xxxviii.   Numbers in right indicate full marks of the question.

Group A

89.   [5x1=5]

    lvi.   ....
    lvii.   ....
    lviii.   ....
    lix.   ....
    lx.   ....

90. ....   [5]
91. ....   [5]

Group B

92. ....   [15]
93. ....   [15]
94. ....   [15]
95. ....   [15]
96. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

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Question format for **75 Marks**:

Subject/ Code

F.M. = 75   **Time**=3Hrs.   Exam Year

General Instructions:
xxiii.   **Group A** carries very short answer type **compulsory** questions.
xxiv.**Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xxxvi.   Answer in your own words as far as practicable.
xxxvii.   Answer all sub parts of a question at one place.
xxxviii.   Numbers in right indicate full marks of the question.

Group A

100.   [5x1=5]

lvi.   ....
lvii.   ....
lviii.   ....
lix.   ....
lx.   ....

101...............   [5]
102...............   [5]

Group B

103...............   [15]
104...............   [15]
105...............   [15]
106...............   [15]
107...............   [15]
108...............   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

Subject/ Code

F.M. = 100   **Time**=3Hrs.   Exam Year

General Instructions:
xxiii.   **Group A** carries very short answer type **compulsory** questions.
xxiv.**Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xxxvi.   Answer in your own words as far as practicable.
xxxvii.   Answer all sub parts of a question at one place.
xxxviii.   Numbers in right indicate full marks of the question.

Group A

12.   [10x1=10]

lvi.   ....   vi.   ....
lvii.   ....   vii.   ....
lviii.   ....   viii.   ....
lix.   ....   ix.   ....
24. ..lx...............   x   ....   [5]
25. ....   [5]

Group B

70. ....   [20]
71. ....   [20]
72. ....   [20]
73. ....   [20]
74. ....   [20]
75. ....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

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SEMESTER I

XXII. MAJOR COURSE –MJ 1:
ATOMIC STRUCTURE, CHEMICAL BONDING & REDOX REACTIONS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
On completion of this course, the students will be able to understand:
3.   Atomic theory and its evolution.
4.   Learning scientific theory of atoms, concept of wave function.
5.   Elements in periodic table, physical and chemical characteristics, periodicity.
6.   To predict the atomic structure, chemical bonding, and molecular geometry based on accepted models.
7.   Atomic theory of matter, composition of atom.
8.   Defining isotopes, isobar and isotone.
9.   Hybridization and shapes of atomic, molecular orbitals, bond parameters, bond- distances and energies.
10. Valence bond theory incorporating concepts of hybridization predicting geometry of molecules.

Course Learning Outcomes:
On successful completion of this course the student should know:
8.   Electronic configuration of various elements in periodic table
9.   Predicting structure of molecules
10. How hydrogen bonding, metallic bonding is important in common materials' scientific applications to material fabrication

Course Content:

UNIT 1: Atomic Structure: (10 classes each of 60 minutes duration)
Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: de Broglie equation, Heisenberg's Uncertainty Principle and its significance, Schrödinger's wave equation, significance of ψ and ψ^2. Quantum numbers and their significance. Normalized and orthogonal wave functions. Sign of wave functions. Radial and angular wave functions for hydrogen atom. Radial and angular distribution curves. Shapes of s, p, d and f orbitals. Pauli's Exclusion Principle, Hund's rule of maximum multiplicity, Aufbau's principle and its limitations.

UNIT II: Periodicity of Elements: (10 classes each of 60 minutes duration)
s, p, d, f -block elements, the Long form of Periodic Table. Detailed discussion of the following properties of the elements.

a.   Effective nuclear charge, shielding or screening effect, Slater rules, variation of effective nuclear charge in periodic table.
b.   Atomic radii (van der Waals)
c.   Ionic and crystal radii.
d.   Covalent radii (octahedral and tetrahedral)
e.   Ionization enthalpy, Successive ionization enthalpies and factors affecting ionization energy. Applications of ionization enthalpy.
f.   Electron gain enthalpy, trends of electron gain enthalpy.
g.   Electronegativity, Pauling, Mullikan, Allred Rachow scales, electronegativity and bond order, partial charge, hybridization, group electronegativity.

UNIT III: Chemical Bonding:
(i) *Ionic bond:* **(5 classes each of 60 minutes duration)**
General characteristics, types of ions, size effects, radius ratio rule and its limitations. Packing of ions in crystals. Born-Lande equation with derivation, Madelung constant, expression for lattice energy, Kapustinskii equation. Born-Haber cycle and its application, Solvation energy.

(ii) *Covalent bond:* **(12 classes each of 60 minutes duration)**
Lewis structure, Valence Shell Electron Pair Repulsion Theory (VSEPR), Shapes of simple molecules and ions containing lone and bond pairs of electrons multiple bonding, sigma and pi-bond approach, Valence Bond theory, (Heitler-London approach). Hybridization containing s, p and s, p, d atomic orbitals, shapes of hybrid orbitals, Bents rule, Resonance and resonance energy, Molecular orbital theory. Molecular orbital diagrams of simple homonuclear and heteronuclear diatomic molecules: N_2, O_2, C_2, B_2, F_2, CO, NO, and their ions. Covalent character in ionic compounds; polarization, polarizing power and polarizability. Fajan rules. Ionic character in covalent compounds: Bond moment and dipole moment, ionic character from dipole moment and electronegativities.

(iii) *Metallic Bond:* **(6 classes each of 60 minutes duration)**
Qualitative idea of free electron model, Semiconductors, Insulators.

(iv) *Weak Chemical Forces:* **(2 classes each of 60 minutes duration)**
Van der Waals, ion-dipole, dipole-dipole, induced dipole, dipole-induced dipole interactions, hydrogen bond, effects of hydrogen bonding on melting and boiling points, solubility, dissolution.

UNIT IV: Oxidation-Reduction and general principle of metallurgy: (15 classes each of 60 minutes duration)
Redox equations, Balancing by Ion electron method & Oxidation number method. Disproportionation Reaction. Standard Electrode Potential and its application to inorganic reactions. Occurrence of metals based on standard electrode potentials. Ellingham diagrams for reduction of metal oxides using carbon or carbon monoxide as reducing agent. Electrolytic Reduction, Pyrometallurgy, Hydrometallurgy. Methods of purification of metals: Electrolytic Kroll process, Parting process, van Arkel de Boer process and Mond's process, Zone refining.

Reference Books:
5.   Lee, J. D. *Concise Inorganic Chemistry,* Wiley, 5th Edn.
6.   Douglas, B.E., McDaniel, D.H., Alexander J.J., *Concepts & Models of Inorganic Chemistry, (Third Edition)* John Wiley & Sons,1999.
7.   Atkins, P. W. and De Paula, J. *Physical Chemistry*, Tenth Edition, Oxford University Press,2014.
8.   Rodger, G. E. *Inorganic and Solid State Chemistry*, Cengage Learning, 2002.
9.   Douglas, B.E, Mc Daniel, D.H. & Alexander, J.J. *Concepts & Models of Inorganic Chemistry 3rd Ed.*, John Wiley Sons, N.Y. 1994.
10.   Rodger, G.E. *Inorganic and Solid State Chemistry*, Cengage Learning India Edition, 2002.6 Miessler, G. L. & Donald, A. Tarr. *Inorganic Chemistry* Fourth Ed., Pearson, 2010

XXIII. SKILL ENHANCEMENT COURSE- SEC 1:
FUEL & PHARMACEUTICAL CHEMISTRY

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objectives:
On completion of this course, the students will be able to understand:
1. Atomic theory and its evolution.
2. Learning scientific theory of atoms, concept of wave function.
3. Elements in periodic table, physical and chemical characteristics, periodicity.
4. To predict the atomic structure, chemical bonding, and molecular geometry based on accepted models.
5. To understand atomic theory of matter, composition of atom.
6. Defining isotopes, isobar and isotone.
7. Hybridization and shapes of atomic, molecular orbitals, bond parameters, bond- distances and energies.
8. Valence bond theory incorporating concepts of hybridization predicting geometry of molecules.

Course Learning Outcomes:
On successful completion of this course the student should know:
1. Electronic configuration of various elements in periodic table
2. Predicting structure of molecules
3. How hydrogen bonding, metallic bonding is important in common materials' scientific applications to material fabrication

Course Content:
UNIT I: Energy Resources & Fuel: (25 classes each of 60 minutes duration)
Review of energy sources (renewable and non-renewable). Classification of fuels and their calorific value.
Coal: Uses of coal (fuel and nonfuel) in various industries, its composition, carbonization of
Coal gas, producer gas and water gas—composition and uses. Fractionation of coal tar, uses of coal tar bases chemicals, requisites of a good metallurgical coke, Coal gasification (Hydro gasification and Catalytic gasification), Coal liquefaction and Solvent Refining.

Petroleum and Petrochemical Industry: Composition of crude petroleum, Refining and different types of petroleum products and their applications.
Fractional Distillation (Principle and process), Cracking (Thermal and catalytic cracking),
Reforming Petroleum and non-petroleum fuels (LPG, CNG, LNG, bio-gas, fuels derived from biomass), fuel from waste, synthetic fuels (gaseous and liquids), clean fuels.

Petrochemicals: Vinyl acetate, Propylene oxide, Isoprene, Butadiene, Toluene and its derivatives Xylene.

Lubricants: Classification of lubricants, lubricating oils (conducting and non-conducting)
Solid and semisolid lubricants, synthetic lubricants.
Properties of lubricants (viscosity index, cloud point, pore point) and their determination.

UNIT II: Pharmaceuticals: (20 classes each of 60 minutes duration)

Drugs & Pharmaceuticals
Drug discovery, design and development; Basic Retrosynthetic approach.

Synthesis of the representative drugs of the following classes:
Analgesics agents, antipyretic agents, anti-inflammatory agents (Aspirin, paracetamol, lbuprofen);
Antibiotics (Chloramphenicol);
Antibacterial and antifungal agents (Sulphonamides; Sulphanethoxazol, Sulphacetamide, Trimethoprim);
Antiviral agents (Acyclovir),
Central Nervous System agents (Phenobarbital, Diazepam), Cardiovascular (Glyceryl trinitrate), Antilaprosy (Dapsone),
HIV-AIDS related drugs (AZT- Zidovudine).

Fermentation

Aerobic and anaerobic fermentation.

Production of (i) Ethyl alcohol and citric acid, (ii) Antibiotics: Penicillin, Cephalosporin, Chloromycetin and Streptomycin, (iii) Lysine, Glutamic acid, Vitamin B2, Vitamin B12 and Vitamin C.

Reference Books:

1.   E. Stocchi: *Industrial Chemistry*, Vol -I, Ellis Horwood Ltd. UK.
2.   P.C. Jain, M. Jain: *Engineering Chemistry*, Dhanpat Rai & Sons, Delhi.
3.   B.K. Sharma: *Industrial Chemistry,* Goel Publishing House, Meerut.
4.   G.L. Patrick: *Introduction to Medicinal Chemistry*, Oxford University Press, UK.65
5.   Hakishan, V.K. Kapoor: *Medicinal and Pharmaceutical Chemistry*, Vallabh Prakashan, Pitampura, New Delhi.
6.   William O. Foye, Thomas L., Lemke , David A. William: *Principles of Medicinal Chemistry*, B.I. Waverly Pvt. Ltd. New Delhi.

SEMESTER II

LXXIII.   MAJOR COURSE- MJ 2:
ORGANIC BASICS AND HYDROCARBONS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
On successful completion of this course the student should be able to understand:
1.   Basic of organic molecules, structure, bonding, reactivity and reaction mechanisms.
2.   Stereochemistry of organic molecules – conformation and configuration, asymmetric molecules and their nomenclature.
3.   Aromatic compounds and aromaticity, mechanism of aromatic reactions.
4.   Reactivity, stability of organic molecules, structure, stereochemistry.
5.   Mechanism of organic reactions (effect of nucleophile/ leaving group, solvent),substitution *vs*. elimination.

Course Learning Outcomes:
On successful completion of this course the student should know:
1.   Design and syntheses of organic molecules.
2.   Correlation of Reactivity, stability of organic molecules, structure, stereochemistry.

Course Content:

UNIT I: Basics of Organic Chemistry: (16 classes each of 60 minutes duration)
Organic Compounds: Classification and Nomenclature, Hybridization, shape of molecules, influence of hybridization on bond properties. Electron Displacement Effects: inductive, electromeric, resonance and mesomeric effects. Tautomerism, hyperconjugation and their applications. Dipole moment, Organic acids and bases, their relative strength. Homolytic and Heterolytic fission with suitable examples. Curly arrow rules, formal charges, Electrophiles and Nucleophiles, Nucleophlicity and basicity, Types, shape and relative stability of reaction intermediates (Carbocations, Carbanions, Free radicals and Carbenes). Aromaticity in benzenoid and non-benzenoid compounds, alternant and non-alternant hydrocarbons, Huckel's rule, annulenes, anti-aromaticity, Y-aromaticity, homo-aromaticity, bonding in fullerenes, crown ether complexes and cryptands, inclusion compounds, cyclodextrins, catenanes and rotaxanes. Organic reactions and their mechanism: Addition, Elimination and Substitution reactions.

UNIT II: Stereochemistry: (12 classes each of 60 minutes duration)
Concept of asymmetry, Fischer Projection, Newmann and Sawhorse projection formulae and their interconversions, Geometrical isomerism: cis–trans & syn-anti isomerism and E/Z notations with C.I.P rules. Optical Isomerism: Optical Activity, Specific Rotation, Chirality/Asymmetry, Enantiomers, Molecules with two or more chiral-centres, Diastereomers, Meso structures, Racemic mixtures, Relative and absolute configuration: D/L and R/S configurations. Threo & Erythreo isomers.
Cycloalkanes and stability, Baeyer strain theory, Conformation analysis, Energy diagrams of cyclohexane: Chair, Boat and Twist boat forms.

UNIT III: Chemistry of Aliphatic Hydrocarbons:
A. Alkanes: (6 classes each of 60 minutes duration)
Chemistry of alkanes: Formation of alkanes, Wurtz Reaction, Corey House Synthesis, Kolbe's Synthesis, Free radical substitutions: Halogenation - relative reactivity and selectivity. Lengthening and shortening of carbon chain in alkanes.

B. Alkenes & Alkynes: (10 classes each of 60 minutes duration)
Formation of alkenes and alkynes by elimination reactions, Mechanism of E1, E2, E1cB reactions. Saytzeff and Hofmann eliminations, Pyrolytic eliminations. Reactions of alkenes: Electrophilic additions their mechanisms (Markownikoff/ Anti Markownikoff addition), mechanism of oxymercuration- demercuration, hydroboration- oxidation, ozonolysis, reduction (catalytic and chemical), syn and anti-hydroxylation

(oxidation). 1, 2- and 1, 4- addition reactions in conjugated dienes and, Diels- Alder reaction, Allylic and benzylic bromination and mechanism, e.g. propene, 1-butene. Reactions of alkynes: Acidity, Electrophilic and Nucleophilic additions. Conversions involving π-bonds.

C. Aromatic Hydrocarbons (10 classes each of 60 minutes duration)
Aromaticity: Aromatic character of arenes, cyclic carbocations/carbanions and heterocyclic compounds with suitable examples. Electrophilic aromatic substitution: halogenation, nitration, sulphonation and Friedel-Craft's alkylation/acylation with their mechanism. Directing effects of substituent groups.

D. Polynuclear Hydrocarbons: (6 classes each of 60 minutes duration)
Reactions of naphthalene and anthracene: Structure, preparation and important derivatives of naphthalene and anthracene.

Reference Books:
1.   Morrison, R. N. & Boyd, R. N. *Organic Chemistry*, 6th Edn., Dorling Kindersley (India)Pvt. Ltd. (Pearson Education).
2.   Pine S. H. *Organic Chemistry*, Fifth Edition, McGraw Hill, (2007)
3.   F. A. Carey, *Organic Chemistry*, Seventh Edition, Tata McGraw Hill (2008).
4.   J. Clayden, N. Greeves, S. Warren, *Organic Chemistry*, 2nd Ed., (2012), Oxford University Press.
5.   F. A. Carey, R. J. Sundberg, *Advanced Organic Chemistry*, *Part A: Structure and mechanism*, Kluwer Academic Publisher, (2000).

LXXIV. MAJOR COURSE- MJ 3:
PRACTICALS-I

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04)   **120 Hours**

Instruction to Question Setter for
End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals: Learning about the hazards of materials, equipment, and procedures used in chemical laboratories is a part of the educational objective of this subject.

I. Acquaintance with Chemistry Laboratory
1. Common Laboratory Apparatus
   Test tube, Beakers, Erlenmeyer flask, Volumetric flask, graduated cylinder, Pipette, Graduated pipette, Burette, Burette clamp. Funnel, Test tube holder, Bunsen burner, Glass rod, Utility clamp, Spot test plate, Tripod for Bunsen burner, Wash bottle, Spatula, Round-bottom flasks, Glass Condenser, Filter paper, Separatory funnel, Chemical balance, Furnaces etc.

2. Common Symbols of Laboratory Concerns
   Biohazard, Highly Flammable, Oxidizing, Corrosive, Harmful/Irritant, Radioactive, Explosive, Toxic, Dangerous for the Environment etc.

3. Common Laboratory Reagents
   Common Acids, Common Bases, Common Inorganic/Organic Salts, Organic Compounds, Common Solvents, Difference between Dilute/Concentrated/Fuming liquids.

4. Chemistry Laboratory Techniques
   Cutting, Bending & Rounding edge of glass tube & glass rods, fitting glassware's, fitting equipment for Fractional distillation, drawing liquids through pipette, burette & measuring cylinders, Diluting a solution to a known strength, Safe storage of chemicals.

II. Common Procedures
1. Heating/Boiling with and without condenser, Filtration techniques, Separation techniques, Crystallization techniques.

2. Purification of organic compounds
    (say naphthalene & others) by crystallization using the following solvents:
    a. Water   b. Alcohol   c. Alcohol-Water   d. Acetone   e. Hexane   f. Toluene

3. Determination of the melting points
    a. Determination of the melting points of above compounds and unknown organic compounds (Kjeldahl method and electrically heated melting point apparatus)
    b. Effect of impurities on the melting point – mixed melting point of two unknown organic compounds
    c. Determination of boiling point of liquid compounds. (Boiling point lower than and more than 100 °C by distillation and capillary method).

III. Volumetric Analysis
1. Acid-Base Titrations
a. Estimation of oxalic acid present in the supplied sample.
b. Estimation of sodium hydroxide present in given sample.
c. Estimation of amount of acetic acid in vinegar solution.

  d.   Estimation of carbonate and hydroxide present together in mixture.
  e.   Estimation of carbonate and bicarbonate present together in a mixture.
      f.   Estimation of free alkali present in different soaps/detergents.

2. Oxidation-Reduction Titrimetry
a.   Estimation of Fe(II) in supplied solution using standardized $KMnO_4$ solution.
    b.   Estimation of oxalic acid using standardized $KMnO_4$ solution.
  c.   Estimation of percentage of Fe(II) in Iron fillings with standard $K_2Cr_2O_7$

Note:
  ➢ You must wear **Safety goggles & Lab Apron** in the laboratory at all times.
  ➢ Only CO_2 and dry-chemical fire extinguishers should be used on chemical or electrical fires.
  ➢ Water faucets at sinks may be used to wash skin exposed to corrosive chemicals.
  ➢ Most importantly, make any **Emergency inform** as soon as possible to a Teacher or staff member.

Reference Books
  1. Vogel, A.I. *A Textbook of Quantitative Inorganic Analysis*, ELBS
  2.   Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. *Practical Organic Chemistry, 5th Ed.,* Pearson (2012)
  3.   Khosla, B. D.; Garg, V. C. & Gulati, A. *Senior Practical Physical Chemistry,* R. Chand & Co.: N.Delhi (2011).
  4.   Athawale, V. D. & Mathur, P. *Experimental Physical Chemistry* New Age International: New Delhi (2001).

LXXV.   SKILL ENHANCEMENT COURSE- SEC 2:
GREEN CHEMISTRY

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objectives:
On completion of this course, the students will be able to understand
5. The importance of green synthesis and its need.
6. The methods involving green synthesis and economy associated with it.
7. The importance of green solvents
8. The scope of green chemistry.

Course Learning Outcomes:
On successful completion of this course the student should know:
1. Goals and outcomes of green chemistry
2. The innovative methods for organic synthesis.
3. The alternative sources of starting materials for green synthesis.

Course Content:

UNIT I: Introduction to Green Chemistry (4 classes each of 60 minutes duration)
What is Green Chemistry? Need for Green Chemistry. Goals of Green Chemistry.
Limitations/ Obstacles in the pursuit of the goals of Green Chemistry.

UNIT II: Principles of Green Chemistry and Designing a Chemical synthesis (15 classes each of 60 minutes duration)
Twelve principles of Green Chemistry with their explanations and examples; Designing a Green Synthesis using these principles; Prevention of Waste/ byproducts; maximum incorporation of the materials used in the process into the final products (Atom Economy); prevention/ minimization of hazardous/ toxic products; designing safer chemicals – different basic approaches to do so; selection of appropriate auxiliary substances (solvents, separation agents), green solvents, solventless processes, immobilized solvents and ionic liquids.

Energy requirements for reactions - use of microwaves, ultrasonic energy; selection of starting materials; avoidance of unnecessary derivatization – careful use of blocking/protecting groups; use of catalytic reagents (wherever possible) in preference to stoichiometric reagents; designing of biodegradable products; prevention of chemical accidents; strengthening/ development of analytical techniques to prevent and minimize the generation of hazardous substances in chemical processes.

UNIT III: Examples of Green Synthesis/ Reactions (18 classes each of 60 minutes duration)
1. Green Synthesis of the following compounds: adipic acid, catechol, BHT, methyl methacrylate, urethane, aromatic amines (4-aminodiphenylamine), benzyl bromide, acetaldehyde, disodium iminodiacetate (alternative to Strecker synthesis), citral, ibuprofen, paracetamol, furfural.

2. Microwave assisted reactions in water: Hofmann Elimination, Hydrolysis (of benzyl chloride, benzamide, n-phenyl benzamide, methylbenzoate to benzoic acid), Oxidation (of toluene, alcohols).
Microwave assisted reactions in organic solvents: Esterification, Fries rearrangement, Orthoester Claisen Rearrangement, Diels-Alder Reaction, Decarboxylation.

Microwave assisted solid state reactions: Deacetylation, Deprotection. Saponification of esters, Alkylation of reactive methylene compounds, reductions, synthesis of nitriles from aldehydes; anhydrides from dicarboxylic acid; pyrimidine and pyridine derivatives; 1,2-dihydrotriazine derivatives; benzimidazoles.

3. Ultrasound assisted reactions: Esterification, saponification, substitution reactions, Alkylations, oxidation, reduction, coupling reaction, Cannizaro reaction, Strecker synthesis, Reformatsky reaction.

4. Selective methylation of active methylene group using dimethylcarbonate: Solid-state polymerization of amorphous polymers using diphenylcarbonate; Use of "Clayan", a nonmetallic oxidative reagent for various reactions; Free Radical Bromination; Role of Tellurium in organic syntheses; Biocatalysis in organic syntheses.

UNIT IV: Future Trends in Green Chemistry (8 classes each of 60 minutes duration)
Oxidation reagents and catalysts; Biomimetic, multifunctional reagents; Combinatorial green chemistry; Proliferation of solventless reactions ss; Green chemistry in sustainable development.

Books Suggested:

1.   V.K. Ahluwalia & M.R. Kidwai: *New Trends in Green Chemistry*, Anamalaya Publishers (2005).
2.   P.T. Anastas & J.K. Warner: *Oxford Green Chemistry- Theory and Practical*, University Press (1998).
3.   A.S. Matlack: *Introduction to Green Chemistry*, Marcel Dekker (2001).
4.   M.C. Cann & M.E. Connely: *Real-World cases in Green Chemistry*, American Chemical Society, Washington (2000).
5.   M.A. Ryan & M. Tinnesand, *Introduction to Green Chemistry*, American Chemical Society, Washington (2002).

SEMESTER III

LXXVI.   MAJOR COURSE- MJ 4:
STATES OF MATTER & CONCEPT OF EQUILIBRIA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
On completion of this course, the students will be able to understand:
1. Familiarization with various states of matter.
2. Physical properties of each state of matter and laws related to describe the states.
3. Calculation of lattice parameters.
4. Understanding Kinetic model of gas and its properties.
5. Maxwell distribution, mean-free path, kinetic energies.
6. Liquid state and its physical properties related to temperature and pressure variation.
7. Properties of liquid as solvent for various household and commercial use.
8. Solids, lattice parameters – its calculation, application of symmetry, solid characteristicsof simple salts.
9. Ionic equilibria – electrolyte, ionization, dissociation.

Course Learning Outcomes:
On successful completion of this course the student shall know:
1. Determination of lattice parameters of given salt.
2. Study of X-Ray diffraction pattern.
3. Numerical related to salt hydrolysis, ionic equilibria.

Course Content:
UNIT I: Behaviour of real gases: (20 classes each of 60 minutes duration)
Deviation from ideal gas behaviour, compressibility factor and its variation with pressure for different gases. Causes of deviation from ideal behaviour. van der Waals equation of state, its derivation and application in explaining real gas behaviour. Boyle's temperature. Isotherms of real gases and their comparison with van der Waals isotherms, continuity of states, critical state, critical and van der Waals constants, law of corresponding states.

Kinetic molecular model of a gas: postulates and derivation of the kinetic gas equation, collision frequency, collision diameter, mean free path and viscosity of gases, their temperature and pressure dependence, relation between mean free path and coefficient of viscosity, calculation of σ from η, variation of viscosity with temperature and pressure. Maxwell distribution and its use in evaluating molecular velocities (average, root mean square and most probable) and average kinetic energy, law of equipartition of energy, degrees of freedom and molecular basis of heat capacities.

UNIT II: Liquid state: (5 classes each of 60 minutes duration)
Structure and physical properties of liquids, vapour pressure, surface tension, viscosity, and their dependence on temperature. Effect of addition of various solutes on surface tension, cleansing action of detergents.

UNIT III: Solid state: (15 classes each of 60 minutes duration)
Nature of the solid state, law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry, symmetry elements and symmetry operations, qualitative idea of point and space groups, seven crystal systems and fourteen Bravais lattices, X-ray diffraction, Bragg's law, a simple account of rotating crystal method and powder pattern method. Analysis of powder diffraction patterns of NaCl, CsCl and KCl. Various types of defects in crystals, Glasses and liquid crystals.

UNIT IV: Equilibria-I: (20 classes each of 60 minutes duration)
Concept of Equilibrium. Le Chatelier's principle and its applications. Relationships between *Kp, Kc* and *Kx* for reactions involving ideal gases (Kinetic derivation). Equilibrium between ideal gases and a pure condensed phase.

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, common ion effect, dissociation constants of mono-, di- and tri-protic acids.

Salt hydrolysis, hydrolysis constants, degree of hydrolysis and pH of different salt solutions. Buffer solutions, Henderson equation, buffer capacity, buffer range, buffer action, applications of buffers in analytical chemistry, Solubility and solubility product.

Bronsted-Lowry concept of acid-base reactions, solvated proton, relative strength of acids, types of acid-base reactions, levelling solvents, Lewis acid-base concept, classification of Lewis acids, Hard and Soft Acids and Bases (HSAB) and applications of HSAB principle.

Qualitative treatment of acid–base titration curves (calculation of pH at various stages). Theories of indicators, selection of indicators and their limitations. Multistage equilibria in polyelectrolytes.

Reference Books:
1. Atkins, P. W. & Paula, J. de *Atkin's Physical Chemistry* 8th Ed., Oxford University Press(2006).
2. Ball, D. W. *Physical Chemistry* Thomson Press, India (2007).
3. Castellan, G. W. *Physical Chemistry* 4th Ed. Narosa (2004).
4. Mortimer, R. G. *Physical Chemistry* 3rd Ed. Elsevier: NOIDA, UP (2009).5 G. M. Barrow, Tata McGraw Hill (Fifth Edition) (2007)
5. Roy, B. N. *Fundamentals of Classical and Statistical Thermodynamics* Wiley, 2001*6 Commonly Asked Questions in Thermodynamics.* CRC Press, 2011.

LXXVII.   MAJOR COURSE- MJ 5:
PRACTICALS-II

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:

I. Measuring Physical parameters
1. **Surface tension measurements.**
a. Determine the surface tension of supplied liquid solution.
b. Study the variation of surface tension of detergent/ supplied solutions with concentration.
2. **Viscosity measurement using Ostwald's viscometer**.
a.   Determination of coefficient of viscosity of supplied solutions
b. Study the variation of coefficient of viscosity of sucrose solution with the change in concentration of solute.

II. Gravimetric Analysis:
a.   Estimation of nickel (II) using Dimethylglyoxime (DMG).
b.   Estimation of barium as $BaSO_4$
c.   Estimation of magnesium in pyrolusite
d.   Estimation of iron in Fe_2O_3 by precipitating iron as $Fe(OH)_3$.

III. Ionic equilibria & pH measurements
1.   Preparation of buffer solutions of different pH
i. Sodium acetate-acetic acid
ii. Ammonium chloride-ammonium hydroxide
2.   pH metric titration of (i) strong acid vs. strong base, (ii) weak acid vs. strong base.
3.   Determination of dissociation constant of a weak acid.
4.   Measurement of pH of different solutions like aerated drinks, fruit juices, shampoos and soaps (use dilute solutions of soaps and shampoos to prevent damage to the glass electrode) using pH-meter.

Reference Books
1.   Vogel, A.I. *A text book of Quantitative Analysis*, ELBS 1986.
2. Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry,* Pearson Education (2009)
3. Furniss, B.S., Hannaford, A.J., Smith, P.W.G., Tatchell, A.R. *Practical Organic Chemistry, 5th Ed.,* Pearson (2012)

LXXVIII.   SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

A Common Syllabus for FYUGP   (Credits: Theory-03) **45 Hours**

Instruction to Question Setter for
End Semester Examination (ESE):
*There will be **objective type test** consisting of **Seventy-five questions of 1 mark each**. Students are required to mark their answer on **OMR Sheet** provided by the University.*

Course Objectives:
The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

W. INTRODUCTION TO COMPUTER SYSTEM
1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU)   **(3 Hours)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer   **(4 Hours)**

3. Operating system: What is an Operating System, Operating System Examples, Functions of Operating System(Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting
                                                            (6 Hours)
4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages   **(4 Hours)**

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails.   **(6 Hours)**

X. MICROSOFT OFFICE 2016 AND LATEST VERSIONS
6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents
        (7 Hours)

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation, slide show, Master Slides, Creating photo album, Rehearse timing and record narration   **(5 Hours)**

9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning   **(4 Hours)**

Reference Books
89.   Nishit Mathur, *Fundamentals of Computer*, APH publishing corporation (2010)
90.   Neeraj Singh, *Computer Fundamentals (Basic Computer),* T Balaji, (2021)
91.   Joan Preppernau, *Microsoft Power Point 2016 step by step*, Microsoft press (2015)
92.   Douglas E Corner, *The Internet Book* 4th Edition, prentice –Hall (2009)
93.   Steven Welkler, *Office 2016 for beginners*, Create Space Independent Publishing Platform (2016)
94.   Wallace Wang, *Microsoft Office 2019*, Wiley (January 2018)

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

95.   Noble Powell, *Windows 11 User Guide For Beginners and Seniors*, ASIN, (October 2021)

SEMESTER IV

LXXIX.   MAJOR COURSE- MJ 6:
FUNCTIONAL GROUPS CONTAINING X, O, S & N

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Course Objectives:
After completion of the course, the learner shall be able to understand:
1. Familiarization about classes of organic compounds and their methods of preparation.
2. Name reactions, uses of various reagents and the mechanism of their action.
3. Use of reagents in various organic transformation reactions.
4. Nitrogen containing functional groups and their reactions..

Course Learning Outcomes:
On successful completion of this course the student should know:
1. Elucidating reaction mechanisms for organic reactions.
2. Organometallic compounds and their uses.
3. Use of benzene diazonium salt in organic synthesis.

Course Content:
UNIT I: Chemistry of Halogenated Hydrocarbons: (10 classes each of 60 minutes duration)
Alkyl halides: Methods of preparation, nucleophilic substitution reactions – S_N1, S_N2 and S_Ni mechanisms with stereochemical aspects and effect of solvent etc. Nucleophilic substitution vs. elimination.
Aryl halides: Preparation from diazonium salts. nucleophilic aromatic substitution, S_NAr, Benzyne mechanism. Relative reactivity of alkyl, allyl/benzyl, vinyl and aryl halides towards nucleophilic substitution reactions.
Organometallic compounds of Mg and Li and their use in synthesis.

UNIT II: Alcohols, Phenols, Ethers and Epoxides: (10 classes each of 60 minutes duration)
Alcohols: preparation, properties and relative reactivity of 1°, 2°, 3°- alcohols, Bouveault-Blanc Reduction, Preparation and properties of glycols and glycerol. Pinacol-Pinacolone rearrangement.
Phenols: Preparation and properties, Acidic nature and factors affecting it, Ring substitution reactions, Reimer–Tiemann and Kolbe's–Schmidt Reactions, Fries and Claisen rearrangements with mechanism.
Ethers and Epoxides: Preparation and reaction with acids. Reaction of epoxides with alcohols, ammonia derivatives and $LiAlH_4$

UNIT III: Carbonyl Compounds: (16 classes each of 60 minutes duration)
Structure, reactivity and preparation of Carbonyl compounds. Nucleophilic additions, Nucleophilic addition-elimination reactions with ammonia derivatives with mechanism. Aldol and Benzoin condensation, Knoevenagel condensation, Claisen-Schmidt, Perkin, Cannizzaro and Wittig reaction, Beckmann and Benzil-Benzilic acid rearrangements, haloform reaction and Baeyer Villiger oxidation, α-substitution reactions, oxidations and reductions (Clemmensen, Wolff-Kishner, $LiAlH_4$, $NaBH_4$, MPV, PDC and PGC),
Addition reactions of unsaturated carbonyl compounds: Michael addition.

UNIT IV: Carboxylic Acids and their Derivatives: (8 classes each of 60 minutes duration)
Preparation, physical properties and reactions of monocarboxylic acids, Typical reactions of dicarboxylic acids, hydroxy acids and unsaturated acids: succinic/phthalic, lactic, malic, tartaric, citric, maleic and fumaric acids, Preparation and reactions of acid chlorides, anhydrides, esters and amides, Comparative study of nucleophilic substitution at acyl group, Mechanism of acidic and alkaline hydrolysis of esters, Claisen condensation, Dieckmann and Reformatsky reactions, Hofmann bromamide degradation and Curtius rearrangement.

UNIT V: Chemistry of Active methylene groups: (4 classes each of 60 minutes duration)
   Active methylene compounds: Keto-enol tautomerism. Preparation and synthetic applications of diethyl

malonate and ethyl acetoacetate.

UNIT VI: Sulphur containing compounds: (4 classes each of 60 minutes duration)
Preparation and reactions of thiols, thioethers and sulphonic acids.

UNIT VII: Nitrogen Containing Functional Groups (8 classes each of 60 minutes duration).
Preparation and important reactions of aliphatic and aromatic compounds of nitro, nitrile and isonitrile groups. Amines: Effect of substituent and solvent on basicity, Preparation and properties: Gabriel phthalimide synthesis, Carbylamine reaction, Mannich reaction, Hoffmann's exhaustive methylation, Hofmann-elimination reaction, Distinction between 1°, 2° and 3°- amines with Hinsberg reagent and nitrous acid. Diazonium salts: Preparation and synthetic applications.

Reference Books:

16. P Sykes, *A Guide Book to Mechanism in Organic Chemistry*, 6th Edition (1997), Orient Longman, New Delhi.
17. Morrison, R. T., Boyd, R. N., Bhatterjee, S.K., *Organic Chemistry*, 7th Edn., Pearson.
18.   Acheson, R.M. *Introduction to the Chemistry of Heterocyclic compounds,* John Welly & Sons(1976).
19.   Solomons, T.W., Fryhle Craig, *Organic Chemistry,* John Wiley & Sons, Inc (2009).
20.   McMurry, J.E. *Fundamentals of Organic Chemistry*, 7th Ed. Cengage Learning India Edition,2013.
21.   Kalsi, P. S. *Organic reacations and their mechanisms*, New Age Science (2010).
22.   Clayden, J., Greeves, N., Warren, S., Wothers, P., *Organic Chemistry,* Oxford University Press Inc., New York (2001).

LXXX.   MAJOR COURSE- MJ 7:
s, p, d, f-block ELEMENTS & COORDINATION CHEMISTRY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
After completion of the course, the learner shall be able to understand:
1. Chemistry of s and p-block elements.
2. Chemistry of noble gases.
3. Structure, bonding of s and p block materials and their oxides/compounds.
4. Chemistry of boron compounds and their structures.
5. Chemistry of noble gases and their compounds, application of VSEPR theory inexplaining structure and bonding.
6. Coordination compounds – its nomenclature, theories, d-orbital splitting in complexes, chelate.
7. Lanthanides, Actinides – separation, colour, spectra and magnetic behaviour
8. The nomenclature of coordination compounds/complexes, Molecular orbital theory, d-orbital splitting in tetrahedral, octahedral, square planar complexes, chelate effects.
9. The transition metals stability in reactions, origin of colour and magnetic properties.
10. The separation of Lanthanoids and Actinoids, its colour, spectra and magnetic behaviour.

Course Learning Outcomes:
On successful completion of this course the student should know:
1. Extraction of metals through metallurgical operations and their uses.
2. Bonding of various s and p block elements.
3. Chemistry of inorganic polymers and their uses.
4. IUPAC nomenclature of coordination compounds/complexes.
5. Prediction of structure of complexes using various theories, colour and magnetic properties of different complexes. Use of lanthanide/actinide compounds in industries.

Course Content:

UNIT I: Chemistry of *s* and *p* Block Elements: (20 classes each of 60 minutes duration)
Inert pair effect, Relative stability of different oxidation states, diagonal relationship and anomalous behaviour of first member of each group. Allotropy and catenation. Complex formation tendency of *s* and *p* block elements. Hydrides and their classification: ionic, covalent and interstitial. Basic beryllium acetate and nitrate. Structure, bonding, preparation, properties and uses. Boric acid and borates, boron nitrides, borohydrides (diborane) carboranes and graphitic compounds, silanes, Oxides and oxoacids of nitrogen, phosphorus and chlorine. Per-oxo acids of Sulphur inter-halogen compounds, poly- halide ions, pseudo-halogens.

UNIT II: Noble Gases: (8 classes each of 60 minutes duration)
Occurrence and uses, rationalization of inertness of noble gases, Clathrates; preparation and properties of XeF_2, XeF_4 and XeF_6, Bonding in noble gas compounds (Valence bond and MO treatment for XeF_2), Shape of noble gas compounds (VSEPR theory).

UNIT III: Transition Elements: (12 classes each of 60 minutes duration)
General group trends with special reference to electronic configuration, colour, variable valency, magnetic and catalytic properties, and ability to form complexes. Stability of various oxidation states and e.m.f. (Latimer & Bosworth diagrams). Difference between the first, second and third transition series. Chemistry of Ti, V, Cr, Mn, Fe and Co in various oxidation states (excluding their metallurgy)

UNIT IV: Coordination Chemistry: (15 classes each of 60 minutes duration)
Werner's theory, EAN rule, IUPAC nomenclature of coordination compounds, isomerism in coordination compounds. Stereochemistry of complexes with the coordination number 4 and 6, Chelate effect. Valence bond theory (inner and outer orbital complexes), Crystal field theory (CFT), d-orbital splitting in weak and strong fields, pairing energies, factors affecting the magnitude of (Δ). Octahedral vs. tetrahedral coordination, tetragonal distortions from octahedral geometry Jahn-Teller theorem, square planar complexes, d-orbital splitting in trigonal bipyramidal, square pyramidal and cubic ligand field environments, CFSE, Variation of lattice energies, enthalpies of hydration and crystal radii variations in halides of first and second row transition metal series, Introduction to Ligand field theory (LFT) & Molecular Orbital Theory (MOT).

UNIT V: Lanthanides and Actinides: (5 classes each of 60 minutes duration)
Electronic configuration, oxidation states, colour, spectra and magnetic behaviour of lanthanides and actinides. Lanthanide contraction, separation of lanthanides (ion-exchange method only).

Reference Books:
1. Lee, J.D. *Concise Inorganic Chemistry*, ELBS, 1991.
2. Douglas, B.E, Mc Daniel, D.H. & Alexander, J.J. *Concepts & Models of Inorganic Chemistry 3rd Ed.* John Wiley Sons, N.Y. 1994.
3. Greenwood, N.N., Earnshaw. *Chemistry of the Elements*, Butterworth-Heinemann. 1997.
4. Cotton, F.A. & Wilkinson, G. *Advanced Inorganic Chemistry*, Wiley, VCH, 1999.
5. Miessler, G. L. & Donald, A. Tarr. *Inorganic Chemistry* Fourth Ed., Pearson, 2010
6. Atkins, P. W and Shriver D. N. *Atkins' Inorganic Chemistry* 5th Ed. Oxford University Press(2010).
7. Purcell, K.F & Kotz, J.C. *Inorganic Chemistry* W.B. Saunders Co, 1977. Huheey, J.E., *Inorganic Chemistry*, Prentice Hall, 1993.
8. Basolo, F, and Pearson, R.C. *Mechanisms of Inorganic Chemistry*, John Wiley & Sons, NY, 1967.

LXXXI.   MAJOR COURSE- MJ 8:
PRACTICALS-III

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
I. Organic Chemistry
1. Detection of hetero elements in organic compounds.
2. Functional group test for nitro, amine and amide groups
3. Functional group tests for alcohols, phenols, carbonyl and carboxylic acid group.
4. Qualitative analysis of unknown organic compounds containing simple functional groups (alcohols, carboxylic acids, phenols and carbonyl compounds)
5. Organic preparations:
   a. Benzolyation of aniline.
   b. Oxidation of Benzaldehyde to benzoic acid.
   c. Hydrolysis of amides and esters.
   d. Preparation of Semicarbazone derivatives of the following compounds: acetone, ethyl methyl ketone, cyclohexanone, benzaldehyde.
   e. Preparation of methyl orange.

II. Spot Analysis
a. Identification of chemicals by Spot tests.
b. Spot analysis of following Acid & Basic Radicals: CO_3^{2-}, Cl^-, NO_3^-, SCN^-, SO_4^{2-}, PO_4^{3-}, NH_4^+, Co^{2+}, Ni^{2+}, Fe^{3+}

III. Qualitative semi micro analysis
Qualitative semi micro analysis of mixtures containing 2 anions and 2 cations. Emphasis should be given to the understanding of the chemistry of different reactions. The following radicals are suggested:

Cations: NH_4^+, Pb^{2+}, Bi^{3+}, Cu^{2+}, Cd^{2+}, Sn^{2+}, Fe^{3+}, Al^{3+}, Co^{2+}, Cr^{3+}, Ni^{2+}, Mn^{2+}, Zn^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}

Anions: CO_3^{2-}, NO_2^-, CH_3COO^-, Cl^-, Br^-, NO_3^-, SO_4^{2-}, PO_4^{3-}, BO_3^{3-}, $C_2O_4^{2-}$
(Spot tests should be carried out wherever feasible)

Mixtures should preferably contain:
a. one interfering anion, **or**
b. insoluble component ($BaSO_4$, $SrSO_4$, $PbSO_4$) **or**
combination of anions e.g. $CO_3^{2-}$and SO_3^{2-}, NO_2^- and NO_3^-, Cl^- and Br^-, Cl^- and I^-, $Br^-$and I^-, NO_3^- and Br^-, NO_3^- and I^-.

Reference Books
1. Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry,* Pearson Education (2009)
2. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. *Practical Organic Chemistry, 5th Ed.,* Pearson (2012)
3. Khosla, B.D.; Garg, V. C. & Gulati, A., *Senior Practical Physical Chemistry,* R. Chand & Co.: New Delhi (2011).
4. Athawale, V. D. & Mathur, P. *Experimental Physical Chemistry* New Age International: New Delhi (2001).

SEMESTER V

LXXXII.   MAJOR COURSE- MJ 9:
CHEMICAL THERMODYNAMICS & APPLICATIONS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
After completion of the course, the learner shall be able to understand:
1.   First & second laws of thermodynamics.
2.   Concept of enthalpy & resonance energy.
3.   Understanding the use of thermochemistry to calculate Bond energy.

Course Learning Outcomes:
On successful completion of this course the student should know the:
1.   use of thermochemistry to calculate Bond energy
2.   use of quantum chemistry in elucidation of atomic structure.
3.   use of thermochemistry to calculate Bond energy.

Course Content:
UNIT I: Introduction & First Law of thermodynamics: (8 classes each of 60 minutes duration)
Intensive and extensive properties, thermodynamic variables, state and path functions, isolated, closed and open systems, reversible, irreversible and cyclic processes. Zeroth law of thermodynamics. *First law of Thermodynamics:* Concept of heat, q, work, w, internal energy, enthalpy, relation between heat capacities, calculations of q, w, U and H for reversible and irreversible processes. Expression for work done under free expansion of gases for isothermal and adiabatic conditions.

UNIT II: Thermochemistry: (9 classes each of 60 minutes duration)
Heat of reactions: standard states, enthalpy of formation of molecules and ions. Enthalpy of reactions (combustion, neutralization, solution etc) and its applications, calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data, effect of temperature (Kirchhoff's equations) and pressure on enthalpy of reactions.

UNIT III: Second & Third Law: (7 classes each of 60 minutes duration)
Concept of entropy, thermodynamic scale of temperature, statement of the second law of thermodynamics, molecular and statistical interpretation of entropy. Calculation of entropy change for reversible and irreversible processes.
Third Law: Statement of third law, concept of residual entropy, calculation of absolute entropy of molecules.

UNIT IV: Free Energy Functions: (6 classes each of 60 minutes duration)
Gibbs and Helmholtz energy, variation of S, G, A with T, V, P, Free energy change and spontaneity. Relation between Joule-Thomson coefficient and other thermodynamic parameters, inversion temperature, Gibbs-Helmholtz equation, Maxwell relations, thermodynamic equations of state.

UNIT V: Partial molar quantities: (8 classes each of 60 minutes duration)
Partial molar quantities, dependence of thermodynamic parameters on composition, Gibbs-Duhem equation, chemical potential of ideal mixtures, change in thermodynamic functions in mixing of ideal gases.

UNIT VI: Dilute solutions: (10 classes each of 60 minutes duration)
Dilute solutions, lowering of vapour pressure, Raoult's and Henry's Laws and their applications. Colligative properties of solutions, abnormal colligative properties, Van't Hoffs factor. Thermodynamic derivation using chemical potential to derive relations between the (i) relative lowering of vapour pressure, (ii) elevation of boiling point, (iii) Depression of freezing point, (iv) osmotic pressure and amount of solute. Applications in calculating molar masses of normal, dissociated and associated solutes in solution. Azeotropes.

UNIT VII: Equilibria-II (12 classes each of 60 minutes duration)

Criteria of thermodynamic equilibrium, degree of advancement of reaction, chemical equilibria in ideal gases, concept of fugacity. Thermodynamic derivation of relation between Gibbs free energy of reaction and reaction quotient. Coupling of exoergic and endoergic reactions. Equilibrium constants and their quantitative dependence on temperature, pressure and concentration. Free energy of mixing and spontaneity; thermodynamic derivation of relations between the various equilibrium constants K_p, K_c and K_x.

Reference Books:

1.   Peter, A. & Paula, J. de. *Physical Chemistry 9th Ed.,* Oxford University Press (2011).
2.   Castellan, G. W. *Physical Chemistry 4th Ed.,* Narosa (2004).
3.   Engel, T. & Reid, P. *Physical Chemistry 3rd Ed.,* Prentice-Hall (2012).
4.   Assael, M. J.; Goodwin, A. R. H.; Stamatoudis, M.; Wakeham, W. A. & Will, S. *Commonly Asked Questions in Thermodynamics.* CRC Press: NY (2011).
5. Laideler K. J. and Meiser J. M. *Physical Chemistry* Third Edition (International)1999
6. Levine I. N., *Physical Chemistry*, Fourth Edition), McGraw-Hill (International), 1995.
7. McQuarrie D. A. and Simon J. D. *Physical Chemistry- A Molecular Approach*, University Science Books, 1998.

LXXXIII.   MAJOR COURSE- MJ 10:
REACTION MECHANISMS IN ORGANIC CHEMISTRY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
On completion of this course, the students will be able to understand
1. Reaction Mechanism and factors related with Structure and Reactivity.
2. Different types of substitution reactions.
3. Different types of Addition reactions in organic molecules
4. How Radical reactions are different from ionic reactions.

Course Learning Outcomes:
On successful completion of this course the student should know:
1. Factors affecting organic reactions and
2. Difference between reactions of aliphatic and aromatic reactions.

UNIT I: Reaction Mechanism: Structure and Reactivity (10 classes each of 60 minutes duration)
Types of mechanisms, types of reactions, thermodynamic and kinetic requirements, kinetic and thermodynamic control, Hammond's postulate, Potential energy diagrams, transition states and intermediates, methods of determining mechanisms, isotope effects. Hard and soft acids and bases.
Generation, structure, stability and reactivity of carbocations, carbanions, free radicals, carbenes and nitrenes.

Effect of structure on reactivity, resonance and field effects, steric effect, quantitative treatment. The Hammett equation and linear free energy relationship, substituent and reaction constants. Taft equation.

Various type of steric strain and their influence on reactivity. Steric acceleration. Molecular measurements of steric effects upon rates, Steric LFER. Conformational barrier to bond rotation-spectroscopic detection of individual conformers. Acyclic and monocyclic systems. Rotation around partial double bonds. Winstein-Holness and Curtin-Hammett principle.

UNIT II: Aliphatic Nucleophilic Substitution (12 classes each of 60 minutes duration)
The S_N2, S_N1, mixed S_N1 and S_N2 and SET mechanisms. Structural and electronic effects on S_N1 and S_N2 reactivity. Solvent effects. Kinetic isotope effects. Intramolecular assistance: Electron transfer nature of S_N2 reaction.

The neighbouring group mechanism, neighbouring group participation by R and π-bonds, anchimeric assistance.

Classical and nonclassical carbocations, phenonium ions, norbornyl system, common carbocation rearrangements. Application of NMR spectroscopy in the detection of carbocations.
The S_Ni mechanism. Nucleophilic substitution at an allylic, aliphatic trigonal and a vinylic carbon. Reactivity effects of substrate structure, attacking nucleophile, leaving group and reaction medium, phase transfer catalysis and ultrasound, ambident nucleophile, regioselectivity.

UNIT III: Aliphatic Electrophilic Substitution (5 classes each of 60 minutes duration)
Elecrophilic reactivity, general mechanism. Bimolecular mechanisms- S_E2 and S_Ei. The S_E1 mechanism, electrophilic substitution accompanied by double bond shifts. Effect of substrates, leaving group and the solvent polarity on the reactivity.
Kinetic of S_E2-Ar reaction. Structural effects on rates and selectivity.

UNIT IV: Addition to Carbon-Carbon Multiple Bonds (5 classes each of 60 minutes duration)
Mechanistic and stereochemical aspects of addition reactions involving electrophiles, nucleophiles and free radicals, regio- and chemo-selectivity, orientation and reactivity. Addition to cyclopropane ring. Hydrogenation of double and triple bonds, hydrogenartion of aromatic rings. Hydroboration. Michael reaction. Sharpless asymmetric epoxidation.

UNIT V: Addition to Carbon-Hetero Multiple Bonds (5 classes each of 60 minutes duration)
Mechanism of metal hydride reduction of saturated and unsaturated carbonyl compounds, acids, esters and nitriles. Addition of Grignard reagents, Organozinc and Organolithium reagents to carbonyl and unsaturated carbonyl compounds. Mechanism of condensation reactions involving enolates- Aldol, Knoevenagel, Claisen, Mannich, Benzoin, Perkin and Stobbe reactions. Hydrolysis of esters and amides, ammonolysis of esters.

UNIT VI: Aromatic Electrophilic Substitution (8 classes each of 60 minutes duration)
The arenium ion mechanism, orientation and reactivity, energy profile diagrams. The ortho/para ratio, ipso attack, orientation in other ring systems. Quantitative treatment of reactivity in substrates and electrophiles. Diazonium coupling, Vilsmeir reaction, Gattermann-Koch reaction.

UNIT VII: Aromatic Nucleophilic Substitution (5 classes each of 60 minutes duration)
The S_NAr, S_N1, benzyne and $S_{RN}1$ mechanisms. Reactivity - effect of substrate structure, leaving group and attacking nucleophile. The von Richter, Sommelet-Hauser, and Smiles rearrangements.

UNIT VIII: Free Radical Reactions (10 classes each of 60 minutes duration)
Types of free radical reactions, free radical substitution mechanism, mechanism at an aromatic substrate, neighbouring group assistance. Reactivity for aliphatic and aromatic substrates at a bridgehead. Reactivity in the attacking radicals. The effect of solvents on reactivity.

Allylic halogenation (NBS), oxidation of aldehydes to carboxylic acids, auto-oxidation, coupling of alkynes and arylation of aromatic compounds by diazonium salts. Sandmeyer reaction. Free radical rearrangement. Hunsdiecker reaction.

Books Suggested:

1. Jerry March, *Advanced Organic Chemistry-Reactions, Mechanism and Structure*, John Wiley.
2. F. A. Carey and R. J. Sundberg, *Advanced Organic Chemistry*, Plenum.
3. Peter Sykes, *A Guide Book to Mechanism in Organic Chemistry*, Longman.
4. C. K. Ingold, *Structure and Mechanism in Organic Chemistry*, Cornell University Press.
5. R. T. Morrison and R. N. Boyd, *Organic Chemistry*, Prentice-Hall.
6. H. 0. House, *Modern Organic Reactions*, Benjamin.
7. R. 0. C. Norman and J. M. Coxon,*Principles of Organic Synthesis*, Blackle Academic & Professional.
8. S. M. Mukherji, *Pericyclic Reactions*, Macmillan, India.
9. S. M. Mukherji and S. P. Singh, *Reaction Mechanism in Organic Chemistry*, Macmillan.
10. D. Nasipuri, *Stereochemistry of Organic Compounds*, New Age international.
11. P.S. Kalsi, *Stereochemistry of Organic Compounds*, New Age International.

LXXXIV.   MAJOR COURSE- MJ 11:
PRACTICALS-IV

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:

I. Inorganic Preparations:
a.   Tetraamminecopper(II) sulphate, $[Cu(NH_3)_4]SO_4.H_2O$
b.   Potassium tris(oxalate)ferrate(III)
c.   Preparation of borax/ boric acid.
d.   Cuprous Chloride, Cu_2Cl_2
e.   Preparation of Aluminium potassium sulphate $K_2SO_4Al_2(SO_4)_3.12H_2O$ (Potash alum)
f.   Preparation of Chrome alum.

II. Thermochemistry
1. Determination of heat capacity of a calorimeter.
2. Determination of heat capacity of the calorimeter and enthalpy of neutralization of hydrochloric acid with sodium hydroxide.
3. Calculation of the enthalpy of ionization of ethanoic acid.
4. Determination of heat capacity of the calorimeter and integral enthalpy (endothermic and exothermic) solution of salts.

III. Equilibria:
Study the equilibrium of at least one of the following reactions by the distribution method:
(i) $I_2(aq) + KI \rightarrow KI_3$ (aq)
(ii) $Cu^{2+}(aq) + nNH_3 \rightarrow [Cu(NH_3)_n]^{2+}$
Any other experiment carried out in the class.

Reference Books
1. J. A. Kent: *Riegel's Handbook of Industrial Chemistry*, CBS Publishers, New Delhi.
2. S. S. Dara: *A Textbook of Engineering Chemistry*, S. Chand & Company Ltd. New Delhi.
3. A. K. De, *Environmental Chemistry*: New Age International Pvt., Ltd, New Delhi.
4. S. M. Khopkar, *Environmental Pollution Analysis*: New Age Int. Publisher, New Delhi.
    Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry,* Pearson Education (2009)
5. Furniss, B.S., Hannaford, A.J., Smith, P.W.G., Tatchell, A.R. *Practical Organic Chemistry, 5th Ed.,* Pearson (2012)
6. Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. *Experiments in Physical Chemistry 8th Ed.;* McGraw-Hill: New York (2003).
7. Halpern, A. M. & McBane, G. C. *Experimental Physical Chemistry 3rd Ed.;* W.H. Freeman & Co.: New York (2003).

SEMESTER VI

LXXXV.   MAJOR COURSE- MJ 12:
ANALYTICAL CHEMISTRY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
After completion of the course, the learner can be able to understand:
1. To expose the students to the basic techniques of Analytical chemistry.
2. To know the application of Instrumentation techniques in analyses
3. To understand the applications of statistics in data analysis.

Course Learning Outcomes:
On successful completion of this course the student should be able to:
1. Decide appropriate methods for different analytical needs.
2. Present data in meaningful form.
3. Interpret instrumental results to a communicative form.

Course Content:

UNIT I: Qualitative and quantitative aspects of analysis (3 classes each of 60 minutes duration)
Introduction to Analytical Chemistry and its interdisciplinary nature. Concept of sampling. Importance of accuracy, precision and sources of error in analytical measurements. Presentation of experimental data and results, from the point of view of significant figures.

UNIT II: Statistical methods in chemical analysis: (12 classes each of 60 minutes duration)
Theory of error and treatment of quantitative data, accuracy and precision, ways of expressing accuracy and precision, Normal error curve and its equation. Useful statistical tests with equation,test of significance, the F-test, Q-test, the students t-test, the Chi-test, the correlation coefficient, confidence limit of the mean, comparison of two standard values, comparison of two standard values, comparison of standard deviation with average deviation, comparison of mean with true values, regression analysis (least square method).

UNIT III: Separation techniques: (15 classes each of 60 minutes duration)
Solvent extraction: Classification, principle and efficiency of the technique.
Mechanism of extraction: extraction by solvation and chelation. Technique of extraction: batch, continuous and counter current extractions. Qualitative and quantitative aspects of solvent extraction: extraction of metal ions from aqueous solution, extraction of organic species from the aqueous and nonaqueous media.

Chromatography: Classification, principle and efficiency of the technique. Paper, column and thin layer chromatography, Gas-liquid chromatography, HPLC. Mechanism of separation: adsorption, partition & ion exchange. Development of chromatograms: frontal, elution and displacement methods. Qualitative and quantitative aspects of chromatographic methods of analysis: IC, GLC, GPC, TLC and HPLC.

UNIT IV: Polarography: (5 classes each of 60 minutes duration)
Current-voltage relationship, theory of polarographic waves, instrumentation, qualitative and quantitative applications.

UNIT V: Thermal analysis: (5 classes each of 60 minutes duration)
Theory, methodology, instruments and applications of theromogravimetric analysis (TGA/DTA), and differential scanning calorimetry (DSC).

UNIT VI: Analysis Samples: (20 classes each of 60 minutes duration)
Analysis of soil: Composition of soil, Concept of pH and pH measurement, Complexometric titrations, Chelation, Chelating agents, use of indicators
a. Determination of pH of soil samples.
b. Estimation of Calcium and Magnesium ions as Calcium carbonate by complexometric titration.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Analysis of water: Definition of pure water, sources responsible for contaminating water, water sampling methods, water purification methods.
a. Determination of pH, acidity and alkalinity of a water sample.
b. Determination of dissolved oxygen (DO) of a water sample.

Analysis of food products: Nutritional value of foods, idea about food processing and food preservations and adulteration.
a. Identification of adulterants in some common food items like coffee powder, asafoetida, chilli powder, turmeric powder, coriander powder and pulses, etc.
b. Analysis of preservatives and colouring matter.

Analysis of cosmetics: Major and minor constituents and their function
a. Analysis of deodorants and antiperspirants, Al, Zn, boric acid, chloride, sulphate.
b. Determination of constituents of talcum powder: Magnesium oxide, Calcium oxide, Zinc oxide and Calcium carbonate by complexometric titration.

Reference Books:
1. Christian, G.D, *Analytical Chemistry*, 6th Ed. John Wiley & Sons, New York, 2004.
2. Cooper, T.G. *The Tools of Biochemistry*, John Wiley and Sons, N.Y. USA. 16 (1977).
3. Day, R. A. & Underwood, A. L. *Quantitative Analysis*, Prentice Hall of India.
4. Dean, J. A. *Analytical Chemistry Notebook*, McGraw Hill.
5. Ditts, R.V. *Analytical Chemistry, Methods of separation*, van Nostrand, 1974.
6. Freifelder, D. Physical Biochemistry 2nd Ed., W.H. Freeman and Co., N.Y. USA (1982).
7. Harris, D.C.: *Exploring Chemical Analysis*, 9th Ed. New York, W.H. Freeman, 2016.
8. Khopkar, S. M., *Basic Concepts of Analytical Chemistry*, New Age (Second edition) 1998
9. Mendham, J., A. I. Vogel's *Quantitative Chemical Analysis* 6th Ed., Pearson, 2009.
10. Mikes, O. *Laboratory Hand Book of Chromatographic & Allied Methods*, Elles Harwood John Wiley 1979.
11. Robinson, J.W. *Undergraduate Instrumental Analysis* 5th Ed., Marcel Dekker, Inc., New York (1995).
12. Skoog, D.A. Holler F.J. & Nieman, T.A. *Principles of Instrumental Analysis*, Cengage Learning India Ed.
13. Skoog, D.A.; West, D.M. & Holler, F.J. *Fundamentals of Analytical Chemistry* 6th Ed., Saunders College Publishing, Fort Worth (1992).
14. Vogel, A. I. Vogel's *Qualitative Inorganic Analysis* 7th Ed., Prentice Hall.
15. Vogel, A. I. Vogel's *Quantitative Chemical Analysis* 6th Ed., Prentice Hall.
16. Willard, H.H. et al.: *Instrumental Methods of Analysis*, 7th Ed. Wardsworth Publishing California, USA, 1988.

LXXXVI.   MAJOR COURSE- MJ 13:
PHASE EQUILIBRIA, CHEMICAL KINETICS & SURFACE CHEMISTRY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
After completion of the course, the learner shall be able to understand:
1.   Phases, components, Gibbs phase rule, Phase diagrams and applications.
2.   Chemical kinetics: type of reactions, determination of rate, theories of reaction rate, steady state approximation.
3.   Catalyst – mechanism, acid base catalysis, enzyme catalysis.
4.   Phases, components, Gibb's phase rule and its applications, construction of phase diagram of different systems, the application of phase diagram.
5.   The basics of chemical kinetics: determination of order, molecularity, and understanding theories of reaction rates, determination of rate of opposing/parallel/chain reactions with suitable examples, application of steady state kinetics, Steady-state approximation.
6.   Langmuir, Freundlich – adsorption isotherms, significance, multilayer adsorption – theory and significance.

Course Learning Outcomes:
On successful completion of this course the student should know:
1.   Application of course objectives stated above.

Course Content:

UNIT I: Phase Equilibria: (28 classes each of 60 minutes duration)
Concept of phases, components and degrees of freedom, derivation of Gibbs Phase Rule for nonreactive and reactive systems, Clausius-Clapeyron equation and its applications to solid- liquid, liquid-vapour and solid-vapour equilibria, phase diagram for one component systems, with applications.
Phase diagrams for systems of solid-liquid equilibria involving eutectic, congruent and incongruent melting points, solid solutions. Three component systems, water- chloroform-acetic acid system, triangular plots.

Binary solutions: Gibbs-Duhem-Margules equation, its derivation and applications to fractional distillation of binary miscible liquids (ideal and non-ideal), azeotropes, lever rule, partial miscibility of liquids, CST, miscible pairs, steam distillation. Nernst distribution law: its thermodynamic derivation and applications.

UNIT II: Chemical Kinetics: (18 classes each of 60 minutes duration)
Order and molecularity of a reaction, rate laws in terms of the advancement of a reaction, differential and integrated rate laws for first, second and fractional order reactions, pseudo-unimolecular reactions, determination of the order, kinetics of complex reactions (limited to first order): (i) Opposing reactions (ii) parallel reactions and (iii) consecutive reactions and their differential rate equations (steady-state approximation in reaction mechanisms) (iv) chain reactions.
Temperature dependence of reaction rates, Arrhenius equation, activation energy. Collision and Activated Complex theories of reaction rates, Unimolecular reaction, qualitative treatment of the theory of absolute reaction rates. Lindemann mechanism.

UNIT III: Surface chemistry: (6 classes each of 60 minutes duration)
Physical adsorption, chemisorption, adsorption isotherms (Freundlich, Langumuir adsorption isotherms, surface area determination), BET theory of multilayer adsorption (Excluding derivation), Adsorption in solution. Colloids: Classification, preparation, properties and stability of colloids.

UNIT IV: Catalysis: (8 classes each of 60 minutes duration)
Types of catalyst, specificity and selectivity, mechanisms of catalyzed reactions at solid surfaces, effect of particle size and efficiency of nanoparticles as catalysts. Enzyme catalysis, Michaelis- Menten mechanism, acid-base catalysis.

Reference Books:
1. Atkins P. and De Paula, J. *Physical Chemistry* Tenth Ed., OUP, 2014.
2. Castellan, G. W. *Physical Chemistry* 4th Ed., Narosa, 2004.
3. Engel, T. and Reid, P. *Physical Chemistry* 3rd Ed., Prentice Hall, 2012.
4. McQuarrie, D. A. and Simon, J. D. *Molecular Thermodynamics* Viva Books, 2004.
5. Roy, B. N. *Fundamentals of Classical and Statistical Thermodynamics* Wiley, 2001
6. Assael, M. J.; Goodwin, A. R. H.; Stamatoudis, M.; Wakeham, W. A. & Will, S. *Commonly Asked Questions in Thermodynamics*. CRC Press, 2011.
7. Metz, C.R. *2000 Solved Problems in Chemistry*, Schaum Series, 2006.
8. Zundhal, S.S. *Chemistry concepts and applications* Cengage India, 2011 6 Ball, D. W. *Physical Chemistry* Cengage India, 2012.
9. Mortimer, R. G. *Physical Chemistry 3rd Ed.,* Elsevier: NOIDA, UP, 2009.
10. Levine, I. N. *Physical Chemistry 6th Ed.,* Tata McGraw-Hill, 2011.

LXXXVII.   MAJOR COURSE- MJ 14:
ORGANOMETALLIC AND BIOINORGANIC CHEMISTRY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
After completion of the course, the learner can be able to understand: Coordination compounds – its nomenclature, theories, d-orbital splitting in complexes, chelate.

1. Transition metals, its stability, colour, oxidation states and complexes.
2. Lanthanides, Actinides – separation, colour, spectra and magnetic behaviour
3. Bioinorganic chemistry – metal ions in biological system, its toxicity, haemoglobin.
4. Understanding the nomenclature of coordination compounds/complexes, Molecular orbital theory, d-orbital splitting in tetrahedral, octahedral, square planar complexes, chelate effects.
5. Understanding the transition metals stability in reactions, origin of colour and magnetic properties.
6. Understanding the separation of Lanthanides and Actinides, its colour, spectra and magnetic behaviour.
7. Understanding the bioinorganic chemistry of metals in biological systems.
8. Haemoglobin and its importance in biological systems.

Course Learning Outcomes:
1. Application of course objectives stated above.

Course Content:

UNIT I: Organometallic Compounds: (10 classes each of 60 minutes duration)
Definition and classification of organometallic compounds on the basis of bond type. Concept of hapticity of organic ligands. Metal carbonyls: 18 electron rule, electron count of mononuclear, polynuclear and substituted metal carbonyls of 3d series. General methods of preparation (direct combination, reductive carbonylation, thermal and photochemical decomposition) of mono and binuclear carbonyls of 3d series.

UNIT II: Synergic effects: (14 classes each of 60 minutes duration)
EAN rule as applied to carbonyls. Preparation, structure, bonding and properties of mononuclear and polynuclear carbonyls of 3d metals. p-acceptor behaviour of carbon monoxide. Synergic effects (VB approach)- (MO diagram of CO can be referred to for synergic effect to IR frequencies).

Structures of mononuclear and binuclear carbonyls of Cr, Mn, Fe, Co and Ni using VBT. pi-acceptor behaviour of CO (MO diagram of CO to be discussed), synergic effect and use of IR data to explain extent of back bonding.

Definition and Classification with appropriate examples based on nature of metal-carbon bond (ionic, s, p and multicentre bonds). Structures, properties and reactions   of organometallic compounds of Mg, Al,Sn and Li – Use in synthesis of organic compounds.

UNIT III: Ferrocene & Zeise's salt: (10 classes each of 60 minutes duration)
Preparation and reactions (acetylation, alkylation, metallation, Mannich Condensation). Structure and aromaticity. Comparison of aromaticity and reactivity with that of benzene.
Preparation & structure of Zeise's salt. Evidences of synergic effect and comparison of synergic effect with that in carbonyls.

UNIT IV: Metal Alkyls: (6 classes each of 60 minutes duration)
Important structural features of methyl lithium (tetramer) and trialkyl aluminium (dimer), concept of multicentre bonding in these compounds. Role of triethylaluminium in polymerisation of ethene (Ziegler – Natta Catalyst). Species present in ether solution of Grignardreagent and their structures, Schlenk equilibrium.

UNIT V: Bioinorganic chemistry: (12 classes each of 60 minutes duration)
A brief introduction to bio-inorganic chemistry. Geochemical effect on distribution of metals. Role of metal ions present in biological systems with special reference to Na^+, K^+ and Mg^{2+} ions: Na/K pump, Role of Mg^{2+} ions in energy production and chlorophyll. Iron and its application in bio- systems, Haemoglobin, Myoglobin, Storage and transfer of iron. Role of Ca^{2+} in blood clotting, stabilization of protein structures and structural role (bones).

UNIT VI: Catalysis by Organometallic Compounds (8 classes each of 60 minutes duration)

Study of the following industrial processes and their mechanism:
1. Alkene hydrogenation (Wilkinsons Catalyst)
2. Hydroformylation (Co salts)
3. Wacker Process
4. Synthetic gasoline (Fischer Tropsch reaction)
5. Synthesis gas by metal carbonyl complexes

Reference Books:

1. Lippard, S.J. & Berg, J.M. *Principles of Bioinorganic Chemistry* Panima Publishing Company1994.
2. Cotton, F.A. & Wilkinson, G, *Advanced Inorganic Chemistry* Wiley-VCH, 1999
3. Basolo, F, and Pearson, R.C. *Mechanisms of Inorganic Chemistry*, John Wiley & Sons, NY,1967.
4. Greenwood, N.N. & Earnshaw A. *Chemistry of the Elements*, Butterworth-Heinemann, 1997

LXXXVIII.   MAJOR COURSE- MJ 15:
PRACTICALS-V

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:

I. Analysis of water
Determination of water quality parameters in following aspect:
a.   Determination of dissolved oxygen in water.
b.   Determination of Chemical Oxygen Demand (COD)
c.   Determination of Biological Oxygen Demand (BOD)
d.   Percentage of available chlorine in bleaching powder.
e.   Estimation of total alkalinity of water samples (CO_3^{2-}, HCO_3^-) using double titration method.
f.   Measurement of dissolved CO_2.

II. Equilibria:
1.   Determination of critical solution temperature (CST) of the phenol-water system.
2.   Determination of effect of impurity (NaCl) on CST of phenol-water system.
3.   Distribution of acetic/ benzoic acid between water and cyclohexane.
4.   Initial rate method: Iodide-persulphate reaction
5.   Integrated rate method:
a.   Acid hydrolysis of methyl acetate with hydrochloric acid.
b.   Saponification of ethyl acetate.

III. Separation Techniques
1. Chromatography:
a.   Separation of mixtures
(i) Paper chromatographic separation of Fe^{3+}, Al^{3+}, and Cr^{3+}.
(ii) Paper chromatographic separation of Cd^{2+} and Pb^{2+}.
(iii) Separation and identification of the monosaccharides present in the given mixture (glucose & fructose) by paper chromatography. Reporting the R_f values.
(iv) Separation of mixture of two amino acids by paper chromatography.

Reference Books:
1.   Vogel, A.I. *A text book of Quantitative Analysis*, ELBS 1986.
2.   Mann, F.G. & Saunders, B.C. *Practical Organic Chemistry,* Pearson Education (2009)
3.   Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. *Practical Organic Chemistry, 5th Ed.,* Pearson (2012)
4.   Ahluwalia, V.K. & Aggarwal, R. *Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis,* University Press (2000).
5.   Ahluwalia, V.K. & Dhingra, S. *Comprehensive Practical Organic Chemistry: Qualitative Analysis,* University Press (2000).
6.   Khosla, B. D.; Garg, V. C. & Gulati, A. *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).
7.   Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. *Experiments in Physical Chemistry* 8th Ed.; McGraw-Hill: New York (2003).
8.   Halpern, A. M. & McBane, G. C. *Experimental Physical Chemistry* 3rd Ed.; W.H. Freeman & Co.: New York (2003).

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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SEMESTER VII

LXXXIX.   MAJOR COURSE- MJ 16:
ELECTROCHEMISTRY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Course Objectives:
After completion of the course, the learner can be able to understand:
1.   Basic principle of electrochemistry, chemical cells and their function, EMF measurement, potentiometric titrations and their applications.

Course Learning Outcomes:
1.   Application of course objectives stated above.

Course Content:
UNIT I: Conductance: (16 classes each of 60 minutes duration)
Arrhenius theory of electrolytic dissociation. Conductivity, equivalent and molar conductivity and their variation with dilution for weak and strong electrolytes. Molar conductivity at infinite dilution. Kohlrausch law of independent migration of ions. Debye-Huckel-Onsager equation, Wien effect, Debye-Falkenhagen effect, Walden's rules. Ionic velocities, mobilities and their determinations, transference numbers and their relation to ionic mobilities, determination of transference numbers using Hittorf and Moving Boundary methods. Applications of conductance measurement: (i) degree of dissociation of weak electrolytes, (ii) ionic product of water (iii) solubility and solubility product of sparingly soluble salts (iv) hydrolysis constants of salts etc.

UNIT II: Electrochemistry: (12 classes each of 60 minutes duration)
Quantitative aspects of Faraday's law. Applications of electrolysis in metallurgy and industry. Half-cell potential, Chemical cells, reversible and irreversible cells with examples. Electromotive force of a cell and its measurement, Nernst equation, Standard electrode (reduction) potential and its application of different kind of half-cells. Electrified interfaces, overpotential, Electrocatalysis- influence of various parameters. Hydrogen electrode.

UNIT III: Application of EMF measurements: (12 classes each of 60 minutes duration)
Application of EMF measurements in determining (i) free energy, enthalpy and entropy of a cell reaction, (ii) equilibrium constants, and (iii) pH values, using hydrogen, quinone-hydroquinone, glass and SbO/Sb_2O_3 electrodes. Concentration cells with and without transference, liquid junction potential, determination of activity coefficients and transference numbers. Qualitative discussion of potentiometric titrations (acid-base, redox, precipitation).

UNIT IV: Electroanalytical methods: (7 classes each of 60 minutes duration)
Classification of electroanalytical methods, basic principle of pH metric, potentiometric and conductometric titrations. Techniques used for the determination of equivalence points. Techniques used for the determination of pKa values.

 UNIT V: Electrical & Magnetic Properties of Atoms and Molecules: (8 classes each of 60 minutes duration)
Basic ideas of electrostatics, Electrostatics of dielectric media, Clausius-Mosotti equation, Lorenz-Laurentz equation, Dipole moment and molecular polarizabilities and their measurements. Diamagnetism, paramagnetism, magnetic susceptibility and its measurement, molecular interpretation.

UNIT VI: Principles of Corrosion: (5 classes each of 60 minutes duration)
Introduction to corrosion, homogenous theory, electrolytic theory of corrosion, forms of corrosion, special attention to rusting and its influence of economy of the world, corrosion monitoring and prevention methods.

Reference Books:
1. Atkins, P.W & Paula, J.D. *Physical Chemistry*, 10th Ed., Oxford University Press (2014).
2. Castellan, G. W. *Physical Chemistry* 4th Ed., Narosa (2004).
3. Mortimer, R. G. *Physical Chemistry* 3rd Ed., Elsevier: NOIDA, UP (2009).
4. Barrow, G. M., *Physical Chemistry* 5th Ed., Tata McGraw Hill: New Delhi (2006).
5. Engel, T. & Reid, P. *Physical Chemistry* 3rd Ed., Prentice-Hall (2012).
6. Rogers, D. W. *Concise Physical Chemistry* Wiley (2010).
7. Silbey, R. J., Alberty, R. A. & Bawendi, M. G. *Physical Chemistry* 4th Ed., John Wiley &Sons, Inc. (2005).

XC.   MAJOR COURSE- MJ 17:
POLYMER & MATERIALS CHEMISTRY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
After completion of the course, the learner can be able to understand:
1. The mechanism of polymer material formation.
2. Molecular weight and structure property relationship
3. Polymerization procedure and Zigler-Natta catalysis. 4. Characterization of polymers

Course Learning Outcomes:
On successful completion of this course the student should be able to understand:
1. Student will explore various aspects of Polymerisation.

Course Content:
UNIT I: Introduction: (4 classes each of 60 minutes duration)
Introduction and classification of Polymers, Biopolymers, Synthetics polymers. polymerization process, degree of polymerization, condensation and addition polymers, kinetics of addition polymerization process.

UNIT II: Polymeric Structure and Property Relationship: (8 classes each of 60 minutes duration)
Structure of polymers - Linear, branched, cross linked, and network polymers, molecular weight (number average and weight average) and distribution of molecular weight, polydispersity index, crystallinity in polymer, melting temperature and glass transition temperature, Volumetric properties - molar volume, density, van der Waals volume, Coefficient of linear thermal expansion and volumetric thermal expansion - Pressure volume temperature (PVT) relationship.

UNIT III. Polymerization Chemistry: (4 classes each of 60 minutes duration)
Industrial methods of polymerization such as a bulk, solution, emulsion, suspension. Stereochemistry of polymers and stereo-specific polymerization, Catalysts-their utility in polymers and stereo-specific polymerizations, Catalysts their utility in polymer manufacture, Zieglar-Natta, Metallocene and others.

UNIT IV: Characterization of Polymers: (8 classes each of 60 minutes duration)
Molecular Weight Determination by Light scattering, End-group analysis, Viscosity, Applications of FTIR, UV-visible, NMR and Mass Spectroscopy for identification of polymers.

UNIT V: Properties of Polymers: (12 classes each of 60 minutes duration)
(Physical, thermal, Flow & Mechanical Properties).
Brief introduction to preparation, structure, properties and application of the following polymers: polyolefins, polystyrene and styrene copolymers, poly (vinyl chloride) and related polymers, poly (vinyl acetate) and related polymers, acrylic polymers, fluoro polymers, polyamides and related polymers. Phenol-formaldehyde resins, polyurethanes, silicone polymers, polydienes, Polycarbonates.

UNIT VI: Frontier areas of polymer science and technology: (16 classes each of 60 minutes duration)
Conducting polymers: Basic principles of conducting polymers, delocalized electronic states of conjugated polymers, polyanilines, polyacetylenes, polythiophene, applications of conducting polymers.

Biodegradable polymers: Definition classification of natural biodegradable polymers, cellulose, cellulose acetate, cellophane, soya protein, corn, zein protein, wheat gluten protein, synthetic biodegradable polymers, polyhydroxy alkanoates, polycarpolactone, polyvinyl alcohol, polyacetic acid, application of biodegradable and biomedical polymers, contact lens, dental polymers, artificial heart, kidney, skin, and blood cells.

Fibers: Natural fibers, cotton, wool, silk, rayon, artificial fibers, polyamides, acrylic acid, PVC, PVA.
Rubber: Compounding and elastomeric properties, vulcanization, reinforcement.

UNIT VII: Inorganic Polymers: (8 classes each of 60 minutes duration)
Types of inorganic polymers, comparison with organic polymers, synthesis, structural aspects and applications of silicones and siloxanes. Borazines, silicates and phosphazenes, and polysulphates.

Reference Books:

1. D.W. Van Krevelen and P.J. Hoftyzen, *Properties of Polymer*, 3rd Edition Elsevier Scientific, Publishing Company Amsterdam - Oxford - Newyork. 1990.
2. J.E. Mark Ed.AIP, *Physical Properties of Polymers Hand Book*, Williston, Vt, 1996.
3. S K Gupta and Anil Kumar, *Reaction Engineering of Step Growth Polymerization*, PlenumPress, 1987
4. Odian, George, *Principles of Polymerization*, McGraw-Hill Book Co., New York (1970).
5. W. Billmeyer, *Text book of polymer science*, 3rd Edn., 2007, Wiley.
6. J.R.Fried, *Polymer Science and Technology*, (2005), PHI publication.
7. Billmeyer Jr., Fred W., *Textbook of Polymer Science*, Wiley- Interscience Publishers, NewYork (1962).
8. R. S. Drago, 1992, *Physical methods for chemistry*: Saunders college publication.
9. P. J. Flory, *Principle of polymer chemistry*, Cornell University Press.
10. P. Ghosh, *Polymer Science and technology, Plastics, Rubber and composites*, Tata McGraw Hill.
11. V. Gowriker, N. V. Viswanathan, J. Sreedhar, *Polymer Science*, New Age Int. Publication, 2019.

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XCI. MAJOR COURSE- MJ 18:
REACTION MECHANISMS &
ELECTRONIC SPECTRA IN INORGANIC CHEMISTRY

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Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

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(Credits: Theory-04) **60 Hours**

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Course Objectives:
On completion of this course, the students will be able to understand
1. Atomic theory and its evolution.
2. Learning scientific theory of atoms, concept of wave function.

Course Learning Outcomes:
On successful completion of this course the student should know:
1. Electronic configuration of various elements in periodic table
2. Predicting structure of molecules

Course Content:

UNIT I: Reaction Mechanism of Transition Metal Complexes (15 classes each of 60 minutes duration)
Energy profile of a reaction, reactivity of metal complexes, inert and labile complexes, kinetic application of valence bond and crystal field theories, kinetics of octahedral substitution, acid hydrolysis, factors affecting acid hydrolysis, base hydrolysis, conjugate base mechanism, direct and indirect evidences in favour of conjugate mechanism, anation reactions, reactions without metal ligand bond cleavage. Substitution reactions in square planar complexes, the trans effect, mechanism of the substitution reaction. Redox reactions, electron transfer reactions, mechanism of one electron transfer reactions, outer- sphere type reactions, cross reactions and Marcus-Hush theory, inner sphere type reactions

UNIT II: Metal-Ligand Bonding in complexes (7 classes each of 60 minutes duration)
Limitation of crystal field theory, molecular orbital theory, octahedral, tetrahedral and square planar complexes, π-bonding and molecular orbital theory.

UNIT III: Electronic Spectra and Magnetic Properties of Transition Metal Complexes
(18 classes each of 60 minutes duration)
Spectroscopic ground states, Term symbol, Selection rule, correlation, Orgel and Tanabe-Sugano diagrams for transition metal complexes (d^1- d^9 states), calculations of dq and β parameters, charge transfer spectra, spectroscopic method of assignment of absolute configuration in optically active metal chelates and their stereochemical information, anomalous magnetic moments, magnetic exchange coupling and spin crossover.

UNIT IV: Metal Clusters (5 classes each of 60 minutes duration)
Higher boranes, carboranes, metalloboranes and metallocarboranes. Metal carbonyl and halide clusters, compounds with metal-metal multiple bonds.

UNIT V: Metal π-Complexes (15 classes each of 60 minutes duration)
Metal carbonyls, structure and bonding, vibrational spectra of metal carbonyls for bonding and structural elucidation, important reactions of metal carbonyls; preparation, bonding, structure and important reactions of transition metal nitrosyl, dinitrogen and dioxygen complexes: tertiary phosphine as ligand.

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Books Suggested:

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1. F.A. Cotton and Wilkinson, *Advanced Inorganic Chemistry*, John Wiley.
2. J.E. Huhey, Harpes & Row; *Inorganic Chemistry.*
3. N.N. Greenwood and A. Earnshow, *Chemisiry of the Elements*, Pergamon.
4. A. B. P. Leve r, *Inorganic Electron ion Spectroscopy*, Elsevier.
5. R.L. Cariin, *Magnetochemistry*, Springer Vertag,
6. Q. Wilkinson, R.D. Gillars and J.A. Mc Cleverty, *Comprehensive Coordination Chemistry* eds., Pergamon.

XCII. MAJOR COURSE- MJ 19:
PRACTICALS-VI

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

<u>*End Semester Examination (ESE):*</u>
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
I. Polymer synthesis
    a.   Preparation of nylon 66/6
    b.   Preparation of Face Cream.
    c.   Preparation of urea-formaldehyde resin.
    d.   Preparation of novolac resin.

II. Estimations
a. Determination of temporary hardness in supplied sample of water.
b. Determination of permanent hardness in supplied sample of water.
c. Determination of total hardness of water by Complexometry.
d. Estimation of Magnesium and Calcium in a mixture by Complexometry.
e. Estimation of Copper & Zn in mixture by Gravimetry.
f. Estimation of Cu & Ni in a mixture by Gravimetry.

III. Conductometry
1. Determination of cell constant
2. Determination of equivalent conductance, degree of dissociation and dissociation constant of a weak acid.
3. Perform the following conductometric titrations:
    a. Strong acid vs. strong base
    b. Weak acid vs. strong base
    c. Mixture of strong acid and weak acid vs. strong base
    d. Strong acid vs. weak base
    e. Construction of Daniell cell and measurement of EMF.

Reference Books:
1. Vogel, Arthur I: *A Test book of Quantitative Inorganic Analysis* (Rev. by G.H Jeffery and others) 5th Ed. The English Language Book Society of Longman.
2. Willard, Hobert H. et al.: *Instrumental Methods of Analysis*, 7th Ed. Wardsworth Publishing Company, Belmont, California, USA, 1988.
3. Ditts, R.V. *Analytical Chemistry – Methods of separation*
4. Malcohm P. Stevens, *Polymer Chemistry: An Introduction*, 3rd Ed.
5. Harry R. Allcock, Frederick W. Lampe and James E. Mark, *Contemporary Polymer Chemistry*, 3rd ed. Prentice-Hall (2003)
6. Fred W. Billmeyer, *Textbook of Polymer Science*, 3rd ed. Wiley-Interscience (1984)
7. Joel R. Fried, *Polymer Science and Technology*, 2nd ed. Prentice-Hall (2003)
8. Petr Munk and Tejraj M. Aminabhavi, *Introduction to Macromolecular Science*, 2nd ed. John Wiley & Sons (2002)
9. L. H. Sperling, *Introduction to Physical Polymer Science*, 4th ed. John Wiley & Sons (2005)
10. Malcolm P. Stevens, *Polymer Chemistry: An Introduction*, 3rd ed. Oxford University Press (2005)
11. Seymour/ Carraher's *Polymer Chemistry*, 9th ed. by Charles E. Carraher, Jr. (2013).

SEMESTER VIII

XCIII. MAJOR COURSE- MJ 20:
MOLECULAR SPECTROSCOPY & PHOTOCHEMISTRY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
This course is designed:
        To expose the students to the basic principles of spectroscopic theory. Application of spectroscopic techniques in organic chemistry. Interaction of electromagnetic radiations and matter. Applications of spectroscopic analysis to elucidate structure of organic compounds.

Course Learning Outcomes:
On successful completion of this course the student should be able to understand:
1. Correlate theory and experimental findings in order to explore structural features of organic compounds.
2. Apply the concept to establish structures of unknown compounds.

Course Content:
UNIT I: Organic Spectroscopy (3 classes each of 60 minutes duration)
General principles: Introduction to absorption and emission spectroscopy. Interaction of electromagnetic radiation with molecules & various types of spectra and Born- Oppenheimer approximation.

UNIT II: *UV Spectroscopy:* (5 classes each of 60 minutes duration)
Types of electronic transitions, λ_{max}, Chromophores and Auxochromes, Bathochromic and Hypsochromic shifts, Intensity of absorption, Application of Woodward - Fieser rules for calculation of λ_{max} for the following systems: α, β-unsaturated aldehydes, ketones, carboxylic acids and esters, Conjugated dienes: alicyclic, homoannular and heteroannular and extended conjugated systems (aldehydes, ketones and dienes). Distinction between cis and trans isomers.

UNIT III*: IR Spectroscopy:* (10 classes each of 60 minutes duration)
Fundamental and non-fundamental molecular vibrations, Infrared radiation and types of molecular vibrations. IR spectra of alkanes, alkenes and simple alcohols (inter and intramolecular hydrogen bonding), aldehydes, ketones, carboxylic acids and their derivatives (effect of substitution on >C=O stretching absorptions). Effect of H-bonding, conjugation, resonance and ring size on IR absorptions, Fingerprint region and its significance, application in functional group analysis.

UNIT IV: *NMR Spectroscopy:* (10 classes each of 60 minutes duration)
Basic principles of Proton Magnetic Resonance, chemical shift and factors influencing it, Spin–Spin coupling and coupling constant, Anisotropic effects in alkene, alkyne, aldehydes and aromatics, Interpretation of NMR spectra of simple compounds.

UNIT V: *Mass Spectroscopy:* (8 classes each of 60 minutes duration)
Basics of fragmentations in organic compounds. Discussion of molecular ion peak, base peak and metastable ions, McLafferty rearrangement. Nitrogen rule, Index of hydrogen deficiency. Application of fragmentation in characterization of organic compounds. Problems on structure elucidation of organic compounds based on spectral data. Applications of IR, UV, NMR and Mass spectra for identification of simple organic molecules.

UNIT VI: *Electronic Spectroscopy:* (8 classes each of 60 minutes duration)
Franck-Condon principle, electronic transitions, singlet and triplet states, fluorescence and phosphorescence, dissociation and predissociation.

UNIT VII: Atomic spectroscopy (6 classes each of 60 minutes duration)
Atomic absorption spectroscopy, theory and application (with some example).

UNIT VIII: *Photophysical and photochemical processes:* (10 classes each of 60 minutes duration)
Laws of photochemistry, quantum yield. Jablonski diagrams: Law of photochemical equivalence, quantum

efficiency, low and high quantum efficiency. kinetics of photochemical reactions ($H_2 + Br_2 \rightarrow 2HBr$, $H_2 + Cl_2 \rightarrow 2HCl$, $2HI \rightarrow H_2 + I_2$), energy transfer in photochemical reactions (photosensitization and quenching), fluorescence, phosphorescence, chemiluminescence, Discussion of Electronic spectra and photochemistry (Lambert-Beer law and its applications).

Reference Books:
1. Laideler K. J. and Meiser J. M. *Physical Chemistry* Third Edition (International)1999
2. Levine I. N., *Physical Chemistry,* Fourth Edition), McGraw-Hill (International), 1995.
3. McQuarrie D. A. and Simon J. D. *Physical Chemistry- A Molecular Approach,* UniversityScience Books, 1998
4. Rohatgi-Mukherjee K. K. *Fundamentals of Photochemistry*, New age (revised secondedition).
5. Banwell C.N. & Mc Cash, E. M. *Fundamentals of Molecular Spectroscopy* 4th Ed. TataMcGraw-Hill: New Delhi (2006).
6. R.M. Silverstein, G.C. Bassler & T.C. Morrill*: Spectroscopic Identification of OrganicCompounds*, John Wiley & Sons.
7. John R. Dyer, *Applications of absorption spectroscopy of organic compounds*, Prentice Hall   India (2012).

XCIV. ADVANCED MAJOR COURSE- AMJ 1:
QUANTUM & NANOCHEMISTRY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
After completion of the course, the learner can be able to understand:
1. Basic principle of laws of electrochemistry.
2. Understanding about chemical cells and their function
3. Understanding about electrodes, EMF measurement.
4. Understanding about potentiometric titrations and theirapplications.

Course Learning Outcomes:
1. Application of course objectives stated above.

Course Content:

QUANTUM CHEMISTRY

UNIT 1: Introduction to Quantum Chemistry (8 classes each of 60 minutes duration)
Introduction to black-body radiation and distribution of energy, photo-electric effect, concept of quantization, wave particle duality (de-Broglie's hypothesis), Plank's Quantum theory. The uncertainty principle, the wave function: wave function and its interpretation, conditions of normalization and Orthogonality and its significance. Basic idea about operators, eigen function and eigen values.

UNIT II: The Schrodinger wave equation (10 classes each of 60 minutes duration)
Postulates of quantum mechanics, the Schrodinger wave equation. Discussion of solutions of the Schrodinger equation to some model systems viz., particle in one dimensional box, three-dimensional box, the harmonic oscillator, the rigid rotor and the hydrogen atom.

Schrodinger equation in spherical polar coordinates and separation of $R_{(r)}$, $\Theta_{(\theta)}$ & $\Phi_{(\phi)}$ (radial and angular parts), degeneracies, spherical harmonics of the hydrogen atoms.

UNIT III: Approximate Methods for multi electron system (6 classes each of 60 min. duration)
The variation method, Perturbation theory (first order and non-degenerate) and the W.K.B. method. Applications of variation method and perturbation theory to the Helium atom.

UNIT IV: Angular momentum (6 classes each of 60 minutes duration)
Ordinary angular momentum, generalized angular momentum (quantum mechanical approach), communication relation, eigen functions for angular momentum, eigen values of angular momentum. Operators: Ladder operators, raising and lowering operator, addition of angular momenta, spin, antisymmetric and Pauli exclusion principle.

UNIT V: Electronic Structure of Atoms (5 classes each of 60 minutes duration)
Electronic configuration, Russell- Saunders terms and coupling schemes, Slater-Condon parameters, term separation energies of the p^n configuration, term separation energies for the d^n configurations, magnetic effects: spin-orbit coupling and Zeeman splitting, introduction to the methods of self -consistent field, the virial theorem.

UNIT VI: Chemical bonding (5 classes each of 60 minutes duration)
Valence bond and Molecular orbital approaches, LCAO-MO treatment of H_2, H_2^+, bonding and anti-bonding orbitals, Comparison of LCAO-MO and VB treatments of H_2 (only wave functions, detailed solution not required) and their limitations. Average and most probable distances of electron from nucleus.

UNIT VII: Molecular Orbital Theory (5 classes each of 60 minutes duration)
Huckel theory of conjugated systems, bond order and charge density calculations. Applications to ethylene, butadiene, cyclopropenyl radical, cyclobutadiene etc. Introduction to extended Huckel theory.

NANOCHEMISTRY
UNIT VIII: Introduction to nanoscience, nanostructure and nanotechnology:

(7 classes each of 60 minutes duration)
Basic idea; Overview of nanostructures and nano-materials, classification, (cluster, colloid, nanoparticles, and nanostructures, Spheroid, Wire, Rod, Tube, and Quantum Dot. Carbon nanotubes and inorganic nanowires. Calculation of percentage of surface atom and surface to volume & ratio of spherical, wire, rod and disc shapes nanoparticles.

UNIT IX: Size dependent properties of nanomaterials: (3 classes each of 60 minutes duration)
Basic idea with few examples only: Quantum confinement, Electrical, Optical (Surface Plasmon resonance), variation in colours (Blueshift & Red shift), Magnetic, thermal and catalytic properties.

UNIT X: Synthesis of Nanomaterials: (5 classes each of 60 minutes duration)
Brief introduction about Top-down and Bottom-up approaches & self-assembly techniques of nanoparticles synthesis, Solvothermal process, Examples of preparation of gold and silver metallic nanoparticles, self-assembled nanostructures-control of nanoarchitecture-one dimensional control. Carbon nanotubes and inorganic nanowires.

Reference Books:
1. Chandra, A. K. *Introductory Quantum Chemistry* Tata McGraw-Hill (2001).
2. House, J. E. *Fundamentals of Quantum Chemistry* 2nd Ed. Elsevier: USA (2004).
3. Zhen Guo and Li Tan, *Fundamentals and Applications of Nanomaterials*.2009, Artech House, London Publication.
4. C. N. R. Rao, A. Muller, A. K. Cheetam, *The* Chemistry of Nanomaterials*: Synthesis, Properties and Applications*, Willey-VCH Verlag, Germany, 2005.
5. G. Cao, *Nanostructures and Nanomaterials: Synthesis, Properties and Appications*, Imperial College Press, London, 2004
6. R. W. Kelsall, I. W. Hameley, M. Geoghegan, *Nanoscale Science and Technology*, John Wiley & Sons, England, 2005
7. Charles P. Poole and Frank J Owens, *Introduction to nano technology*, Wiley, interscience, 2003.
8. Pradeep, T., *A text of book of nanoscience and nanotechnology*, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2012.

XCV. ADVANCED MAJOR COURSE- AMJ 2:
HETEROCYCLICS & BIOMOLECULES

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
After completion of the course, the learner shall be able to understand:
Understanding reactions and reaction mechanism of compounds containing active methylene groups. Understanding the reactions and mechanisms of diazonium compounds. Understanding the structure, mechanism of reactions of selected heterocyclic compounds. Classification, structure, mechanism of reactions of few selected alkaloids and terpenes.

Course Learning Outcomes:
On successful completion of this course the student should know:
Elucidating reaction mechanisms for organic reactions. Use of active methylene groups in organic mechanism and preparation of new organiccompounds. Use of benzene diazonium salt in organic synthesis. Applications of heterocyclic compounds in pharmaceutics/drugs and the mechanism of actions.

Course Content:
UNIT I: Heterocyclic Compounds: (12 classes each of 60 minutes duration)
Classification and nomenclature, Structure, aromaticity in 5-numbered and 6-membered rings containing one heteroatom, Synthesis, reactions and mechanism of substitution reactions of Furan, Pyrrole (Paal-Knorr synthesis, Knorr pyrrole synthesis, Hantzsch synthesis), Thiophene, Pyridine (Hantzsch synthesis), Pyrimidine, Structure elucidation of indole, Fischer indole synthesis and Madelung synthesis), Structure elucidation of quinoline and isoquinoline, Skraup synthesis, Friedlander's synthesis, Knorr quinoline synthesis, Doebner-Miller synthesis, Bischler-Napieralski reaction, Pictet-Spengler reaction, Pomeranz-Fritsch reaction. Derivatives of furan: Furfural and Furoic acid.

UNIT II: Chemistry of Carbohydrates: (16 classes each of 60 minutes duration)
Occurrence, classification and their biological importance. Monosaccharides: Constitution and absolute configuration of glucose and fructose, epimers and anomers, mutarotation, determination of ring size of glucose and fructose, Haworth projections and conformational structures, Interconversions of aldoses and ketoses, Killiani- Fischer synthesis and Ruff degradation, Disaccharides – Structure elucidation of maltose, lactose and sucrose. Polysaccharides – Elementary treatment of starch, cellulose and glycogen excluding their structure elucidation.

UNIT III: Chemistry of Amino Acids, Peptides and Proteins (10 classes each of 60 minutes duration)
Classification of Amino Acids, Zwitterion structure and Isoelectric point. Overview of Primary, Secondary, Tertiary and Quaternary structure of proteins. Determination of primary structure of peptides, determination of N-terminal amino acid (by DNFB and Edman method) and C–terminal amino acid (by thiohydantoin and with carboxypeptidase enzyme). Synthesis of simple peptides (upto dipeptides) by N-protection (t-butyloxycarbonyl and phthaloyl) & C-activating groups and Merrifield solid phase synthesis.

UNIT IV: Chemistry of Enzymes and correlation with drug action (8 classes)
Mechanism and factors affecting of enzyme action, Coenzymes and cofactors and their role in biological reactions, Specificity of enzyme action (including stereospecifity). Enzyme inhibitors and their importance, phenomenon of inhibition (competitive and non- competitive inhibition including allosteric inhibition).

UNIT V: Chemistry of Lipids (8 classes each of 60 minutes duration)
Introduction to lipids, classification. Oils and fats: Common fatty acids present in oils and fats, Omega fatty acids, Trans fats, Hydrogenation, Saponification value, Iodine number.
Biological importance of triglycerides, phospholipids, glycolipids, and steroids (cholesterol).

UNIT VI: Chemistry of Dyes (6 classes each of 60 minutes duration)
Classification, Colour and chemical constitution, Mordant and Vat Dyes, Chemistry of dyeing, Synthesis and applications of: Azo dyes – Methyl Orange and Congo Red (mechanism of Diazo Coupling), Triphenylmethane dyes -Malachite Green, Rosaniline and Crystal Violet, Phthalein dyes – Phenolphthalein and Fluorescein, Natural dyes –structure elucidation and synthesis of Alizarin and Indigo, Edible Dyes with examples.

Reference Books:

1. P Sykes, A Guide Book to Mechanism in Organic Chemistry, 6th Edition (1997), Orient Longman, New Delhi.
2.   Morrison, R. T., Boyd, R. N., Bhatterjee, S.K., *Organic Chemistry*, 7th Edn., Pearson.
3. Acheson, R.M. *Introduction to the Chemistry of Heterocyclic compounds,* John Welly & Sons(1976).
4.   Solomons, T.W., Fryhle Craig, *Organic Chemistry,* John Wiley & Sons, Inc (2009).
5. McMurry, J.E. *Fundamentals of Organic Chemistry*, 7th Ed. Cengage Learning India Edition,2013.
6. Kalsi, P. S. *Organic reacations and their mechanisms*, New Age Science (2010).
7. Clayden, J., Greeves, N., Warren, S., Wothers, P., *Organic Chemistry,* Oxford University Press Inc., New York (2001).
8. Singh, J., Ali, S.M. & Singh, J. *Natural Product Chemistry*, Prajati Parakashan (2010).
9. Bansal R. K. *Heterocyclic Chemistry: Syntheses, Reactions and Mechanisms*, New Age, ThirdEdition (1999).
10. J. C. Kotz, P. M. Treichel & J. R. Townsend: *General Chemistry*, Cengage Lening India Pvt. Ltd., New Delhi (2009).
11.   B. H. Mahan: *University Chemistry* 3rd Ed. Narosa (1998).
12.   R. H. Petrucci: *General Chemistry* 5th Ed. Macmillan Publishing Co.: New York (1985).
13.   J. D. Lee: *A New Concise Inorganic Chemistry,* E.L.B.S.
14.   F.A. Cotton & G. Wilkinson: *Basic Inorganic Chemistry,* John Wiley.
15.   Gary Wulfsberg: *Inorganic Chemistry,* Viva Books Pvt. Ltd.
16.   Morrison, R. T. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
17.   Finar, I. L. *Organic Chemistry* (*Volume 1*), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
18.   Finar, I. L. *Organic Chemistry* (*Volume 2*), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
19.   Nelson, D. L. & Cox, M. M. *Lehninger's Principles of Bioch*emistry 7th *Ed.,* W. H. Freeman.
20.   Berg, J. M., Tymoczko, J. L. & Stryer, L. *Biochemistry 7th Ed.,* W. H. Freeman.

XCVI. ADVANCED MAJOR COURSE- AMJ 3:
PRACTICALS-VII

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for
End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
I. Biomolecules:
1.   Saponification value of an oil or a fat.
2.   Determination of Iodine number of an oil/ fat.
3.   Extraction of caffeine from tea leaves.
4.   Analysis of Carbohydrate: aldoses and ketoses, reducing and non-reducing sugars.
5.   Qualitative analysis of unknown organic compounds containing monofunctional groups.

II. Estimations
a.   Estimation of amino group by brominating method.
b.   Estimation of Phenolic group by brominating method.
c.   Estimation of glucose by Fehling solution method.
d.   Estimation of glucose by Bendicts solution method.
e.   Estimation of amino acid.
f.   Estimation of Formaldehyde.

III. Separation and identification
a.   Separation and identification of organic compounds from the following mixture.
    i.   Benzoic acid + β – napthol.
    ii. ρ – toludine + naphthalene.

IV. Green Synthesis: Diels Alder reaction in water
a.   Reaction between furan and maleic acid in water at room temperature rather than in benzene which requires refluxing.

Reference Books
1.   Anastas, P.T & Warner, J.C. *Green Chemistry: Theory and Practice,* Oxford University Press (1998).
2.   Kirchoff, M. & Ryan, M.A. *Greener approaches to undergraduate chemistry experiment*. American Chemical Society, Washington DC (2002).
3.   Ryan, M.A. *Introduction to Green Chemistry*, Tinnesand; American Chemical Society, Washington DC (2002).
4.   Sharma, R.K.; Sidhwani, I.T. & Chaudhari, M.K. I.K. *Green Chemistry Experiment: A monograph International Publishing House Pvt Ltd. New Delhi*. Bangalore CISBN 978-93-81141-55-7 (2013).
5.   Cann, M.C. & Connelly, M. E. *Real world cases in Green Chemistry*, American Chemical Society (2008).
6.   Cann, M. C. & Thomas, P. *Real world cases in Green Chemistry,* American Chemical Society (2008).
7.   Pavia, D. L. Lamponan, G. H. &Kriz, G.S. *W B Introduction to organic laboratory*.
8.   Stocchi: *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK.
9.   R.M. Felder, R.W. Rousseau: *Elementary Principles of Chemical Processes*, Wiley Publishers, New Delhi.

COURSES OF STUDY FOR FYUGP IN **"CHEMISTRY" MINOR**

MINOR COURSE-1A   **(SEM-I)**

XCVII.   MINOR COURSE- MN 1A:
INTRODUCTORY CHEMISTRY

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	**Pass Marks: Th (SIE + ESE) = 30**

(Credits: Theory-03) **45 Hours**

Course Objectives:

After completion of the course, the learner can be able to understand:

1. To expose the students to the basic principles of Chemistry.
2. Exposure of all three major branches of Chemistry.
3. Concept of molecular framework and chemical bonding
4. Representative elements and their chemistry.
5. Atomic theory and its evolution.
6. Learning scientific theory of atoms, concept of wave function.
7. Elements in periodic table, physical and chemical characteristics, periodicity.
8. Hybridization and shapes of atomic, molecular orbitals, bond parameters, bond- distances and energies.
9. Valence bond theory incorporating concepts of hybridization predicting geometry of molecules.
10. Basic of organic molecules, structure, bonding, reactivity and reaction mechanisms.
11. Stereochemistry of organic molecules – conformation and configuration, asymmetricmolecules and nomenclature.
12. Aromatic compounds and aromaticity, mechanism of aromatic reactions.
13. Reactivity, stability of organic molecules, structure, stereochemistry.
14. Mechanism of organic reactions (effect of nucleophile/leaving group, solvent),substitution *vs.* elimination.

Course Learning Outcomes:

1. Application of course objectives stated above.

Course Content:

Section A: Physical Chemistry
UNIT I: Chemical Energetics: (8 classes each of 60 minutes duration)
Review of thermodynamics and the Laws of Thermodynamics.
Important principles and definitions of thermochemistry. Concept of standard state and standard enthalpies of formations. Calculation of bond energy, bond dissociation energy from thermochemical data. Statement of Third Law of thermodynamics and calculation of absolute entropies of substances.

UNIT VII: Chemical Kinetics: (7 classes each of 60 minutes duration)
The concept of reaction rates. Effect of temperature, pressure, catalyst and other factors on reaction rates. Order and molecularity of a reaction. Derivation of integrated rate equations for zero, first and second order reactions (both for equal and unequal concentrations of reactants). Half–life of a reaction. General methods for determination of order of a reaction. Concept of activation energy and its calculation from Arrhenius equation.

Section B: Inorganic Chemistry
UNIT III: Atomic Structure: (5 classes each of 60 minutes duration)
What is Quantum mechanics? Time independent Schrodinger equation and meaning of various terms in it. Significance of ψ and ψ^2, Schrodinger equation for hydrogen atom. Radial and angular parts of the hydrogenic wave functions (atomic orbitals) and their variations for 1s, 2s, 2p, 3s, 3p and 3d orbitals (Only graphical representation). Radial and angular nodes and their significance. Radial distribution functions and the concept of the most probable distance with special reference to 1s and 2s atomic orbitals. Significance of quantum numbers, orbital angular momentum and quantum numbers m_l and m_s. Shapes of *s*, *p* and *d* atomic orbitals, nodal planes. Discovery of spin, spin quantum number (*s*) and magnetic spin quantum number (m_s).
Rules for filling electrons in various orbitals, Electronic configurations of the atoms. Stability of half-filled and completely filled orbitals, concept of exchange energy. Relative energies of atomic orbitals, Anomalous electronic configurations.

UNIT IV: Chemical Bonding and Molecular Structure: (10 classes each of 60 minutes duration)

Ionic Bonding: General characteristics of ionic bonding. Energy considerations in ionic bonding, lattice energy and solvation energy and their importance in the context of stability and solubility of ionic compounds. Polarizing power and polarizability. Fajan's rules, ionic character in covalent compounds, bond moment, dipole moment and percentage ionic character.

Covalent bonding: VB Approach: Shapes of some inorganic molecules and ions on the basis of VSEPR and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements.

Section C: Organic Chemistry
UNIT V: Fundamentals of Organic Chemistry: (3 classes each of 60 minutes duration)

Inductive Effect, Electromeric Effect, Resonance and Hyperconjugation. Cleavage of Bonds: Homolysis and Heterolysis. Structure, shape and reactivity of organic molecules: Nucleophiles and electrophiles. Reactive Intermediates: Carbocations, Carbanions and free radicals.
Aromaticity: Benzenoids and Hückel's rule.

UNIT VI: Aliphatic hydrocarbons:
Alkanes: (4 classes each of 60 minutes duration) (Upto 5 Carbons)

Preparation: Catalytic hydrogenation, Wurtz reaction, Kolbe's synthesis, from Grignard reagent. *Reactions:* Free radical Substitution: Halogenation

Alkenes: (3 classes each of 60 minutes duration) (Upto 5 Carbons)

Preparation: Elimination reactions: Dehydration of alkenes and dehydrohalogenation of alkyl halides (Saytzeff's rule),
Reactions: cis-addition (alk. $KMnO_4$) and trans-addition (bromine), Addition of HX (Markownikoff's and anti-Markownikoff's addition), Hydration, Ozonolysis, oxymecuration-demercuration, Hydroboration-oxidation.

Alkynes: (3 classes each of 60 minutes duration) (Upto 5 Carbons)

Preparation: Acetylene from CaC_2 and conversion into higher alkynes, by dehalogenation of tetra halides and dehydrohalogenation of vicinal-dihalides.
Reactions: Formation of metal acetylides, addition of bromine and alkaline $KMnO_4$, ozonolysis and oxidation with hot alk. $KMnO_4$.

UNIT VII: Aromatic hydrocarbons: (5 classes each of 60 minutes duration)

Preparation of benzene: from phenol, by decarboxylation, from acetylene, from benzene sulphonic acid.
Reactions of benzene: Electrophilic substitution: nitration, halogenation and sulphonation. Friedel-Craft's reaction (alkylation and acylation). Side chain oxidation of alkyl benzenes (upto 4 carbons on benzene)

Reference Books:

1. J. C. Kotz, P. M. Treichel & J. R. Townsend: *General Chemistry*, Cengage Lening India Pvt. Ltd., New Delhi (2009)
2. Lee, J. D. *Concise Inorganic Chemistry,* Wiley, 5th Edn.
3. Douglas, B.E., McDaniel, D.H., Alexander J.J., *Concepts & Models of Inorganic Chemistry, (Third Edition)* John Wiley & Sons,1999.
4. Atkins, P. W. and De Paula, J. *Physical Chemistry*, Tenth Edition, Oxford University Press,2014.
5. Douglas, B.E, Mc Daniel, D.H. & Alexander, J.J. *Concepts & Models of Inorganic Chemistry 3rd Ed.*, John Wiley Sons, N.Y. 1994.
6. Peter Sykes, *A Guide Book to Mechanism in Organic Chemistry*, Longman.
7. C. K. Ingold, *Structure and Mechanism in Organic Chemistry*, Cornell University Press.
8. R. T. Morrison and R. N. Boyd, *Organic Chemistry*, Prentice-Hall.
9. H. 0. House, *Modern Organic Reactions*, Benjamin.
10. R. 0. C. Norman and J. M. Coxon, *Principles of Organic Synthesis*, Blackle Academic & Professional.

XCVIII.   MINOR COURSE- MN 1A PR:
MINOR PRACTICALS-1A PR

Marks: Pr (ESE: 3Hrs) = 25	**Pass Marks: Pr (ESE) = 10**

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:

Section A: Physical
Thermochemistry
1.   Determination of heat capacity of calorimeter.
2.   Determination of enthalpy of neutralization of hydrochloric acid with sodium hydroxide.
3.   Determination of integral enthalpy of solution of salts (KNO_3, NH_4Cl).
4.   Determination of enthalpy of hydration of copper sulphate.

Section B: Inorganic Chemistry - Volumetric Analysis
1. Acid-Base Titrations
   a.   Estimation of oxalic acid present in the supplied sample.
   b.   Estimation of sodium hydroxide present in given sample.
   c.   Estimation of amount of acetic acid in vinegar solution.
   d.   Estimation of carbonate and hydroxide present together in mixture.
   e. Estimation of carbonate and bicarbonate present together in a mixture.
   f.   Estimation of free alkali present in different soaps/detergents.

2. Oxidation-Reduction Titrimetry
   a. Estimation of Fe(II) in supplied solution using standardized $KMnO_4$ solution.
   b. Estimation of oxalic acid using standardized $KMnO_4$ solution.
   c. Estimation of percentage of Fe(II) in Iron fillings with standard $K_2Cr_2O_7$

Section C: 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. Recrystallisation, determination of melting point and calculation of quantitative yields to be done.
   a.   Benzoylation of amines/phenols
   b.   Oxime and 2,4 dinitrophenyl hydrazone of aldehyde/ketone

Reference Books:
1.   Vogel's *Qualitative Inorganic Analysis*, A.I. Vogel, Prentice Hall, 7th Edition.
2.   F. G. Mann & B. C. Saunders, *Practical Organic Chemistry*, Orient Longman (1960).
3.   B.D. Khosla, *Senior Practical Physical Chemistry*, R. Chand & Co.
4.   S. M. Khopkar, *Environmental Pollution Analysis*: Wiley Eastern Ltd, New Delhi.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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MINOR COURSE-1B   (SEM-III)

XCIX. MINOR COURSE- MN 1B:
CHEMICAL EQUILIBRIA & FUNCTIONAL GROUPS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-03) **45 Hours**

Course Objectives:
This course is designed:
1. Chemical aspects of some common health hazards.
2. Chemistry of some common useful materials

Course Learning Outcomes:
On successful completion of this course the student should be able to understand:
1. Explore significance of chemistry in daily life.
2. Explore common chemicals of daily use.
3. Learn about food

Course Content:

Section A: Physical Chemistry
UNIT I: Equilibrium: (15 classes each of 60 minutes duration)
Chemical Equilibria: Le Chatelier's principle. Relationships between *Kp, Kc* and *Kx* for reactions involving ideal gases**.** Free energy change in a chemical reaction. Thermodynamic derivation of the law of chemical equilibrium. Distinction between ΔG and ΔG^o,

Ionic Equilibria: Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, common ion effect. Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle.

Section B: Inorganic Chemistry (8 classes each of 60 minutes duration)
MO Approach: Rules for the LCAO method, bonding and antibonding MOs and their characteristics for *s-s*, *s-p* and *p-p* combinations of atomic orbitals, nonbonding combination of orbitals, MO treatment of homonuclear diatomic molecules of 1st and 2nd periods (including idea of *s-p* mixing) and heteronuclear diatomic molecules such as CO, NO and NO$^+$. Comparison of VB and MO approaches.

Section C: Organic Chemistry
UNIT II: Alkyl and Aryl Halides
Alkyl Halides (Upto 5 Carbons) (5 classes each of 60 minutes duration)
Types of Nucleophilic Substitution (S_N1, S_N2 and S_Ni) reactions.
Preparation: from alkenes *and* alcohols.
Reactions: hydrolysis, nitrite & nitro formation, nitrile & isonitrile formation. Williamson's ether synthesis: Elimination vs substitution.

Aryl Halides (3 classes each of 60 minutes duration)
Preparation: (Chloro, bromo and iodo-benzene case): from phenol, Sandmeyer & Gattermann reactions.
Reactions (Chlorobenzene): Aromatic nucleophilic substitution (replacement by –OH group) and effect of nitro substituent. Benzyne Mechanism: KNH$_2$/NH$_3$ (or NaNH$_2$/NH$_3$).
Reactivity and Relative strength of C-Halogen bond in alkyl, allyl, benzyl, vinyl and aryl halides.

Alcohols: (4 classes each of 60 minutes duration)
Preparation: Preparation of 1°, 2° and 3° alcohols: using Grignard reagent, Ester hydrolysis, Reduction of aldehydes, ketones, carboxylic acid and esters.
Reactions: With sodium, HX (Lucas test), esterification, oxidation (with PCC, alk. KMnO$_4$, acidic dichromate,

conc. HNO₃). Oppeneauer oxidation *Diols:* (Upto 6 Carbons) oxidation of diols. Pinacol-Pinacolone rearrangement.

Phenols: (3 classes each of 60 minutes duration)
Preparation: Cumene hydroperoxide method, from diazonium salts.
Reactions: Electrophilic substitution: Nitration, halogenation and sulphonation. Reimer- Tiemann Reaction, Gattermann-Koch Reaction, Houben–Hoesch Condensation, Schotten – Baumann Reaction.

Ethers (aliphatic and aromatic): (2 classes each of 60 minutes duration)
Cleavage of ethers with HI.

Aldehydes and ketones (aliphatic and aromatic): (5 classes each of 60 minutes duration)
(Formaldehye, acetaldehyde, acetone and benzaldehyde)
Preparation: from acid chlorides and from nitriles.

Reactions– Reaction with HCN, ROH, NaHSO₃, NH₂-G derivatives. Iodoform test. Aldol Condensation, Cannizzaro's reaction, Wittig reaction, Benzoin condensation. Clemensen reduction and Wolff Kishner reduction. Meerwein-Pondorff Verley reduction.

Reference Books:

1.   T. W. Graham Solomons: *Organic Chemistry, John Wiley and Sons.*
2.   Peter Sykes: *A Guide Book to Mechanism in Organic Chemistry,* Orient Longman.
3.   I.L. Finar: *Organic Chemistry* (Vol. I & II), E. L. B. S.
4.   R. T. Morrison & R. N. Boyd: *Organic Chemistry*, Prentice Hall.
5.   Arun Bahl and B. S. Bahl: *Advanced Organic Chemistry,* S. Chand.
6.   G. M. Barrow: *Physical Chemistry* Tata McGraw-Hill (2007).
7.   G. W. Castellan: *Physical Chemistry* 4th Edn. Narosa (2004).
8.   J. C. Kotz, P. M. Treichel & J. R. Townsend: *General Chemistry* Cengage Lening India Pvt. Ltd., New Delhi (2009).
9.   B. H. Mahan: *University Chemistry* 3rd Ed. Narosa (1998).
10.   R. H. Petrucci: *General Chemistry* 5th Ed. Macmillan Publishing Co.: New York (1985).

C.   MINOR COURSE- MN 1B PR:
MINOR PRACTICALS-**1B PR**

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:

Section A: Physical Chemistry
Ionic equilibria pH measurements
1.   Measurement of pH of different solutions like aerated drinks, fruit juices, shampoos and soaps (use dilute solutions of soaps and shampoos to prevent damage to the glass electrode) using pH-meter.
2.   Determine the pH of the given aerated drinks fruit juices, shampoos and soaps.
3. Preparation of buffer solutions:
   a.   Sodium acetate-acetic acid
   b.   Ammonium chloride-ammonium hydroxide

Section B: Organic Chemistry
1.   Detection of hetero elements in organic compounds.
2.   Functional group tests for alcohols, phenols, carbonyl and carboxylic acid group.
3.   Purification of organic compounds by crystallization (from water and alcohol) and distillation.
4.   Criteria of Purity: Determination of melting and boiling points.
5.   Preparations: Mechanism of various reactions involved to be discussed.
6. Recrystallisation, determination of melting point and calculation of quantitative yields to be done.
   a.   Oxime of aldehyde/ketone
   b.   2,4 dinitrophenylhydrazone of aldehyde/ketone
7. Analysis of soaps and detergents.
8. Preparation of Nylon-6, Nylon-66
9. Preparation of face cream
10. Vitamin-C preparation.

Reference Books

1.   B.D. Khosla, *Senior Practical Physical Chemistry*, R. Chand & Co.
2.   A.I. Vogel: *Textbook of Practical Organic Chemistry*, 5th edition, Prentice-Hall.
3.   F. G. Mann & B. C. Saunders, *Practical Organic Chemistry*, Orient Longman (1960).
4.   Waites M.J. (2008). *Industrial Microbiology: An Introduction*, 7th Edition, Blackwell Science, London, UK.
5.   Prescott S.C., Dunn C.G., Reed G. (1982). Prescott & Dunn's Industrial Microbiology, 4th Edition, AVI Pub. Co., USA.
6.   Reed G. (2004). *Prescott & Dunn's industrial microbiology*, 4th Edition, AVI Pub. Co., USA.
7.   JR Casida L.E. (2015). *Industrial Microbiology*, 3rd Edition, New Age International (P) Limited Publishers, New Delhi, India.
8.   Waites M.J., Morgan N.L., Rockey J.S. and Higton G. (2001) *Industrial Microbiology: An Introduction*. 1st Edition, Blackwell Science, London, UK.
9.   Pelczar M.J., Chan E.C.S. and Krieg N.R. (2003) *Microbiology*. 5th Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi.

MINOR COURSE-1C   **(SEM-V)**

CI.   MINOR COURSE- MN 1C:
CHEMISTRY OF s- & p-BLOCK ELEMENTS AND STATES OF MATTER

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-03) **45 Hours**

Course Objectives:

After completion of the course, the learner can be able to understand:
1. Composition of atmosphere
2. Biogeochemical cycles
3. Hydrological cycle
4. Water quality parameters
5. Atmospheric chemical phenomena and environmental pollution
6. Water pollution, parameters of water pollution, treatment of polluted water.

Course Learning Outcomes:

On successful completion of this course the student should know:
1. Heat Budget of Earth
2. Quality parameters for water
3. Environmental pollution
4. Water pollution, parameters and treatment of polluted water.

Course Content:

UNIT I: General Principles of Metallurgy: (5 classes each of 60 minutes duration)
Chief modes of occurrence of metals based on standard electrode potentials. Ellingham diagrams for reduction of metal oxides using carbon as reducing agent.
Hydrometallurgy, Methods of purification of metals (Al, Pb, Ti, Fe, Cu, Ni, Zn): electrolytic, oxidative refining, Kroll process, Parting process, van Arkel-de Boer process and Mond's process.

UNIT II: *s*- and *p*-Block Elements: (5 classes each of 60 minutes duration)
Periodicity in *s*- and *p*-block elements with respect to electronic configuration, atomic and ionic size, ionization enthalpy, electronegativity (Pauling, Mulliken, and Alfred-Rochow scales). Allotropy in C, S, and P. Oxidation states with reference to elements in unusual and rare oxidation states like carbides and nitrides), inert pair effect, diagonal relationship and anomalous behaviour of first member of each group.

UNIT III: Compounds of *s*- and *p*-Block Elements: (10 classes each of 60 minutes duration
Hydrides and their classification (ionic, covalent and interstitial), structure and properties with respect to stability of hydrides of p- block elements.
Concept of multicentre bonding (diborane). Structure, bonding and their important properties like oxidation/reduction, acidic/basic nature of the following compounds and their applications in industrial, organic and environmental chemistry.
Hydrides of nitrogen (NH_3, N_2H_4, N_3H, NH_2OH)
Oxoacids of P, S and Cl.
Halides and oxohalides: PCl_3, PCl_5, $SOCl_2$ and SO_2Cl_2

Section B: Physical Chemistry
UNIT IV: Kinetic Theory of Gases: (15 classes each of 60 minutes duration)
Postulates of Kinetic Theory of Gases and derivation of the kinetic gas equation. Most probable, average and root mean square velocities (no derivation). Collision number, collision frequency, collision diameter and mean free path of molecules. Maxwell Boltzmann distribution laws of molecular velocities and molecular energies (graphic representation – derivation not required) and their importance.
Deviation of real gases from ideal behaviour, compressibility factor, causes of deviation. van der Waals

equation of state for real gases. Boyle temperature (derivation not required). Critical phenomena, critical constants and their calculation from van der Waals equation. Andrews isotherms of CO_2. Viscosity of gases and effect of temperature and pressure on coefficient of viscosity (qualitative treatment only).

UNIT V: Liquids: (4 classes each of 60 minutes duration)
Surface tension and its determination using stalagmometer. Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only)

UNIT VI: Solids: (6 classes each of 60 minutes duration)
Forms of solids. Symmetry elements, unit cells, crystal systems, Bravais lattice types and identification of lattice planes. Laws of Crystallography - Law of constancy of interfacial angles, Law of rational indices. Miller indices. X–Ray diffraction by crystals, Bragg's law. Structures of NaCl, KCl and CsCl (qualitative treatment only). Defects in crystals. Glasses and liquid crystals.

Reference Books:
1.   G. M. Barrow: *Physical Chemistry* Tata McGraw-Hill (2007).
2.   G. W. Castellan: *Physical Chemistry* 4th Edn. Narosa (2004).
3.   J. C. Kotz, P. M. Treichel & J. R. Townsend: *General Chemistry* Cengage Lening India Pvt. Ltd., New Delhi (2009).
4.   B. H. Mahan: *University Chemistry* 3rd Ed. Narosa (1998).
5.   R. H. Petrucci: *General Chemistry* 5th Ed. Macmillan Publishing Co.: New York (1985).
6.   J. D. Lee: *A New Concise Inorganic Chemistry,* E.L.B.S.
7.   F.A. Cotton & G. Wilkinson: *Basic Inorganic Chemistry,* John Wiley.
8.   D. F. Shriver and P. W. Atkins: *Inorganic Chemistry*, Oxford University Press.
9.   Gary Wulfsberg: *Inorganic Chemistry,* Viva Books Pvt. Ltd.

CII.   MINOR COURSE- MN 1C PR:
MINOR PRACTICALS-1C PR

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

Practicals:

Section A: Inorganic Chemistry
Qualitative semi micro analysis
1. Qualitative semi micro analysis of mixtures containing 2 anions and 2 cations. Emphasis should be given to the understanding of the chemistry of different reactions. The following radicals are suggested:

Cations: NH_4^+, Pb^{2+}, Bi^{3+}, Cu^{2+}, Cd^{2+}, Sn^{2+}, Fe^{3+}, Al^{3+}, Co^{2+}, Cr^{3+}, Ni^{2+}, Mn^{2+}, Zn^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}
Anions: CO_3^{2-}, NO_2^-, CH_3COO^-, Cl^-, Br^-, NO_3^-, SO_4^{2-}, PO_4^{3-}, BO_3^{3-}, $C_2O_4^{2-}$
(Spot tests should be carried out wherever feasible)

Section B: Physical Chemistry
(I) Surface tension measurement (use of organic solvents excluded).

a) Determination of the surface tension of a liquid or a dilute solution using a stalagmometer.

b) Study of the variation of surface tension of a detergent solution with concentration.

(II) Viscosity measurement (use of organic solvents excluded).

a) Determination of the relative and absolute viscosity of a liquid or dilute solution using an Ostwald's viscometer.
b) Study of the variation of viscosity of an aqueous solution with concentration of solute.

(III) Chemical Kinetics

Study the kinetics of the following reactions.

a.   Initial rate method: Iodide-persulphate reaction
b.   Integrated rate method:
c.   Acid hydrolysis of methyl acetate with hydrochloric acid.
d.   Saponification of ethyl acetate.
e.   Compare the strengths of HCl and H_2SO_4 by studying kinetics of hydrolysis of methyl acetate

Reference Books
1.   A.I. Vogel, *Qualitative Inorganic Analysis*, Prentice Hall, 7th Edn.
2.   A.I. Vogel, *Quantitative Chemical Analysis*, Prentice Hall, 6th Edn.
3.   B.D. Khosla, *Senior Practical Physical Chemistry*, R. Chand & Co.

MINOR COURSE-1D   **(SEM-VII)**

CIII.   MINOR COURSE- MN 1D:
CHEMISTRY OF d- & f-BLOCK ELEMENTS & MOLECULES OF LIFE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-03) **45 Hours**

Course Objectives:
After completion of the course, the learner shall be able to understand:
1.   Basic human physiology. About the basic of human physiological system and food science
2. To learn about the nutrition and its importance, To learn about the food preservation and its utility.
3.   Important component of healthy food, Excess and deficiency of nutrition
4.   Food preservatives, Preserved products, Food standards

Course Learning Outcomes:
On successful completion of this course the student should know:
1. To know about the basic of human physiological system and food science
2. To learn about the nutrition and its importance, To learn about the food preservation and its utility.

Course Content:
Section A: Inorganic Chemistry
UNIT I: Transition Elements (3d series) (6 classes each of 60 minutes duration)
General group trends with special reference to electronic configuration, variable valency, colour, magnetic and catalytic properties, ability to form complexes and stability of various oxidation states.

UNIT II: Lanthanides and Actinides: (5 classes each of 60 minutes duration)
Electronic configuration, oxidation states, colour, spectra and magnetic behaviour of lanthanides and actinides. Lanthanide contraction, separation of lanthanides (ion-exchange method only).

UNIT III: Coordination Chemistry (5 classes each of 60 minutes duration)
Valence Bond Theory (VBT): Inner and outer orbital complexes of Cr, Fe, Co, Ni and Cu (coordination numbers 4 and 6). Structural and stereoisomerism in complexes with coordination numbers 4 and 6.
Drawbacks of VBT. IUPAC system of nomenclature.

UNIT IV: Crystal Field Theory (4 classes each of 60 minutes duration)
Crystal field effect, octahedral symmetry. Crystal field stabilization energy (CFSE), Crystal field effects for weak and strong fields. Tetrahedral symmetry. Factors affecting the magnitude of D. Spectrochemical series. Comparison of CFSE for O_h and T_d complexes.

Section B: Organic Chemistry
UNIT V: Carbohydrates (8 classes each of 60 minutes duration)
Classification of carbohydrates, reducing and non-reducing sugars, General properties of Glucose and Fructose, their open chain   structure. Epimers, mutarotation and anomers. Determination of configuration of Glucose (Fischer proof). Cyclic structure of glucose. Haworth projections. Cyclic structure of fructose. Linkage between monosachharides, structure of disacharrides (sucrose, maltose, lactose) and polysacharrides (starch and cellulose) excluding their structure elucidation.

UNIT VI: Amino Acids, Peptides and Proteins (8 classes each of 60 minutes duration)
Classification of Amino Acids, Zwitterion structure and Isoelectric point
Overview of Primary, Secondary, Tertiary and Quaternary structure of proteins.
Determination of primary structure of peptides, determination of N-terminal amino acid (by DNFB   and Edman method) and C–terminal amino acid (by thiohydantoin and with carboxypeptidase enzyme).
Synthesis of simple peptides (upto dipeptides) by N-protection (t- butyloxycarbonyl and phthaloyl) & C-activating groups and Merrifield solid phase synthesis.

UNIT VII: Enzymes and correlation with drug action (6 classes each of 60 minutes duration)

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Mechanism of enzyme action, factors affecting enzyme action, Coenzymes and cofactors and their role in biological reactions, Specificity of enzyme action (Including stereospecifity).

Enzyme inhibitors and their importance, phenomenon of inhibition (Competitive and Non- competitive inhibition including allosteric inhibition).

Drug action-receptor theory. Structure –activity relationships of drug molecules, binding role of –OH group, -NH$_2$ group, double bond and aromatic ring,

UNIT VIII: Lipids (3 classes each of 60 minutes duration)

Introduction to lipids, classification. Oils and fats: Common fatty acids present in oils and fats, Omega fatty acids, Trans fats, Hydrogenation, Saponification value, Iodine number.

Biological importance of triglycerides, phospholipids, glycolipids, and steroids (cholesterol).

Reference Books:

1.   J. C. Kotz, P. M. Treichel & J. R. Townsend: *General Chemistry*, Cengage Lening India Pvt. Ltd., New Delhi (2009).
2.   B. H. Mahan: *University Chemistry* 3rd Ed. Narosa (1998).
3.   R. H. Petrucci: *General Chemistry* 5th Ed. Macmillan Publishing Co.: New York (1985).
4.   J. D. Lee: *A New Concise Inorganic Chemistry,* E.L.B.S.
5.   F.A. Cotton & G. Wilkinson: *Basic Inorganic Chemistry,* John Wiley.
6.   Gary Wulfsberg: *Inorganic Chemistry,* Viva Books Pvt. Ltd.
7.   Morrison, R. T. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
8.   Finar, I. L. *Organic Chemistry* (*Volume 1*), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
9.   Finar, I. L. *Organic Chemistry* (*Volume 2*), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
10.   Nelson, D. L. & Cox, M. M. *Lehninger's Principles of Bioch*emistry *7th Ed.,* W. H. Freeman.
11.   Berg, J. M., Tymoczko, J. L. & Stryer, L. *Biochemistry 7th Ed.,* W. H. Freeman.

CIV. MINOR COURSE- MN 1D PR:
MINOR PRACTICALS-1D PR

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

Practicals:

Section A: Inorganic Chemistry

1. Estimation of the amount of nickel present in a given solution as bis(dimethylglyoximato) nickel(II) or aluminium as oxinate in a given solution gravimetrically.
2. Estimation of (i) Mg^{2+} or (ii) Zn^{2+} by complexometric titrations using EDTA.
3. Estimation of total hardness of a given sample of water by complexometric titration.
4. To draw calibration curve (absorbance at λmax vs. concentration) for various concentrations of a given coloured compound and estimate the concentration of the same in a given solution.
5. Determination of the composition of the Fe^{3+} salicylic acid complex/ Fe^{2+} phenanthroline complex in solution by Job's method.
6. Determination of concentration of Na+ and K+ using Flame Photometry.

Section B: Organic Chemistry

1. Separation of amino acids by paper chromatography
2. To determine the concentration of glycine solution by formylation method.
3. Study of titration curve of glycine
4. To determine the saponification value of an oil/fat.
5. To determine the iodine value of an oil/fat
6. Differentiate between a reducing/ nonreducing sugar.
7. To synthesise aspirin by acetylation of salicylic acid and compare it with the ingredient of an aspirin tablet by TLC.

Reference Books

1. Oser B L (1965). *Hawk's Physiological Chemistry*, 14th Ed. McGraw-Hill Book
2. Subalakshmi, G and Udipi, SA (2006) *Food processing and preservation*, 1st Ed. New Age International (P) Ltd.
3. Srilakshmi B (2018): *Food Science*, 7th Colour Ed. New Age International (P) Lt
4. Potter NN and Hotchkiss JH (1999): *Food science*,5th Ed, Spinger.
5. A.I. Vogel, *Qualitative Inorganic Analysis*, Prentice Hall, 7th Edn.
6. A.I. Vogel, *Quantitative Chemical Analysis*, Prentice Hall, 6th Edn.
7. *Vogel's Textbook of Practical Organic Chemistry*, ELBS.
8. Ahluwalia, V.K. & Aggarwal, R. *Comprehensive Practical Organic Chemistry,* Universities Press.

FYUGP

MATHEMATICS HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented from 3rd Semester of Academic Session 2022-26

& From 1st Semester of Session 2023-27 Onwards

UNIVERSITY DEPARTMENT OF MATHEMATICS
RANCHI UNIVERSITY
Morabadi Campus, Ranchi 834002, Jharkhand. (Ph. 0651-6555611)
Website: www.rumathmca.com; E-mail: dept_math@rediffmail.com

Dr. Ashalata Keshri, Associate Professor, HoD Math, Ranchi University, Ranchi

Ref.   **Date:** 23.06.2023

The meeting of Board of Studies was held today dated 23/06/2023 (Friday) at 02:00 PM in the Office chamber of the Head, under the chairmanship of the Head, University Department of Mathematics R.U. Ranchi.

The following members were present in the meeting:

1. Head, Univ. Deptt. of Mathematics, R. U. Ranchi (Chairperson)
2. Dr. C. S. P. Lugun, Ex-head, University Department of Mathematics, R. U. Ranchi.
3. Dr. R. K. Dwivedi, Head, Deptt of Mathematics, VBU, Hazaribagh.
4. Dr. A.K. Mahato, Ex. Head, University Department of Mathematics, DSPMU, R.U. Ranchi.
5. Mrs. Rimil Nidhi Bhuinyan, (Assistant professor) faculty member.
6. Dr. Sheet Nihal Topno, (Assistant professor) faculty member
7. Mr. Amit Bara, (Assistant professor) faculty member

The Board of Studies gone through the previous syllabus of Under graduate Course; Curriculum framework and credit system for the Four Year Undergraduate Programme and the draft syllabus as per NEP-2020 for Major & Minor U.G., Course to be implemented from academic year 2022-2023.

After detail discussion the committee approved the draft syllabus for undergraduate course as per NEP-2020, to be implemented from 2022.

Mrs. Rimil Nidhi Bhuinyan

Mr. Amit Bara

Dr. R. K. Dwivedi,
Head, Deptt. of Mathematics,
V.B.U. Hazaribagh.

Dr. Sheet Nihal Topno

Dr. C. S. P. Lugun,
Ex-Head, Univ. Deptt. of Mathematics,
Ranchi University, Ranchi.

Dr. A.K. Mahato,
Ex-Head, Deptt. of Mathematics,
DSPMU, Ranchi

DIRECTOR
IQAC, RANCHI UNIVERSITY
RANCHI-834 001

Dr. Asha Lata Keshri, Associate
Professor, Head, University Department
of Mathematics, R. U. Ranchi.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Table of Content

Students are Instructed to

Refer Syllabus of Allied/ Opted Subjects from R.U. Website

HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1st of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:
  - y)Odd Semester: **From first Monday of August to third Saturday of December**
  - z)Even Semester: **From first Monday of January to third Saturday of May**
- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
  - ➢ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
  - ➢ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
  - ➢ Bachelor's Degree after a 3-year (6 semesters) programme of study,
  - ➢ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
  - ➢ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

y) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.

One credit for Theory   = 15 Hours of Teaching i.e., 15 Credit Hours
One credit for Practicum   = 30 Hours of Practical work i.e., 30 Credit Hours

z) For credit determination, instruction is divided into three major components:

Hours (L) – Classroom Hours of one-hour duration.
Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.
- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

cxix.   The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

cxx.   No student will be detained in odd Semesters (I, III, V & VII).

cxxi.   To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

cxxii. To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

cxxiii. To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

cxxiv. However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

cxxv.   Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

cxxvi. To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year.

cxxvii. A student has to pass in minimum 3 papers out of the total 4 papers.

cxxviii. It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result of the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)														
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)														
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree														
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4
Exit Point: Bachelor's Degree with Hons. /Hons. with Research													**160**	**224**

Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME 2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	AEC-1	Language and Communication Skills (MIL 1 - Hindi/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Hindi)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4
IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2
	VAC-2	Value Added Course-2	2

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4
	RC/ AMJ-1 AMJ-2 AMJ-3	Research Internship/Field Work/Dissertation OR Advanced Major paper-1 (Disciplinary/Interdisciplinary Major) Advanced Major paper-2 (Disciplinary/Interdisciplinary Major) Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	12/ 4 4 4
		Total Credit	**160**

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	xxv. Discipline/ Interdisciplinary courses and xxvi. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64
Minor	xxv. Discipline/ Interdisciplinary courses and xxvi. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Double Major Courses		Credits
	Code	Papers	Credits
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:

AEC   Ability Enhancement Courses
SEC   Skill Enhancement Courses
IAP   Internship/Apprenticeship/ Project
MDC   Multidisciplinary Courses
MJ   Major Disciplinary/Interdisciplinary Courses
DMJ   Double Major Disciplinary/Interdisciplinary Courses
MN   Minor Disciplinary/Interdisciplinary Courses
AMJ   Advanced Major Disciplinary/Interdisciplinary Courses
RC   Research Courses

AIMS OF BACHELOR'S DEGREE PROGRAMME IN MATHEMATICS

The broad aims of the LOCF for Mathematics are to:

i.   create deep interest in learning mathematics.
ii.   develop broad and balanced knowledge and understanding of definitions, concepts, principles and theorems.
iii. familiarize the students with suitable tools of mathematical analysis to handle issues and problems in mathematics and related sciences.
iv.   enhance the ability of learners to apply the knowledge and skills acquired by them during the programme to solve specific theoretical and applied problems in mathematics.
v.   provide students/learners sufficient knowledge and skills enabling them to undertake further studies in mathematics and its allied areas on multiple disciplines concerned with mathematics.

encourage the students to develop a range of generic skills helpful in employment, internships and social activities.

PROGRAM LEARNING OUTCOMES

The broad programme learning outcomes in Mathematics are:

i.   Bachelor's degree in mathematics is the culmination of in-depth knowledge of algebra, calculus, geometry, Mechanics and several other branches of mathematics. This also leads to study of related areas like computer science and statistics. Thus, this programme helps learners in building a solid foundation for higher studies in mathematics.

ii. The skills and knowledge gained has intrinsic beauty, which also leads to proficiency in analytical reasoning. This can be utilised in modelling and solving real life problems.

iii. Students undergoing this programme learn to logically question assertions, to recognise patterns and to distinguish between essential and irrelevant aspects of problems. They also share ideas and insights while seeking and benefitting from knowledge and insight of others. This helps them to learn behave responsibly in a rapidly changing interdependent society.

iv. Students completing this programme will be able to present mathematics clearly and precisely, make vague ideas precise by formulating them in the language of mathematics, describe mathematical ideas from multiple perspectives and explain fundamental concepts of mathematics to non-mathematicians.

v.   Completion of this programme will also enable the learners to join teaching profession in primary and secondary schools.

This programme will also help students to enhance their employability for government jobs, jobs in banking, insurance and investment sectors, data analyst jobs and jobs in various other public and private enterprises

SEMESTER WISE COURSES IN MATHEMATICS MAJOR-1 FOR FYUGP
2022 onwards

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Courses		Credits	Examination Structure		
	Code	Papers		Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	Geometry & Calculus	4	25	75	---
II	MJ-2	Multivariable Calculus	4	25	75	---
	MJ-3	Real Analysis-I & Matrices-I	4	25	75	---
III	MJ-4	Ordinary Differential Equations-I	4	25	75	---
	MJ-5	Abstract Algebra-I & Matrices-II	4	25	75	---
IV	MJ-6	Complex Analysis-I	4	25	75	---
	MJ-7	Mechanics	4	25	75	---
	MJ-8	Linear Programming	4	25	75	---
V	MJ-9	Real Analysis-II	4	25	75	---
	MJ-10	Linear Algebra & Hydrostatics	4	25	75	---
	MJ-11	Partial Differential Equations & Calculus of Variations	4	25	75	---
VI	MJ-12	Metric Space	4	25	75	---
	MJ-13	Abstract Algebra-II	4	25	75	---
	MJ-14	Probability & Statistics	4	25	75	---
	MJ-15	Numerical Analysis	4	25	75	---
VII	MJ-16	Advanced Mechanics	4	25	75	---
	MJ-17	Advanced Algebra	4	25	75	---
	MJ-18	Programming in C & Matlab	4	25	75	---
	MJ-19	Practical: Programming in C & Matlab	4	---	---	100
VIII	MJ-20	Ordinary Differential Equations-II	4	25	75	---
	AMJ-1	Real Analysis-III	4	25	75	---
	AMJ-2	Complex Analysis-II	4	25	75	---
	AMJ-3	Topology	4	25	75	---
	or RC-1	Research Methodology	4	25	75	---
	RC-2	Project Dissertation/ Research Internship/ Field Work	8	---	---	200
		Total Credit	**92**			

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Skill Enhancement Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	Theory of Sets, Numbers & Equations	3	---	75	---
II	SEC-2	Discrete Mathematics	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	**9**			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Minor Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	Calculus	4	25	75	---
III	MN-1B	Set Theory & Algebra	4	25	75	---
V	MN-1C	ODE & Real Analysis	4	25	75	---
VII	MN-1D	PDE & Complex Analysis	4	25	75	---
		Total Credit	**16**			

INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There will be Only One Semester Internal Examination in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

Y. (SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Z. (SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Conversion of Attendance into score may be as follows:

Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

AK.   (ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

AL.   (ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

AM.   (ESE 100 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

Subject/ Code

F.M. =10   **Time**=1Hr.   Exam Year

General Instructions:
lxi. **Group A** carries very short answer type compulsory questions.
lxii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
lxiii. Answer in your own words as far as practicable.
lxiv. Answer all sub parts of a question at one place.
lxv. Numbers in right indicate full marks of the question.

Group A

37.   [5x1=5]

lxi.   ....
lxii.   ....
lxiii.   ....
lxiv.   ....
lxv.   ....

Group B

38. ....   [5]
39. ....   [5]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **20 Marks**:

Subject/ Code

F.M. =20   **Time**=1Hr.   Exam Year

General Instructions:
lxi. **Group A** carries very short answer type compulsory questions.
lxii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
lxiii. Answer in your own words as far as practicable.
lxiv. Answer all sub parts of a question at one place.
lxv. Numbers in right indicate full marks of the question.

Group A

49.   [5x1=5]

lxi.   ....
lxii.   ....
lxiii.   ....
lxiv.   ....
lxv.   ....

50. ....   [5]

Group B

51. ....   [10]
52. ....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION
Question format for **50 Marks**:

Subject/ Code

F.M. =50   **Time**=3Hrs.   Exam Year

General Instructions:

xxiii.   **Group A** carries very short answer type **compulsory** questions.
xxiv.**Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
xxxix.   Answer in your own words as far as practicable.
xl.   Answer all sub parts of a question at one place.
xli. Numbers in right indicate full marks of the question.

Group A

73.   [5x1=5]

lxi.   ....
lxii.   ....
lxiii.   ....
lxiv.   ....
lxv.   ....

Group B

74. ....   [15]
75. ....   [15]
76. ....   [15]
77. ....   [15]
78. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **60 Marks**:

Subject/ Code

F.M. =60   **Time**=3Hrs.   Exam Year

General Instructions:

xxv.**Group A** carries very short answer type **compulsory** questions.
xxvi.   **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
xxxix.   Answer in your own words as far as practicable.
xl.   Answer all sub parts of a question at one place.
xli. Numbers in right indicate full marks of the question.

Group A

97.   [5x1=5]

lxi.   ....
lxii.   ....
lxiii.   ....
lxiv.   ....
lxv.   ....

98. ....   [5]
99. ....   [5]

Group B

100. ....   [15]
101. ....   [15]
102. ....   [15]
103. ....   [15]
104. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **75 Marks**:

Subject/ Code

F.M. = 75   **Time**=3Hrs.   Exam Year

General Instructions:
xxv. **Group A** carries very short answer type **compulsory** questions.
xxvi.   **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xxxix.   Answer in your own words as far as practicable.
xl. Answer all sub parts of a question at one place.
xli. Numbers in right indicate full marks of the question.

Group A

109.   [5x1=5]

    lxi.   ....
    lxii.   ....
    lxiii.   ....
    lxiv.   ....
    lxv.   ....

110. ....   [5]
111. ....   [5]

Group B

112. ....   [15]
113. ....   [15]
114. ....   [15]
115. ....   [15]
116. ....   [15]
117. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

Subject/ Code

F.M. = 100   **Time**=3Hrs.   Exam Year

General Instructions:
xxv. **Group A** carries very short answer type **compulsory** questions.
xxvi.   **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xxxix.   Answer in your own words as far as practicable.
xl. Answer all sub parts of a question at one place.
xli. Numbers in right indicate full marks of the question.

Group A

13.   [10x1=10]

lxi.	....	vi.	....
lxii.	....	vii.	....
lxiii.	....	viii.	....
lxiv.	....	ix.	....
lxv.	....	x	....

26. ....   [5]
27. ....   [5]

Group B

76. ....   [20]
77. ....   [20]
78. ....   [20]
79. ....   [20]
80. ....   [20]
81. ....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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SEMESTER I

XXIV. MAJOR COURSE –MJ 1:
GEOMETRY & CALCULUS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) Theory: 60 Lectures

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Explain the properties of three dimensional shapes.
2. Understand the notion of successive differentiation and express some functions in an infinite series.
3. Evaluate integrals of different rational and irrational functions.
4. Evaluate n^{th} order integration by means of reduction formulae.
5. Sketch curves in Cartesian and polar coordinate systems.

Course Content:
Unit-I: Planes, Straight Lines and Spheres
Planes: Distance of a point from a plane, Angle between two planes, Pair of planes, Bisectors of angles between two planes; *Straight lines:* Equations of straight lines, Distance of a point from a straight line, Distance between two straight lines, Distance between a straight line and a plane; *Spheres:* Different forms, Intersection of two spheres, Orthogonal intersection, Tangents and normal.

Unit-II: Differential Calculus
Successive differentiation: n^{th} order differentiation of Standard functions e^{ax+b}, $(ax + b)^n$, $\log(ax + b)$, $\sin(ax + b)$, $\cos(ax + b)$, $e^{ax}\sin(bx + c)$, $e^{ax}\cos(bx + c)$, Leibnitz's theorem, *Series Expansion:* Maclaurin's and Taylor's theorems for expansion of a function in an infinite series, Taylor's theorem in finite form with Lagrange remainder.

Unit-III: Integral Calculus
Integration of rational and irrational functions, Evaluation of definite integrals, Reduction formulae of $\int\sin^n xdx$, $\int\cos^n xdx$, $\int\tan^n xdx$, $\int\sec^n xdx$ and $\int\sin^m x \cos^n xdx$, Special integrals, Differentiation and integration under the sign of integration (Beta and Gamma functions are excluded).

Unit-IV: Application of Integral Calculus
Curvature; Asymptotes of general algebraic curves, Asymptotes parallel to axes; Symmetry, Concavity and convexity, Points of inflection, Tangents at origin, Multiple points, Position and nature of double points; Tracing of Cartesian, polar and parametric curves, Length of plane curve and area bounded by plane curves, Volume and surface area of solid of revolution.

Reference Books:
1.   D. Chatterjee (2009). *Analytical Geometry: Two and Three Dimensions*. Narosa Publishing House.
2.   Lalji Prasad (2019). *Differential Calculus*, Paramount Publication.
3.   A. D. Dasgupta, S. B. Prasad & R. S. Prasad (2021). *Degree level Integral Calculus*, Bharti Bhawan.

XXV. SKILL ENHANCEMENT COURSE- SEC 1:
THEORY OF SETS, NUMBERS & EQUATIONS

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03)   **Theory: 45 Lectures**

Course Objectives & Learning Outcome:
This course will enable the students to:
1. Familiarize the basics of set, equivalence class and countability of sets which are essential part of the development of other important mathematical structures.
2. Learn basic number theory which is helpful in notion of higher algebra.
3. Generalize the idea of quadratic equations into higher degree polynomial equations.

UNIT-1: Set Theory
Relations, Equivalence relations, Equivalence classes, Functions, Composition of functions, Inverse of a function, Finite and infinite sets, Countable and uncountable sets, Cardinality of sets, cardinal numbers.

UNIT-2: Number Theory
The division algorithm, Divisibility and Euclidean algorithm, The fundamental theorem of arithmetic, Modular arithmetic and basic properties of congruences, Principles of mathematical induction and well ordering, Diophantine equations.

UNIT-3: Theory of Equations
Elementary theorems on the roots of an equations including Cardan's method, The remainder and factor theorems, Synthetic division, Factored form of a polynomial, The Fundamental theorem of algebra, Relations between the roots and the coefficients of polynomial equations, Imaginary roots, Integral and rational roots; The nth roots of unity, De Moivre's theorem for integer and rational indices and its applications.

Books Recommended:
1. M. K. Gupta (2008). *Discrete Mathematics.* Krishna Prakashan.
2. S. B. Malik (2008). *Basic Number Theory.* Vikas Publishing House.
3. Lalji Prasad (2016). *Theory of Equations.* Paramount Publications.

SEMESTER II

CV.   MAJOR COURSE- MJ 2:
MULTIVARIABLE CALCULUS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Learn conceptual variations while advancing from one variable to several variables in calculus.
2. Inter-relationship amongst the line integral, double and triple integral formulations.
3. Applications of multivariable calculus in understanding the architecture of curves and surfaces in plane and space etc.
4. Realize importance of Green, Gauss and Stokes' theorems in other branches of mathematics.

Course Content:
Unit-I: Partial Derivatives
Functions of several variables, Partial differentiation, Chain rule, Directional derivatives, Higher order partial derivatives, Total differential and differentiability, Jacobians, Change of variables, Euler's theorem for homogeneous functions, Envelopes and evolutes, Maxima and Minima of a function of two variables, Lagrange's multipliers.

Unit-II: Double & Triple Integration.
 Double integration over rectangular and nonrectangular regions, Double integrals in polar coordinates, Applications of Double integrals (surface area), Triple integrals, Volume by triple integrals, Triple integration in cylindrical and spherical coordinates, Change of variables in double and triple integrals.

Unit-III: Vector Field
Vector point function, Scalar point function, Differentiation of a vector function, Derivatives of a sum of vectors, Derivatives of a product of vectors, Gradient, Divergence and Curl and vector identities.

Unit-IV: Green's, Stokes' and Gauss Divergence Theorem
Line integrals, Applications of line integrals: Mass and Work, Fundamental theorem for line integrals, Conservative vector fields, Green's theorem, Area as a line integral, Surface integrals, Stokes' theorem, The Gauss divergence theorem.

Reference Books:
1. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley.
2. James Stewart (2012). *Multivariable Calculus* (7th edition). Brooks/Cole. Cengage.
3. A. S. Dasgupta & S. B. Prasad (2017). *Degree Level Vector Analysis*. Bharti Bhawan.
4.   Lalji Prasad (2019). *Differential Calculus*. Paramount Publication.

CVI.   MAJOR COURSE- MJ 3:
REAL ANALYSIS-I & MATRICES-I

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Understand many properties of the real line $\mathbb{R}$ and learn to define sequence in terms of functions from $\mathbb{R}$ to a subset of $\mathbb{R}$.
2. Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and to calculate their limit superior, limit inferior, and the limit of a bounded sequence.
3. Apply the ratio, root, alternating series and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers.
4. Learn some of the properties of Riemann integrable functions, and the applications of the fundamental theorems of integration.
5. Assimilate notions of matrix operations and cultivate them in calculating ranks and solve system of linear equations.

Course Content:
Unit-I: Real Number System
Algebraic and order properties of $\mathbb{R}$, Absolute value of a real number; Bounded above and bounded below sets, Supremum and infimum of a nonempty subset of $\mathbb{R}$, The completeness property of $\mathbb{R}$, Archimedean property, Density of rational numbers in $\mathbb{R}$, Definition and types of intervals, Neighborhood of a point in $\mathbb{R}$, Open, closed and perfect sets in $\mathbb{R}$

Unit-II: Sequences of Real Numbers
Convergent sequence, Limit of a sequence, Bounded sequence, Limit theorems, Monotone sequences, Weierstrass' theorem for – sequences, Monotone convergence theorem, Subsequences, Bolzano sequences, Limit superior and limit inferior of a sequence of real numbers, Cauchy sequence, Cauchy's convergence criterion.

Unit-III: Infinite Series
Convergence and divergence of infinite series of positive real numbers, Necessary condition for convergence, Cauchy criterion for convergence; Tests for convergence of positive term series; Basic comparison test, Limit comparison test, D'Alembert's ratio test, Cauchy's nth root test, Integral test; Alternating series, Leibniz test, Absolute and conditional convergence.

Unit-IV: Matrices and Applications
Matrix operations, Row reduction and echelon forms, The rank of a matrix, Systems of linear equations.

Reference Books:
1.   Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley.
2. Shanti Narayan & M. D. Raisinghania (2020). *Elements of Real Analysis*. S. Chand.
3. Shanti Narayan & P. K. Mittal (2010). *A Textbook of Matrices*. S. Chand.
4. A. R. Vashishtha (2014). *Matrices*. Krishna Prakashan.

CVII. SKILL ENHANCEMENT COURSE- SEC 2:
DISCRETE MATHEMATICS

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) **Theory: 45 Lectures**

Course Objectives & Learning Outcome:
This course will enable the students to:
1. Stretch the concept of set theory into discrete mathematical structure called partially ordered set.
2. Study the lattices and related properties.
3. Learn representation of many physical problems diagrammatically (called graphs) and develop the methods of solution through various Graph theoretic techniques.

UNIT-I: Posets
Definitions, examples and basic properties of partially ordered sets (poset), Order isomorphism, Hasse diagrams, Dual of a poset, Duality principle, Maximal and minimal elements, Least upper bound and greatest upper bound, Building new poset, Maps between posets.

UNIT-II: Lattices
Lattice as Poset, Lattices as algebraic structures, Sublattices, Products and homomorphisms; Definitions, examples and properties of modular and distributive lattices; Complemented, relatively complemented and sectionally complemented lattices.

UNIT-III: Graph Theory
Definition, examples and basic properties of graphs, Königsberg bridge problem; Subgraphs,
Complete graphs, Bipartite graphs, Isomorphism of graphs, Paths and circuits, Eulerian Circuits, Hamiltonian Cycles, Adjacency Matrix, Weighted Graph, Traveling Salesman's Problem, Shortest Path, Dijkstra's Algorithm.

Books Recommended:
1. M. K. Gupta (2008). *Discrete Mathematics.* Krishna Prakashan.
2. Edgar G. Goodaire and Michael M. Parmenter (2003). *Discrete Mathematics with Graph Theory.* Pearson.

SEMESTER III

CVIII. MAJOR COURSE- MJ 4:
ORDINARY DIFFERENTIAL EQUATIONS-I

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Understand the genesis of ordinary differential equations.
2. Learn various techniques of getting exact solutions of solvable first order differential equations and linear differential equations of higher order.
3. Grasp the concept of a general solution of a linear differential equation of an arbitrary order and also learn a few methods to obtain the general solution of such equations.
4. Formulate mathematical models in the form of ordinary differential equations to suggest possible solutions of the day to day problems arising in physical, chemical and biological disciplines.

Course Content:
Unit-I: First Order Differential Equations
Basic concepts and genesis of ordinary differential equations, Order and degree of a differential equation, Differential equations of first order and first degree, Equations in which variables are separable, Homogeneous equations, Linear differential equations and equations reducible to linear form, Exact differential equations, Integrating factor, First order higher degree equations solvable for x, y and p. Clairaut's form and singular solutions. Statement of Picard's theorem for the existence and uniqueness of the solutions of the first order differential equations.

Unit-II: Second Order Linear Differential Equations
Statement of existence and uniqueness theorem for linear differential equations, General theory of linear differential equations of second order with variable coefficients, Solutions of homogeneous linear ordinary differential equations of second order with constant coefficients, Transformations of the equation by changing the dependent/independent variable, Method of variation of parameters and method of undetermined coefficients.

Unit-III: Higher Order Linear Differential Equations
Linearly dependent and linearly independent solutions on an interval, Wronskian and its properties, Concept of a general solution of a linear differential equation, Linear homogeneous and non-homogeneous equations of higher order with constant coefficients, Euler-Cauchy equation, Method of variation of parameters and method of undetermined coefficients.

Unit-IV: Applications
Orthogonal trajectories, Acceleration-velocity model, Minimum velocity of escape from Earth's gravitational field, Growth and decay models, Malthusian and logistic population models, Radioactive decay, Drug assimilation into the blood of a single cold pill.

Reference Books:
2. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley.
3. M. D. Raisinghania (2013). *Ordinary and Partial Differential Equations* (15th edition). S. Chand.
4. B. Rai, D. P. Choudhury & H. I. Freedman (2013). *A Course in Ordinary Differential Equations* (2nd edition). Narosa.

CIX.   MAJOR COURSE- MJ 5:

ABSTRACT ALGEBRA-I & MATRICES-II

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives &Learning Outcomes:
This course will enable the students to:
1. Recognize the mathematical objects called groups.
2. Link the fundamental concepts of groups and symmetries of geometrical objects.
3. Explain the significance of the notions of cosets, normal subgroups, and factor groups.
4. Analyze consequences of Lagrange's theorem.
5. Learn about structure preserving maps between groups and their consequences.
6. Comprehend the notion of eigenvalues and eigen functions and related results.

Course Content:
Unit-I: Groups and Subgroups
Definition and examples of groups including dihedral, permutation and quaternion groups, Elementary properties of groups. Subgroups and examples of subgroups, Cyclic groups, Properties of cyclic groups, Lagrange's theorem, Euler phi function, Euler's theorem, Fermat's little theorem.

Unit-II: Normal Subgroups and Permutation Groups
Properties of cosets, Normal subgroups, Simple groups, Factor groups, Cauchy's theorem for finite abelian groups; Centralizer, Normalizer, Center of a group, Product of two subgroups; Classification of subgroups of cyclic groups, Cycle notation for permutations, Properties of permutations, Even and odd permutations, alternating groups, Cayley's theorem and its applications.

UNIT-III: Group Homomorphisms
Group homomorphisms, Properties of homomorphisms, Group isomorphisms, Properties of isomorphisms; First, second and third isomorphism theorems for groups.

UNIT-IV: Eigenvalues & Eigen functions of a Matrix
Eigenvalues and eigen vectors, The characteristic equation and the Caley-Hamilton theorem.

Reference Books:
1. P. B. Bhattacharya, S. K. Jain & S. R. Nagpaul (2003). *Basic Abstract Algebra (*2nd edition). Cambridge University Press.
2. S. Singh & Q. Zamiruddin (2022). *Modern Algebra.,* Vikas Publishing House.
3. John B. Fraleigh (2007). *A First Course in Abstract Algebra* (7th edition). Pearson.
4. Joseph A. Gallian (2017). *Contemporary Abstract Algebra* (9th edition). Cengage.
5. N. S. Gopalakrishnan (1986). *University Algebra.* New Age International Publishers.
6. N. Herstein (2006). *Topics in Algebra* (2nd edition). Wiley India.
7. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley.
8. A. R. vashishtha (2014). *Matrices*. Krishna Prakashan.

CX.   SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

A Common Syllabus for FYUGP   (Credits: Theory-03) **45 Hours**

Instruction to Question Setter for
End Semester Examination (ESE):
*There will be **objective type test** consisting of **Seventy-five questions of 1 mark each**. Students are required to mark their answer on **OMR Sheet** provided by the University.*

Course Objectives:
The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

Y. INTRODUCTION TO COMPUTER SYSTEM

1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU)   **(3 Hours)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer   **(4 Hours)**

3. Operating system: What is an Operating System, Operating System Examples, Functions of Operating System (Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting
(6 Hours)

4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages   **(4 Hours)**

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails.   **(6 Hours)**

Z. MICROSOFT OFFICE 2016 AND LATEST VERSIONS

6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents
        (7 Hours)

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation, slide show, Master Slides, Creating photo album, Rehearse timing and record narration   **(5 Hours)**

9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning   **(4 Hours)**

Reference Books
96.   Nishit Mathur, Fundamentals of Computer, APH publishing corporation (2010)
97.   Neeraj Singh, Computer Fundamentals (Basic Computer), T Balaji, (2021)
98.   Joan Preppernau, Microsoft Power Point 2016 step by step, Microsoft press (2015)
99.   Douglas E Corner, The Internet Book 4th Edition, prentice –Hall (2009)
100.   Steven Welkler, Office 2016 for beginners, Create Space Independent Publishing Platform (2016)

101.   Wallace Wang, Microsoft Office 2019, Wiley (January 2018)
102.   Noble Powell, Windows 11 User Guide For Beginners and Seniors, ASIN, (October 2021)

SEMESTER IV

CXI.   MAJOR COURSE- MJ 6:
COMPLEX ANALYSIS-I

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Visualize complex numbers as points of $\mathbb{R}^2$ and stereographic projection of complex plane on the Riemann sphere.
2. Understand the significance of differentiability and analyticity of complex functions leading to the Cauchy−Riemann equations.
3. Understand the convergence, term by term integration and differentiation of a power series.
4. Learn Taylor and Laurent series expansions of analytic functions
5. Understand notion of conformal representation and bilinear transformation.

Course Content:
Unit-I: Complex Plane and functions.
Complex numbers and their representation, algebra of complex numbers; Complex plane, Open set, Domain and region in complex plane; Stereographic projection and Riemann sphere; Complex functions and their limits including limit at infinity; Continuity.

Unit-II: Analytic Functions and Cauchy−Riemann Equations
Differentiability of a complex valued function, Cauchy−Riemann equations, Harmonic functions, necessary and sufficient conditions for differentiability, Analytic functions; Analyticity and zeros of exponential, trigonometric and logarithmic functions; Branch cut and branch of multi-valued functions.

Unit-III: Power Series
Sequences, Series and their convergence, Taylor series and Laurent series of analytic functions, Power series, Radius of convergence, Integration and differentiation of power series, Absolute and uniform convergence of power series.

Unit-IV: Conformal Representation
Transformation, Jacobian, Conformal transformation, Some general transformations, Bilinear transformation, Critical points, Fixed points, Cross ratio, Preservance of cross ratio, Fixed points of bilinear transformation.

Reference Books:
1. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley.
2. J. W. Brown & R. V. Churchill (2009). *Complex Variables and Applications.* McGraw-Hill International Ed.
3. Lars V. Ahlfors (2017). *Complex Analysis* (3rd edition). McGraw-Hill Education.
4. J. N. Sharma (2014). *Functions of a complex variable.* Krishna Prakashan.
5. J. K. Goyal & K. P. Gupta (2008). *Functions of a complex variable.* Pragati Prakashan

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CXII. MAJOR COURSE- MJ 7:
MECHANICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Familiarize with subject matter, which has been the single centre, to which were drawn mathematicians, physicists, astronomers, and engineers together.
2. Understand necessary conditions for the equilibrium of particles acted upon by various forces and learn the principle of virtual work for a system of coplanar forces acting on a rigid body.
3. Determine the centre of gravity of some materialistic systems and discuss the equilibrium of a uniform cable hanging freely under its own weight.
4. Deal with the kinematics and kinetics of the rectilinear and planar motions of a particle including the constrained oscillatory motions of particles.
5. Learn that a particle moving under a central force describes a plane.

Course Content:
Unit-I: Statics
Equilibrium of a particle, Equilibrium of a system of particles, Necessary conditions of equilibrium, Moment of a force about a point, Moment of a force about a line, Couples, Moment of a couple, Equipollent system of forces, Work and potential energy, Principle of virtual work for a system of coplanar forces acting on a particle or at different points of a rigid body, Forces which can be omitted in forming the equations of virtual work.

Unit-II: Centre of Gravity and Common Catenary
Centre of gravity of plane area including a uniform thin straight rod, triangle, circular arc,
Semicircular area and quadrant of a circle, Centre of gravity of a plane area bounded by a
Curve, Centre of gravity of a volume of revolution; Flexible strings, Common catenary, Intrinsic and Cartesian equations of the common catenary, Approximations of the catenary.

Unit-III: Rectilinear Motion
Simple harmonic motion (SHM) and its geometrical representation, SHM under elastic forces, Motion under inverse square law, Motion in resisting media, Concept of terminal velocity, Motion of varying mass.

Unit-IV: Motion in a Plane
Kinematics and kinetics of the motion, Expressions for velocity and acceleration in Cartesian, Polar and intrinsic coordinates; Motion in a vertical circle, projectiles in a vertical plane and cycloidal motion.

Reference Books:
1. P. L. Srivatava (1964). Elementary Dynamics. Ram Narin Lal, Beni Prasad Publishers Allahabad.
2. S. Ramsey (2009). Statics. Cambridge University Press.
3. S. Ramsey (2009). Dynamics. Cambridge University Press.
4. R. S. Varma (1962). A Text Book of Statics. Pothishala Pvt. Ltd.
5. A. R. Vashishtha (2020). *Statics and Dynamics*. Krishna.

CXIII. MAJOR COURSE- MJ 8:
LINEAR PROGRAMMING

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Analyze and solve linear programming models of real life situations.
2. Provide graphical solutions of linear programming problems with two variables, and illustrate the concept of convex set and extreme points.
3. Understand the theory of the simplex method.
4. Know about the relationships between the primal and dual problems, and to understand sensitivity analysis.
5. Learn about the applications to transportation and assignment.

Course Content:
Unit-I: Linear Programming Problem, Convexity and Basic Feasible Solutions
Formulation, Canonical and standard forms, Graphical method; Convex and polyhedral sets, Hyperplanes, Extreme points; Basic solutions, Basic Feasible Solutions, Reduction of feasible solution to basic feasible solution, Correspondence between basic feasible solutions and extreme points.

Unit-II: Simplex Method
Optimality criterion, Improving a basic feasible solution, Unboundedness, Unique and alternate optimal solutions; Simplex algorithm and its tableau format; Artificial variables, Two-phase method, Big-M method.

Unit-III: Duality
Formulation of the dual problem, Duality theorems, Complimentary slackness theorem, Economic interpretation of the dual, Dual-simplex method.

Unit-IV: Applications to Transportation & Assignment Problems
Definition and formulation, Methods of finding initial basic feasible solutions: Northwest-corner rule, Least-cost method, Vogel approximation method; Algorithm for obtaining optimal solution. Assignment Problem: Mathematical formulation and Hungarian method.

Reference Books:
1. Mokhtar S. Bazaraa, John J. Jarvis & Hanif D. Sherali (2010). *Linear Programming and Network Flows* (4th edition). John Wiley & Sons.
2. G. Hadley (2002). *Linear Programming*. Narosa Publishing House.
3. Hamdy A. Taha (2017). *Operations Research: An Introduction* (10th edition). Pearson.
4. S. D. Sharma (2012). *Operation Research (Theory Methods and Applications)*. Kedar Nath.
5. R. K. Gupta (2014). *Linear Programming.* Krishna prakashan.
6. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley.

SEMESTER V

CXIV. MAJOR COURSE- MJ 9:
REAL ANALYSIS-II

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)　**Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Know analytical approach to limit and continuity of a real function.
2. Understand the differentiability of a real function from analytical stand point.
3. Learn theory of Integration from Riemann's approach.
4. Determine the convergence of improper integrals.
5. Grasp the Beta & Gamma functions and their properties along with multiple integrals and their extensions.

Course Content:
Unit-II: Limit and Continuity
Limit: δ - ε definition of limit of a real valued function, Limit at infinity and infinite limits; *Continuity:* Continuity of a real valued function, Properties of continuous functions, Intermediate value theorem, Geometrical interpretation of continuity, Types of discontinuity; Uniform continuity.

Unit-III: Differentiability
Differentiability of a real valued function, Geometrical interpretation of differentiability, Relation between differentiability and continuity, Differentiability and monotonicity, Chain rule of differentiation; Darboux's theorem, Rolle's theorem, Lagrange's mean value theorem, Cauchy's mean value theorem, Geometrical interpretation of mean value theorems.

Unit-IV: Riemann Integration
Riemann integral, Integrability of continuous and monotonic functions, Fundamental theorem of integral calculus, First mean value theorem, Bonnet and Weierstrass forms of second mean value theorems.

Unit-V: Improper integrals
Improper integrals, Dirichlet test and Abel's test for improper integrals, Definition & convergence of Beta & Gamma functions and their properties, duplication formula, inter-relation, Multiple Integrals of Dirichlet's form, Liouville's extension, Change of order of integration and change of variables.

Reference books:
1. Shanti Narayan & M. D. Raisinghania (2020). *Elements of Real Analysis.* S. Chand.
2. J. N. Sharma & A. R. Vashishtha (2014). *Mathematical Analysis-II.* Krishna Prakashan.
3. Robert G. Bartle & Donald R. Sherbert (2015). *Introduction to Real Analysis* (4th edition).Wiley India.

CXV. MAJOR COURSE- MJ 10:
LINEAR ALGEBRA & HYDROSTATICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Find eigenvalues and corresponding eigenvectors for a square matrix.
2. Understand the concepts of vector spaces, subspaces, bases, dimension and their properties.
3. Relate matrices and linear transformations, compute eigen values and eigen vectors of linear transformations.
4. Know isomorphisms of vector spaces and their duality.
5. Understand the basic properties of fluids under different circumstances.

Course Content:
Unit-I: Vector Spaces
Definition and examples, Subspace, Linear span, Quotient space and direct sum of subspaces, Linearly independent and dependent sets, Bases and dimension.

Unit-II: Linear Transformations
Definition and examples, Algebra of linear transformations, Matrix of a linear transformation, Change of coordinates, Rank and nullity of a linear transformation and rank-nullity theorem.

Unit-III: Further Properties of Linear Transformations
Isomorphism of vector spaces, Isomorphism theorems, Dual and second dual of a vector space, Transpose of a linear transformation, Eigen vectors and eigen values of a linear transformation, Characteristic polynomial and Cayley−Hamilton theorem, Minimal polynomial.

Unit-IV: Hydrostatics
Nature and properties of fluid pressure, Pressure of heavy liquids, Equilibrium of fluids under given system of forces, Centre of pressure, Thrust on plane and curved surfaces.

Reference Books:
1. A. R. Vashishtha, J. N. Sharma & A. K. Vashishtha (2010). *Linear Algebra.* Krishna Publication.
2. Kenneth Hoffman & Ray Kunze (2015). *Linear Algebra* (2nd edition). Prentice-Hall.
3. Vivek Sahai & Vikas Bist (2013). *Linear Algebra* (2nd Edition). Narosa Publishing House.
4. Gilbert Strang (2014). *Linear Algebra and its* Applications (2nd edition). Elsevier.
5. M. Rahman (2009). Hydrostatics (2nd edition). New Central Book Agency.

CXVI. MAJOR COURSE- MJ 11:
PARTIAL DIFFERENTIAL EQUATIONS & CALCULUS OF VARIATIONS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
11. Apply a range of techniques to solve first & second order partial differential equations.
12. Model physical phenomena using partial differential equations such as the heat and wave equations.
13. Understand problems, methods and techniques of calculus of variations.

Course Content:
Unit-I: First Order Partial Differential Equations

Order and degree of Partial differential equations (PDE), Concept of linear and non-linear partial differential equations, Partial differential equations of the first order, Lagrange's method, Some special type of equation which can be solved easily by methods other than the general method, Charpit's general method.

Unit-II: Second Order Partial Differential Equations with Constant Coefficients
Classification of linear partial differential equations of second order, Homogeneous and nonhomogeneous equations with constant coefficients.

Unit-III: Second Order Partial Differential Equations with Variable Coefficients
Partial differential equations reducible to equations with constant coefficient, Second order PDE with variable coefficients, Classification of second order PDE, Reduction to canonical or normal form; Monge's method; Solution of heat and wave equations in one and two dimensions by method of separation of variables.

Unit-IV: Calculus of Variations-Variational problems with fixed boundaries
Euler's equation for functional containing first order and higher order total derivatives, Functionals containing first order partial derivatives, Variational problems in parametric form, Invariance of Euler's equation under coordinates transformation.

Reference books:
1. M. D. Raisinghania (2013). *Ordinary and Partial Differential Equations* (15th edition). S. Chand.
2. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley.
3. A. S. Gupta (2004). *Calculus of Variations with Applications*. PHI Learning.

SEMESTER VI

CXVII.   MAJOR COURSE- MJ 12:
METRIC SPACE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Generalize the idea obtained in Real analysis.
2. Develop the concept of metric space and related properties.
3. Learn the idea of completeness of a space with its properties.
4. Understand the compactness of metric space.
5. Assimilate the idea of connectedness in metric space.

Course Content:
Unit-I: Concepts in Metric Spaces
Definition and examples of metric spaces, Open spheres and closed spheres, Neighbourhoods, Open sets, Interior, exterior and boundary points, Closed sets, Limit points and isolated points, Interior and closure of a set, Boundary of a set, Bounded sets, Distance between two sets, Diameter of a set, Subspace of a metric space.

Unit-II: Complete Metric Spaces and Continuous Functions
Cauchy and Convergent sequences, Completeness of metric spaces, Cantor's intersection theorem, Dense sets and separable spaces, Nowhere dense sets and Baire's category theorem, Continuous and uniformly continuous functions, Homeomorphism, Banach contraction principle.

Unit-III: Compactness
Weierstrass property, Compactness and $-$Compact spaces, Sequential compactness, Bolzano Borel theorem, Totally bounded sets, Equivalence of $-$ finite intersection property, Heine compactness and sequential compactness, Continuous functions on compact spaces.

Unit-IV: Connectedness
Separated sets, Disconnected and connected sets, Components, Connected subsets of $\mathbb{R}$, Continuous functions on connected sets.

Reference books:
1. P. K. Jain & Khalil Ahmad (2019). *Metric Spaces*. Narosa.
2. G. F. Simmons (2004). *Introduction to Topology and Modern Analysis*. McGraw-Hill.
3. Shanti Narayan & M. D. Raisinghania (2020). *Elements of Real Analysis.* S. Chand.
4. Satish Shirali & Harikishan L. Vasudeva (2006). *Metric Spaces*. Springer-Verlag.

CXVIII.   MAJOR COURSE- MJ 13:
ABSTRACT ALGEBRA-II

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Know the fundamental concepts in ring theory such as the concepts of ideals, quotient rings, integral domains, and fields.
2. Learn about structure preserving maps among Rings and their properties.
3. Deal with the Polynomial Rings over commutative rings and rational fields.
4. Grasp the idea of irreducibility of polynomials in a Ring.
5. Familiarize with Factorization theory and related algebra.

Unit-I: Rings and Ideals
Definitions and examples of Rings, commutative ring, ring with unity, unit in a ring, Matrix ring, Boolean ring, Ring of continuous functions, Nilpotent element, idempotent element, Integral domain, Division Ring and Field, Properties of ring, Subrings and Ideals, Prime ideal, maximal ideal, Algebra of Ideals, Characteristic of a ring.

Unit-II: Ring Homomorphism and Fields
Quotient rings, Ring Homomorphism and Isomorphism, Properties of Ring Homomorphism, Kernels and related properties, Fundamental theorem of Homomorphism, First and second theorems of Isomorphism, Field of Quotients.

Unit-III: Polynomial Rings
Polynomial rings over commutative ring and their basic properties, The division algorithm; Remainder theorem, Factor theorem, Polynomial rings over rational field, Irreducible and Reducible Polynomial, Primitive polynomial, Gauss lemma and Eisenstein's criterion.

Unit-IV: Factorization Theory
Divisibility, Euclidean Domains, Principal Ideal domain, Unique Factorization domain. Relationship among Euclidean domain, Principal Ideal domain, Unique factorization domain.

Reference books:
1. S. Singh & Q. Zamiruddin (2008). *Modern Algebra.* Vikas Publishing House.
2. P. B. Bhattacharya, S. K. Jain & S. R. Nagpaul (2003). *Basic Abstract Algebra* (2nd edition). Cambridge University Press.
3. John B. Fraleigh (2007). *A First Course in Abstract Algebra* (7th edition). Pearson.
4. Joseph A. Gallian (2017). *Contemporary Abstract Algebra* (9th edition). Cengage.
5. N. S. Gopalakrishnan (1986). *University Algebra.* New Age International Publishers.
6. I. N. Herstein (2006). *Topics in Algebra* (2nd edition). Wiley India

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CXIX. MAJOR COURSE- MJ 14:
PROBABILITY & STATISTICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Understand distributions in the study of the joint behaviour of two random variables.
2. Establish a formulation helping to predict one variable in terms of the other that is, correlation and linear regression.
3. Understand central limit theorem, which establish the remarkable fact that the empirical frequencies of so many natural populations, exhibit a bell-shaped curve.

Course Content:
Unit-I: Probability Functions and Moment Generating Function
Basic notions of probability, Conditional probability and independence, Baye's theorem; Random variables - Discrete and continuous, Cumulative distribution function, Probability mass/density functions; Transformations, Mathematical expectation, Moments, Moment generating function, Characteristic function.

Unit-II: Univariate Discrete and Continuous Distributions
Discrete distributions: Uniform, Bernoulli, Binomial, Negative binomial, Geometric and Poisson; Continuous distributions: Uniform, Gamma, Exponential, Chi-square, Beta and normal; Normal approximation to the binomial distribution.

Unit-III: Bivariate Distribution
Joint cumulative distribution function and its properties, Joint probability density function, Marginal distributions, Expectation of function of two random variables, Joint moment generating function, Conditional distributions and expectations.

Unit-IV: Sampling and Estimation Theory
Sampling Theory, Random samples and Random numbers, Sampling with and without Replacement, Sampling distribution of Means, Proportions, differences and Sums, Unbiased Estimates, Efficient estimates, Point and Interval estimates, Confidence-interval estimates of population parameters.

Reference Books:
1. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley.
2. Robert V. Hogg, Joseph W. McKean and Allen T. Craig, (2013). *Introduction to Mathematical Statistic.* Pearson Education, Asia.
3. Irwin Miller and Marylees Miller, John E. Freund (2014). *Mathematical Statistics with Applications*, 7th Ed., Pearson Education, Asia.
4. S C Gupta & V K Kapoor (2014). *Fundamentals of Mathematical Statistics*. S. Chand.

CXX. MAJOR COURSE- MJ 15:
NUMERICAL ANALYSIS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Obtain numerical solutions of algebraic and transcendental equations.
2. Find numerical solutions of system of linear equations and check the accuracy of the solutions.
3. Learn about various interpolating and extrapolating methods.
4. Apply various numerical methods to differentiation and integration.

Course Content:

Unit-I: Numerical Methods for Solving Algebraic and Transcendental Equations
Round-off error and computer arithmetic, Local and global truncation errors, Algorithms and convergence; Bisection method, False position method, Fixed point iteration method, Newton's method and secant method for solving equations.

Unit-II: Numerical Methods for Solving Linear Systems
Partial and scaled partial pivoting, Lower and upper triangular (LU) decomposition of a matrix and its applications, Thomas method for tridiagonal systems; Gauss – Jacobi, Gauss – Seidel and successive over-relaxation (SOR) methods.

Unit-III: Interpolation
Lagrange and Newton interpolations, Piecewise linear interpolation, Cubic spline interpolation, Finite difference operators, Gregory–Newton forward and backward difference interpolations.

Unit-IV: Numerical Differentiation and Integration
First order and higher order approximation for first derivative, Approximation for second derivative; Derivative using forward, backward and central difference interpolation formulae, General quadrature formula, Trapezoidal rule, Simpson's rules and error analysis, Weddle's rule, Newton-Cote's method. Solution of ordinary differential equations: Picard's method of successive approximations.

Reference Books:
1. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley.
2. Wiley Brian Bradie (2006), *A Friendly Introduction to Numerical Analysis*. Pearson.
3. P.P. Gupta, G.S. Malik, J.P. Chauhan (2020). *Calculus of Finite Differences & Numerical Analysis*, Krishna Publication.
4. G. Shankar Rao (2018). *Numerical Analysis*. New Age.

SEMESTER VII

CXXI. MAJOR COURSE- MJ 16:
ADVANCED MECHANICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives &Learning Outcomes:
This course will enable the students to:
1. Understand the reduction of force system in three dimensions to a resultant force acting at a base point and a resultant couple, which is independent of the choice of base of reduction.
2. Learn about a nul point, a nul line, and a nul plane with respect to a system of forces acting on a rigid body together with the idea of central axis.
3. Know the inertia constants for a rigid body and the equation of momental ellipsoid together with the idea of principal axes and principal moments of inertia and to derive Euler's equations of motion of a rigid body, moving about a point which is kept fixed.
4. Study the kinematics and kinetics of fluid motions to understand the equation of continuity in Cartesian, cylindrical polar and spherical polar coordinates which are used to derive Euler's equations and Bernoulli's equation.

Course Content:
Unit-I: Statics in Space
Forces in three dimensions, Reduction to a force and a couple, Equilibrium of a system of particles, Central axis and Wrench, Equation of the central axis, Resultant wrench of two wrenches; Null points, lines and planes with respect to a system of forces, Conjugate forces and conjugate lines.

Unit-II: Motion of a Rigid Body
Moments and products of inertia of some standard bodies, Momental ellipsoid, Principal axes and moments of inertia; Motion of a rigid body with a fixed point, Kinetic energy of a rigid body with a fixed point and angular momentum of a rigid body, Euler's equations of motion for a rigid body with a fixed point, Velocity and acceleration of a moving particle in cylindrical and spherical polar coordinates, Motion about a fixed axis, Compound pendulum.

Unit-III: Kinematics of Fluid Motion
Lagrangian and Eulerian approaches, Material and convective derivatives, Velocity of a fluid at a point, Equation of continuity in Cartesian, cylindrical polar and spherical polar coordinates, Cylindrical and spherical symmetry, Boundary surface, Streamlines and pathlines, Steady and unsteady flows, Velocity potential, Rotational and irrotational motion, Vorticity vector and vortex lines.

Unit-IV: Kinetics of Fluid Motion
Euler's equations of motion in Cartesian, cylindrical polar and spherical polar coordinates; Bernoulli's equation, Impulsive motion.

Reference Books:
1. S. Ramsay (1960). *A Treatise on Hydromechanics, Part-II Hydrodynamics*. G. Bell & Sons.
2. F. Chorlton (1967). *A Textbook of Fluid Dynamics*. CBS Publishers.
3. Michel Rieutord (2015). *Fluid Dynamics, An Introduction*. Springer.
4. E. A. Milne (1965). *Vectorial Mechanics*, Methuen & Co. Limited. London.
5. A. R. Vashishtha (2007). *Dynamics*. Krishna Publication.
6. S. Swarupa (2003). *Fluid Dynamics*. Krishna Publication.

CXXII.　　　　　MAJOR COURSE- MJ 17:
ADVANCED ALGEBRA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)　**Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Learn in detail finite permutation groups and using group action they will be able to prove Sylow's theorems.
2. Familiarize the concept of solvability of groups.
3. Obtain matrix of a linear transformation, and its reduction to standard forms.
4. Explore the idea of various field extensions.
5. Know finite fields in detail and Fundamental theorem of Galois theory.

Course Content:
Unit-I: Solvable Groups and Sylow Theorems
Finite permutation groups S_n and A_n, Group action, Conjugate class, Class equation, Orbit -stabilizer theorem, Sylow's theorems (proofs using group actions), Normal and Subnormal series, Jordan-Holder theorem, Solvable groups, Nilpotent groups.

Unit-II: Linear Algebra
Matrix of a linear transformation, Canonical Forms – Similarity of linear transformations, Invariant subspaces, Eigen values and Eigen vectors, Reduction to diagonal, triangular and Jordan forms, The primary decomposition theorem.

Unit-III: Field Extension
Extension fields, Finite extension, Algebraic and transcendental extensions, Splitting fields, Existence and uniqueness, Separable and inseparable extension, Normal extensions, Perfect fields.

Unit-IV: Finite Field
 Finite fields, Theorems on finite fields, Primitive elements, Algebraically closed fields, Automorphism of extensions, Galois extension, Fundamental theorem of Galois Theory.

Reference books:
1. D.S. Dummit, R.M. Foote (2003). *Abstract Algebra*. John Wiley & Sons.
2. I.N. Herstein (1975). *Topics in Algebra.* Wiley Eastern Ltd., New Delhi.
3. M. Artin (1991). *Algebra.* Prentice-Hall of India.
4. K. Hoffman and R. Kunze (1997). *Linear Algebra* (2nd edition). Prentice Hall of India, New Delhi.
5. N.S. Gopala Krishnan (2008). *University Algebra.* New Age Int. Publ.
6. William J Gilbert (2005). *Modern Algebra with Applications.* Wiley India.

CXXIII.   MAJOR COURSE- MJ 18:
PROGRAMMING IN C & MATLAB

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcomes:
This course will enable the students to:
1. Familiarize with two computer programming languages C & MATLAB.
2. Understand various terms of C & MATLAB necessary to write a computer program.
3. Learn various inbuilt functions and to create function files.
4. Use MATLAB as calculator to solve many mathematical problems.
5. Solve various mathematical problems Numerically and plot Graphs.

Course Content:
Unit-I: Introduction to C Language
Overview of C: History of C, Importance of C, Structure of a C Program. *Elements of C*: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant. *Input/output*: Unformatted & formatted I/O function, Input functions viz. scanf(), getch(), getche(), getchar(), gets(), output functions viz. printf(), putch(), putchar(), puts(). *Operators & Expression*: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators. Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity. *Decision making & branching*: Decision making with IF statement, IF-ELSE statement, Nested IF statement, ELSE-IF ladder, switch statement, goto statement. *Decision making & looping*: For, while, and do-while loop, jumps in loops, break, continue statement. *Understanding header files*: stdio.h, math.h, ctype.h and its function prototypes.

Unit-II: Functions
Definition, prototype, passing parameters, recursion. *Storage classes in C*: auto, extern, register and static storage class, their scope, storage, & lifetime. Structure, Union, enum. *Arrays*: Definition, types, initialization, processing an array, Strings & arrays. Pointer and Its implementation using Function, Structure, Union, *Array File Handling*: Needs of File Handling, File Modes, Type of Files, Open/Create, Read, Write, Delete, Copy, Rename, Searching etc.

Unit-III: Introduction to MATLAB
Elementary MATH Built-in –Functions, Creating Arrays, one-dimensional, two-dimensional arrays, Variables, Strings. Mathematical operations with arrays, Script files, Two dimensional plots, Functions and Function files.

Unit-IV: Programming in MATLAB
Relational and Logical operators, Conditional statements, the switch-case statement., Loops, Nested Loops and Nested conditional statements, The break and continue commands, , Polynomials, Curve Fitting and Interpolation, Applications to Numerical Analysis.

Reference books:
1. E. Balagurusamy (2018). *Computing Fundamentals and C Programming.* Tata McGraw-Hill.
2. Yashwant P. Kanetker (2016). *Let Us C.* BPB.
3. V. Rajaraman (1994). *Computer Programming in C*. PHI.
4. Amos Gilat (2012). *MATLAB- An Introduction with Applications.* Wiley India.

CXXIV.   MAJOR COURSE- MJ 19:
PRACTICAL: PROGRAMMING IN C & MATLAB

Marks: Pr (ESE: 3Hrs) =100	**Pass Marks: Pr (ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:

Course Objectives & Learning Outcome:
This course will enable the students to:
1. Be able to write programs in C language as well as MATLAB. They'll be benefited with the use of computer programming in their academics and future research work

Course Content:
Programming in C:
1. Write programs to understand different logics using Flow chart.
2. Write programs to understand printf, scanf, gets, getchar, puts, sqrt etc functions.
3. Write programs to illustrate the concepts of constants, variables and data types.
4. Write programs to illustrate operators and expressions in C.
5. Write programs to illustrate decision making and branching in C.
6. Write programs to illustrate decision making and looping in C Analysis of various programs, i.e, Find the syntax error, logical error and outputs.
7. Write programs to illustrate array in C.
8. Write programs to illustrate of user defined functions.
9. Write programs to illustrate structures and unions.
10. Write programs to illustrate concept of pointers, character strings and string manipulations.
11. Write programs to illustrate of user defined functions using pointers, array, structure, union etc.
12. Write programs to illustrate File Handling in C.

Programming in MATLAB:
1. Write programs to illustrate Built-in functions and Arrays
2. Write Programs to illustrate Script files, functions and function files
3. Write programs to illustrate two dimensional plots
4. Write programs to illustrate curve fitting and interpolation
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SEMESTER VIII

CXXV.　　　MAJOR COURSE- MJ 20:
ORDINARY DIFFERENTIAL EQUATIONS-II

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)　**Theory: 60 Lectures**

Course Objectives & Learning Outcome:
This course will enable the students to:
1. Know Picard's method of obtaining successive approximations of solutions of first order differential equations, passing through a given point in the plane and Power series method for higher order linear equations, especially in cases when there is no method available to solve such equations.
2. Learn the methods of solution of second and higher order ordinary differential equation.
3. Solve the Linear system of ordinary differential equations using eigenvalues and eigen functions and other methods.
4. Understand Strum-Lioville BVP and their solution using Green's function technique.

Course Content:
Unit-I: First Order ODE
Existence and uniqueness of the solution to ODE, Picard's existence theorem, Lipschitz condition, Uniqueness theorem, Picard's method of successive approximation.

Unit-II: Second and Higher Order ODE
Algebraic properties of solutions of homogeneous equations & Wronskian of second order ODE, n^{th} order ODE, Wronskian of a functions and its properties, Annihilator method to solve non homogeneous ODE with constant coefficients, initial value problem, Existence and uniqueness theorem.

Unit-III: Linear System of ODE's
Linear system of ODEs, Existence and Uniqueness of linear system, linear homogeneous system with constant coefficients, method of eigen value and eigen vectors, Fundamental solution, Reduction of higher order linear equation into first order linear equations

Unit-IV: Boundary Value Problem
Strum-Lioville boundary value problem with homogenous boundary conditions. Green's function, Green's function techniques for solving self-adjoint boundary value problem

Reference books:
1. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley.
2. E.A. Coddington and N. Levinson (1955). *Theory of Ordinary Differential Equations*. Mc Graw-Hill, NY.
3. M. Brawn (1992). *Differential equations and their applications*. Springer-Verlag New York.
4. A. Chakrabarti (1990). *Elements of ordinary differential equations and special functions.* New Age, Int. Publ.
5. M. D. Raisinghania (2001). *Advanced differential equations.* S. Chand and Company.
6. A. Coddington (1987). *An introduction to Ordinary Differential equations.* Prentice Hall of India, New Delhi

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CXXVI.   ADVANCED MAJOR COURSE- AMJ 1:
REAL ANALYSIS-III

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcome:
This course will enable the students to:
1. Relate concepts of uniform convergence of sequence and series of functions.
2. Upgrade the concept of function of one variable to the several variables and understand the generalized concept of derivatives as a linear transformation.
3. Understand the generalized concepts of Chain rule and Taylor's theorem.
4. Assimilate the notion of inverse function theorem, implicit function theorem and Jacobians.
5. Be familiar with the notion of measure theory and its generalizations.
6. Upgrade the concept of integration to that of Lebesgue theory.

Course Content:
Unit-I: Uniform Convergence
Sequences and series of functions, pointwise and uniform convergence. Cauchy criterion for uniform convergence, M_n-Test, Weierstrass M-test, Abel's and Dirichlet's test for uniform convergence, uniform convergence and continuity, preservation of differentiability and integrability theorems.

Unit-II:– Functions Of Several Variables
Derivative of functions in an open subset of R^n into R^m as a linear transformation, Chain rule, Partial derivatives, Taylor's theorem, Inverse function theorem, Implicit function theorem, Jacobians.

Unit-III: Measure Theory
Motivation and Concept of Measure of a set, Outer measure, Measurable sets, Lebesgue measures, A non-measurable set, Measurable functions, Littlewood's three principles.

Unit-IV: The Lebesgue Integral
Lebesgue integral of a bounded function over a finite measure, The integral of a non-negative unction, The general Lebesgue integral, Convergence theorems, Convergence in measure.

Reference books:
1. Walter Rudin (2017). *Principles of Mathematical Analysis.* 3 rd ed. McGraw-Hill.
2. I. K. Rana (2007). *An Introduction to Measure and Integration.* Narosa.
3. H. K. Pathak (2021). *Real Analysis.* Shree Shiksha Sahitya Prakashan.
4. P. P. Gupta, G. S. Malik & S. K. Mittal (2008). *Measure Theory.* Pragati Prakashan.
5. J. N. Sharma & A. R. Vashishtha (2014). *Mathematical Analysis-II.* Krishna Prakashan.

CXXVII.   ADVANCED MAJOR COURSE- AMJ 2:
COMPLEX ANALYSIS-II

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcome:
This course will enable the students to:
1. Learn the role of Cauch-Goursat theorem and Cauchy integral formula in evaluation of contour integrals.
2. classify the nature of singularity, poles and residues and application of Cauchy Residue theorem.
3. Study the meromorphic function and related results.
4. Develop the understanding of Analytic continuation and its applications.

Course Content:
Unit –I: Complex Integration
Line integral, Path independence, Complex integration, Cauchy-Goursat Theorem, Cauchy's Integral formula, Higher order derivatives, Morera's Theorem, Cauchy's inequality, Liouville's theorem, Maximum modulus principle, Minimum modulus principle.

Unit-II: Singularities and Cauchy Residue Theorem
Zero of a function, Singular point, Types of singularities, isolated poles and zeros, limiting point of poles and zeros, Residue at a pole, Residue at infinity, Cauchy Residue theorem, Jordan's lemma, Evaluation of integrals.

Unit-III: Meromorphic Functions
Definitions of Meromorphic and entire functions, Mittag-Lefler's expansion, Number of poles and zeros of a meromorphic function, Principle of argument, Rouche's theorem, Fundamental theorem of Algebra.

Unit-IV: Analytic Continuation and Its Application
Definition of Analytic continuations and related problems, Uniqueness theorem of Analytic continuation, Standard method/ Power series method of Analytic continuation along a curve, Singularity on the circle of convergence of power series.

Reference books:
1. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley
2. Churchill and Brown (2009), *Complex variables and applications.* McGraw-Hill Pub.Company.
3. Walter Rudin (1966). *Real and Complex Analysis*. Mc Graw Hill Book Co.
4. E.C. Titchmarsh (1976). *The Theory of Functions.* Oxford University Press. London.
5. J. N. Sharma (2014). *Functions of a complex variable.* Krishna Prakashan.
6. J. K. Goyal & K. P. Gupta (2008). *Functions of a complex variable.* Pragati Prakashan.
7. H. K. Pathak (2021). *Complex Analysis.* Shree Shiksha Sahitya Prakashan

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CXXVIII.   ADVANCED MAJOR COURSE- AMJ 3:
TOPOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives & Learning Outcome:
This course will enable the students to:
1. Be familiar with the Fundamental properties of a Topological space.
2. Learn concept of continuity and connectedness in Topological spaces.
3. Know countability and separation axioms of Topological spaces.
4. Study the compactness and related results.

Course Content:
UNIT-I: Fundamentals of A Topological Space
Definition and examples of topological spaces. Closed sets, Closure. Dense subsets. Neighbourhoods, Interior, exterior and boundary. Accumulation points and derived sets. Bases and sub-bases. Subspaces and relative topologies. Quotient topology

Unit-II: Continuity and Connectedness
Continuity and homeomorphism, Product of topological spaces, connected space and its properties.

Unit-III: Countability and Separation Axioms
First and Second countable spaces. Lindelof's theorem, separable spaces, second countability and separability. Separation axioms To, T1, T2, T3, T4: their Characterizations and basic properties. Urysohn's Lemma. Tietze extension theorem.

Unit-IV: Compactness
Compactness. continuous image of compact sets. Basic property of compactness. Compactness and finite intersection property Tychonoff's Theorem, One point compactification of a topological space.

Reference books:
1. K.D. Joshi (1983). *Introduction to General Topology.* Wiley Eastern Ltd.
2. W.J. Pervin (1964). *Foundations of General Topology.* Academic Press Inc. New York.
3. G.F. Simmons (2017). *Introduction to Topology and Modern Analysis.* Mc Graw Hill Int. book company.
4. J.R. Munkres (1974). *Topology A first course.* Prentice hall India Pvt. Ltd.
5. S. Lipschutz (1968). *General Topology.* Schaum's outline series.

COURSES OF STUDY FOR FYUGP IN **"MATHEMATICS" MINOR**

MINOR COURSE-1A 　　　　　　　　　　　　　　　　　　　　　　　　**(SEM-I)**

CXXIX. 　　　　MINOR COURSE- MN 1A:
CALCULUS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)　**Theory: 60 Lectures**

Course Objectives &Learning Outcomes:
This course will enable the students to:
1. Study the successive differentiation, expansions of functions, integration of rational and irrational functions and reduction formulae.
2. Trace curves and obtain length of curves along with volume and surface area of solid of revolution.
3. Familiarize with the idea of partial derivatives and its properties.
4. Evaluate double and triple integrals along with their applications.

Course Content:
Unit-I: Differential and Integral Calculus
Successive differentiation and Leibnitz theorem, Maclaurin's and Taylor's theorems for expansion of a function, Taylor's theorem in finite form with Lagrange remainder. Integration of rational and irrational functions, Evaluation of Definite Integrals, Reduction Formulae of $\int \sin^n x dx$, $\int \cos^n x dx$, $\int \tan^n x dx$ and $\int \sec^n x dx$.

Unit-II: Curvature, Asymptotes and Curve Tracing
Curvature; Asymptotes of general algebraic curves, Parallel asymptotes, Asymptotes parallel to axes; Symmetry, Concavity and convexity, Points of inflection, Tangents at origin, Multiple points, Position and nature of double points; Tracing of Cartesian, polar and parametric curves, Length of plane curve and area bounded by plane curves, Volume and surface area of solid of revolution.

Unit-III: Functions of Several Variables
Limit, continuity and first order partial derivatives, Higher order partial derivatives, Change of variables, Euler's theorem for homogeneous functions, Taylor's theorem, Total differentiation and Jacobians.

Unit-IV: Double and Triple Integrals
Double integration over rectangular and nonrectangular regions, Double integrals in polar coordinates, Triple integral over a parallelepiped and solid regions, Volume by triple integrals, Line integrals, Green's theorem, Area as a line integral, Surface integrals, Stokes' theorem, The Gauss divergence theorem.

Reference Books:
1. 　　　　Lalji Prasad (2019). *Differential Calculus.* Paramount Publication.
2. 　　　　A. D. Dasgupta, S. B. Prasad & R. S. Prasad (2021). *Degree level Integral Calculus.* Bharti bhawan.
3. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley
4. James Stewart (2012). *Multivariable Calculus* (7th edition). Brooks/Cole. Cengage.

MINOR COURSE-1B   **(SEM-III)**

CXXX.   MINOR COURSE- MN 1B:
SET THEORY & ALGEBRA

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives &Learning Outcomes:
This course will enable the students to:
1. Grasp the elementary idea of set theory like equivalence and countability.
2. Learn the algebraic structure of groups.
3. Study subgroups, cyclic and permutation groups.
4. Handle matrices and obtain their ranks, eigenvalues, eigenvectors and apply them in the solution of system of linear equations.

Course Content:
Unit-I: Set Theory and Algebra
Sets, Relations, Equivalence relations, Equivalence classes; Finite, countable and uncountable sets; The division algorithm, Divisibility and the Euclidean algorithm, Modular arithmetic and basic properties of congruences;

Unit-II: Groups, Subgroups
Definition and properties of a group, Abelian groups, Examples of groups including D_n (dihedral groups), Q_8 (quaternion group), $GL_n(R)$ or $GL(n, R)$ (general linear groups) and $SL_n(R)$ or $SL(n, R)$ (special linear groups); Subgroups and examples, Cosets and their properties, Lagrange's theorem and its applications.

Unit-III: Cyclic and Permutation Groups
Cyclic groups and properties, Classifications of subgroup of cyclic groups, Cauchy theorem for finite Abelian groups; Centralizer, Normalizer, Center of a group, Product of two subgroups, Permutation group and properties, Even and odd permutations, Cayley's theorem.

Unit-IV: Row Echelon Form of Matrices and Applications
Systems of linear equations, Row reduction and echelon forms, The rank of a matrix and its applications in solving system of linear equations; Matrix operations, Symmetric, skew- symmetric, self-adjoint, orthogonal, Hermition, skew-Hermition and unitary matrices; Eigenvectors and eigen values, The characteristic equation and the Cayley–Hamilton theorem.

Reference Books:
1. A. D. Dasgupta & S. N. Thakur (2021). *Degree Level Set Theory.* Bharti Bhawan.
2. A. D. Dasgupta & S. B. Prasad (2021). *Degree Level Abstract Algebra.* Bharti Bhawan.
3. A. D. Dasgupta & S. B. Prasad (2021). *Degree Level Matrices.* Bharti Bhawan.

MINOR COURSE-1C   **(SEM-V)**

CXXXI.   MINOR COURSE- MN 1C:
ODE & REAL ANALYSIS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives &Learning Outcomes:
This course will enable the students to:
1. Solve first and second order ordinary differential equations.
2. Understand the basic structure of set of real numbers.
3. Study the convergence of sequence and series of real numbers.

Course Content:
Unit-I: First Order Differential Equations
Basic concepts and genesis of ordinary differential equations, Order and degree of a differential equation, Differential equations of first order and first degree, Equations in which variables are separable, Homogeneous equations, Linear differential equations and equations reducible to linear form, Exact differential equations, Integrating factor, First order higher degree equations solvable for x, y and p, Clairaut's form and singular solutions.

Unit-II: Second Order Linear Differential Equations
Statement of existence and uniqueness theorem for the solution of linear differential equations, General theory of linear differential equations of second order with variable coefficients, Solutions of homogeneous linear ordinary differential equations of second order with constant coefficients, Method of variation of parameters and method of undetermined coefficients.

Unit-III: Real Numbers
The set of real numbers ($\mathbb{R}$) as an ordered field, Least upper bound properties of $\mathbb{R}$, Metric property and completeness of $\mathbb{R}$, Archimedean property of $\mathbb{R}$, Dense subsets of $\mathbb{R}$, Idea of Neighborhood of a point in $\mathbb{R}$, Open sets, limit point of a set and closed sets in $\mathbb{R}$, Convergence of Sequences in $\mathbb{R}$ Bounded and monotonic sequences, Convergent sequence and its limit, Limit theorems, Monotone convergence theorem, Subsequences, Cauchy sequence, Cauchy's convergence criterion.

Unit-IV: Infinite Series
Convergence of a series of positive real numbers, Necessary condition for convergence, Cauchy criterion for convergence; Tests for convergence: Comparison test, Limit comparison test, D'Alembert's ratio test, Cauchy's nth root test, Alternating series, Absolute and conditional convergence, Leibniz theorem.

Reference Books:
1. M. D. Raisinghania (2020). *Ordinary and Partial Differential Equations.* S. Chand.
2. Lalji Prasad (2016). *Real Analysis.* Paramount Publications.
3. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley
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MINOR COURSE-1D   (SEM-VII)

CXXXII.   MINOR COURSE- MN 1D:
PDE & COMPLEX ANALYSIS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives &Learning Outcomes:
This course will enable the students to:
1. Solve first and second order partial differential equations.
2. Evaluate simultaneous and iterated limits of a function of two variables.
3. Familiarize with the complex number representations and their algebra.
4. Study the analyticity of a function of complex variable.

Course Content:
Unit-I: First Order Partial Differential Equations
Genesis of Partial differential equations (PDE), Concept of linear and non-linear PDEs, Methods of solution of Simultaneous differential equations of the form: $dx/P(x,y,z) = dy/Q(x,y,z) = dz/R(x,y,z)$, Lagrange's method for PDEs of the form: $P(x,y,z)p+Q(x,y,z)q=R(x,y,z)$, where $p=\partial z/\partial x$ and $q=\partial z/\partial y$.

Unit-II: Second Order Partial Differential Equations with Constant Coefficients
Principle of superposition for homogeneous linear PDEs, Relation between solution sets of non-homogeneous linear PDEs and their corresponding homogeneous equations, Reducible and irreducible homogeneous equations and their solutions in various possible cases, Solution of non-homogeneous reducible equations using Lagrange's method for first order equations.

UNIT III: Function of two variables and Complex plane
Real Functions of Two Variables: Simultaneous and Iterated limits: Continuity, Partial Derivatives, Complex numbers and their representation, algebra of complex numbers; Complex plane Complex functions and their limits including limit at infinity; Continuity.

Unit-IV: Analytic Functions and Cauchy−Riemann Equations
Differentiability and analyticity; Cauchy−Riemann equations, Harmonic functions, Sufficient conditions for differentiability and analyticity.

Reference Books:
1. M. D. Raisinghania (2020). *Ordinary and Partial Differential Equations.* S. Chand.
2. Lalji Prasad (2019). *Complex Analysis.* Paramount Publications.
3. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). Wiley
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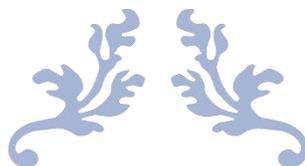
FYUGP

BOTANY HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented from 3rd Semester of Academic Session 2022-26

& From 1st Semester of Session 2023-27 Onwards

Members of Board of Studies for preparing Provisional Syllabus of the Four - Year Undergraduate Programme (FYUGP)

1. **Chairman -**

    Dr. Kunul Kandir
    Professor & Head
    University Department of Botany, Ranchi University, Ranchi

2. **Internal Member -**

    i. **Dr. Latika Sharan**
        Associate Professor
        University Department of Botany, Ranchi University, Ranchi

    ii. **Dr. Anita Mehta**
        Associate Professor
        University Department of Botany, Ranchi University, Ranchi

    iii. **Dr. Anil Kumar**
        Associate Professor
        University Department of Botany, Ranchi University, Ranchi

    iv. **Dr. Radha Krishna Jha**
        Associate Professor
        University Department of Botany, Ranchi University, Ranchi

    v. **Dr. Ladly Rani**
        Assistant Professor
        University Department of Botany, Ranchi University, Ranchi

    vi. **Dr. Smrity Prabha**
        Assistant Professor
        University Department of Botany, Ranchi University, Ranchi

    vii. **Dr. Shweta Nag**
        Assistant Professor
        University Department of Botany, Ranchi University, Ranchi

    viii. **Dr. Binod Kumar Mahto**
        Assistant Professor
        University Department of Botany, Ranchi University, Ranchi

3. **External Members -**

    i. **Prof. E. N. Siddiqui**
        University Professor (Retd.),
        University Department of Botany, Vinoba Bhave University,
        Hazaribagh

    ii. **Dr. Ishwari Prasad Gupta**
        Associate Professor, Department of Botany
        The Dean, Faculty of Science, D.S.P.M. University, Ranchi

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IQAC, RANCHI UNIVERSITY
RANCHI-834 001

Page 1 of 2

Professor & Head
Univ. Dept. of Botany
RANCHI UNIVERSITY, RANCHI

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

4.   **Special Invitee Member -**

   i.   **Dr. Jaikant Prasad Sinha**
           Associate Professor and Principal
           Department of Botany
           R.L.S.Y. College, Ranchi

   ii.   **Dr. Malay Bharti**
           Assistant Professor
           Department of Botany
           Doranda College, Ranchi

   iii.   **Mrs. Anshu Ankita Bara**
           H.O.D.,
           Department of Botany
           St. Paul College, Ranchi

5.   **Student Alumni Member -**

   i.   **Ms. Zeba Parween**
           Research Scholar
           University Department of Botany
           Ranchi University, Ranchi

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IQAC, RANCHI UNIVERSITY.
RANCHI-834 001

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Univ. Dept. of Botany
RANCHI UNIVERSITY, RANCH

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Table of Content

Students are Instructed to

Refer Syllabus of Allied/ Opted Subjects from R.U. Website

HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1ˢᵗ of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:
  - aa) Odd Semester: **From first Monday of August to third Saturday of December**
  - ab) Even Semester: **From first Monday of January to third Saturday of May**
- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
  - ➢ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
  - ➢ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
  - ➢ Bachelor's Degree after a 3-year (6 semesters) programme of study,
  - ➢ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
  - ➢ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

  aa) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.

  One credit for Theory   = <u>15 Hours of Teaching</u> i.e., 15 Credit Hours
  One credit for Practicum   = <u>30 Hours of Practical work</u> i.e., 30 Credit Hours

  ab) For credit determination, instruction is divided into three major components:

  Hours (L) – Classroom Hours of one-hour duration.
  Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
  Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.
- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

cxxix. The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

cxxx. No student will be detained in odd Semesters (I, III, V & VII).

cxxxi. To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

cxxxii. To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

cxxxiii. To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

cxxxiv. However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

cxxxv. Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

cxxxvi. To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year.

cxxxvii. A student has to pass in minimum 3 papers out of the total 4 papers.

cxxxviii. It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result of the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)													
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)													
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree													
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4
Exit Point: Bachelor's Degree with Hons. /Hons. with Research												**160**	**224**

Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME 2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	AEC-1	Language and Communication Skills (MIL 1 - Hindi/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Hindi)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4

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IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2
	VAC-2	Value Added Course-2	2
	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4

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RC/		Research Internship/Field Work/Dissertation OR	12/
AMJ-1		Advanced Major paper-1 (Disciplinary/Interdisciplinary Major)	4
AMJ-2		Advanced Major paper-2 (Disciplinary/Interdisciplinary Major)	4
AMJ-3		Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**160**

NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	xxvii. Discipline/ Interdisciplinary courses and xxviii. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64
Minor	xxvii. Discipline/ Interdisciplinary courses and xxviii. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9

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Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

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Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Double Major Courses		Credits
	Code	Papers	Credits
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:
AEC   Ability Enhancement Courses
SEC   Skill Enhancement Courses
IAP   Internship/Apprenticeship/ Project
MDC   Multidisciplinary Courses
MJ   Major Disciplinary/Interdisciplinary Courses
DMJ   Double Major Disciplinary/Interdisciplinary Courses
MN   Minor Disciplinary/Interdisciplinary Courses
AMJ   Advanced Major Disciplinary/Interdisciplinary Courses
RC   Research Courses

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AIMS OF BACHELOR'S DEGREE PROGRAMME IN BOTANY

The broad aims of bachelor's degree programme in Botany are:

22. The programme is designed to equip students with essential knowledge and technical skills to study plants and related subjects in a holistic manner.

23. The main aim is to train the learners in all areas of plant biology using appropriate combinations of core and elective papers with significant inter- disciplinary components.

24. Students would be exposed to cutting-edge technologies that are currently used in the study of plant life forms, their evolution and interactions with other organisms within the ecosystem. Students would also become aware of the social and environmental significance of plants and their relevance to the national economy.

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PROGRAM LEARNING OUTCOMES

The broad aims of bachelor's degree programme in Botany are:

(xlii)   Students will be able to understand and explain different specializations of Botany such as systematics, evolution, ecology, developmental biology, physiology, biochemistry, plant interactions with microbes and insects, morphology, anatomy, reproduction, genetics, cell and molecular biology of plants.

(xliii) Students will be trained in various analytical techniques of plant biology, use of plants as industrial resources or as support system for human livelihood and will be well versed with the use of transgenic technologies for both basic and applied research in plants.

(xliv)   Students will be able to identify various life forms of plants, design and execute experiments related to basic studies on evolution, ecology, developmental biology, physiology, biochemistry, plant interactions with microbes and insects, morphology, anatomy, reproduction, genetics, microbiology, molecular biology, recombinant DNA technology, transgenic technology. Students are also familiarized with the use of bioinformatics tools and databases and in the application of statistics to biological data.

(xlv)   Students will acquire core competency in the subject Botany and in allied subject areas.

(xlvi)   They will be able to use the evidence based comparative studies approach to explain the evolution of organism and understand the genetic diversity and its significance.

(xlvii) The students will be able to explain various physiological and metabolic processes unique to plants.

(xlviii) They would be able to elaborate on the concepts of gene, genome and the molecular processes of replication, transcription and translation.

(xlix)   They will be able to understand adaptation, development and behaviour of different forms of life.

(l)   The students will get an understanding of functioning of ecosystem and tracing the energy pyramids through nutrient flow.

(li)   Students will be able to demonstrate the experimental techniques and methods in plant sciences and have innovative research ideas.

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SEMESTER WISE COURSES IN BOTANY MAJOR-1 FOR FYUGP   2022 onwards

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	Microbiology, Phycology and Mycology	4	25	75	---
II	MJ-2	Non-Flowering Plants and Palaeobotany	4	25	75	---
	MJ-3	**Practical-I**	4	---	---	100
III	MJ-4	Plant Anatomy And Embryology	4	25	75	---
	MJ-5	**Practical-II**	4	---	---	100
IV	MJ-6	Ecology And Environmental Studies	4	25	75	---
	MJ-7	Plant Taxonomy & Economic Botany	4	25	75	---
	MJ-8	**Practical-III**	4	---	---	100
V	MJ-9	Cell Biology & Biochemistry	4	25	75	---
	MJ-10	Genetics	4	25	75	---
	MJ-11	**Practical-IV**	4	---	---	100
VI	MJ-12	Plant Physiology	4	25	75	---
	MJ-13	Molecular Biology	4	25	75	---
	MJ-14	Plant Biotechnology	4	25	75	---
	MJ-15	**Practical-V**	4	---	---	100
VII	MJ-16	Bioinformatics & Computational Biology	4	25	75	---
	MJ-17	Advanced Molecular Biology	4	25	75	---
	MJ-18	Applied Botany	4	25	75	---
	MJ-19	**Practical-VI**	4	---	---	100
VIII	MJ-20	Advanced Biotechnology	4	25	75	---
	AMJ-1	Biological Instrumentation	4	25	75	---
	AMJ-2	Nanobiotechnology	4	25	75	---
	AMJ-3	**Practical-VII**	4	---	---	100
	or RC-1	Research Methodology	4	25	75	---
	RC-2	Project Dissertation/ Research Internship/ Field	8	---	---	200

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		Work				
		Total Credit	**92**			

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Skill Enhancement Courses		Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
	Code	Papers				
I	SEC-1	Floriculture & Landscaping	3	---	75	---
II	SEC-2	Minor Forest Produce	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	**9**			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Minor Courses		Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
	Code	Papers				
I	MN-1A	Biodiversity	4	15	60	25
III	MN-1B	Plant Ecology And Taxonomy	4	15	60	25
V	MN-1C	Plant Anatomy & Embryology	4	15	60	25
VII	MN-1D	Plant Physiology & Metabolism	4	15	60	25
		Total Credit	**16**			

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INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There will be Only One Semester Internal Examination in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

AA.   (SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

AB.   (SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Conversion of Attendance into score may be as follows:

Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

AN.   (ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

AO.   (ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

AP.   (ESE 100 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark

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each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

Subject/ Code

F.M. =10   **Time**=1Hr.   Exam Year

General Instructions:
lxvi. **Group A** carries very short answer type compulsory questions.
lxvii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
lxviii.   Answer in your own words as far as practicable.
lxix. Answer all sub parts of a question at one place.
lxx. Numbers in right indicate full marks of the question.

Group A

40.   [5x1=5]

      lxvi.   ....
      lxvii.   ....
      lxviii.   ....
      lxix.   ....
      lxx.   ....

Group B

41. ....   [5]
42. ....   [5]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **20 Marks**:

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Subject/ Code

F.M. =20   **Time**=1Hr.   Exam Year

General Instructions:
lxvi. **Group A** carries very short answer type compulsory questions.
lxvii.**Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
lxviii.   Answer in your own words as far as practicable.
lxix. Answer all sub parts of a question at one place.
lxx. Numbers in right indicate full marks of the question.

Group A

53.   [5x1=5]

lxvi.	....
lxvii.	....
lxviii.	....
lxix.	....
lxx.	....

54. ....   [5]

Group B

55. ....   [10]
56. ....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION
Question format for **50 Marks**:

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Subject/ Code

F.M. =50   **Time**=3Hrs.   Exam Year

General Instructions:

xxv. **Group A** carries very short answer type **compulsory** questions.

xxvi.   **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.

xlii. Answer in your own words as far as practicable.

xliii. Answer all sub parts of a question at one place.

xliv. Numbers in right indicate full marks of the question.

Group A

79.   [5x1=5]

    lxvi.   ....
    lxvii.   ....
    lxviii.   ....
    lxix.   ....
    lxx.   ....

Group B

80. ....   [15]
81. ....   [15]
82. ....   [15]
83. ....   [15]
84. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **60 Marks**:

Subject/ Code

F.M. =60   **Time**=3Hrs.   Exam Year

General Instructions:

xxvii.   **Group A** carries very short answer type **compulsory** questions.

xxviii.   **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.

xlii. Answer in your own words as far as practicable.

xliii. Answer all sub parts of a question at one place.

xliv. Numbers in right indicate full marks of the question.

Group A

105.   [5x1=5]

    lxvi.   ....
    lxvii.   ....
    lxviii.   ....
    lxix.   ....
    lxx.   ....

106................   [5]
107................   [5]

Group B

108................   [15]
109................   [15]
110................   [15]
111................   [15]
112................   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

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Question format for **75 Marks**:

	Subject/ Code	
F.M. = 75	**Time**=3Hrs.	Exam Year

General Instructions:

xxvii.   **Group A** carries very short answer type **compulsory** questions.
xxviii.   **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xlii. Answer in your own words as far as practicable.
xliii. Answer all sub parts of a question at one place.
xliv. Numbers in right indicate full marks of the question.

Group A

118.   [5x1=5]

        lxvi.   ....
        lxvii.   ....
        lxviii.   ....
        lxix.   ....
        lxx.   ....

119................   [5]
120................   [5]

Group B

121................   [15]
122................   [15]
123................   [15]
124................   [15]
125................   [15]
126................   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

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Subject/ Code

F.M. = 100	**Time**=3Hrs.	Exam Year

General Instructions:

xxvii.   **Group A** carries very short answer type **compulsory** questions.
xxviii.   **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xlii. Answer in your own words as far as practicable.
xliii. Answer all sub parts of a question at one place.
xliv. Numbers in right indicate full marks of the question.

Group A

14.   [10x1=10]

lxvi.	vi. ....
lxvii.	vii. ....
lxviii.	viii. ....
lxix.	ix. ....

28. ..lxx.................   x   ....   [5]
29. ....   [5]

Group B

82. ....   [20]
83. ....   [20]
84. ....   [20]
85. ....   [20]
86. ....   [20]
87. ....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

SEMESTER I

XXVI. MAJOR COURSE –MJ 1:
MICROBIOLOGY, PHYCOLOGY AND MYCOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
On completion of this course, the students will be able to understand
   ll   To gain knowledge of diversity, life forms, life cycles, morphology and importance of microorganisms.

Course Learning Outcomes:
On successful completion of this course the student should know:
   1. Students would understand the classification, characteristic features, cell structure and growth andreproduction in viruses, bacteria and economic importance.

Course Content:

Microbiology:

Unit 1: Introduction to microbial world
Types and Classification.   **(2 lectures)**

Unit 2: Viruses
Discovery, physiochemical and biological characteristics; classification (Baltimore), general structure with

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special reference to viroids and prions; replication (general account), DNA virus (T-phage), lytic and lysogenic cycle; RNA virus (TMV). Economic importance of viruses with reference to vaccine production, role in research, medicine and diagnostics, as causal organisms of plant diseases.   **(8 lectures)**

Unit 3: Bacteria

Discovery, general characteristics; Types-archaebacteria, eubacteria, wall-less forms (mycoplasma and spheroplasts); Cell structure; Nutritional types; Reproduction-vegetative, asexual and recombination (conjugation, transformation and transduction).   **(8 lectures)**

Phycology:

Unit 4: Algae

General characteristics of Algae, Criteria for classification of algae, Fritsch (1935) system of classification. Significant contributions of eminent phycologists (F.E. Fritsch and M.O.P. Iyengar). Economic importance of algae.   **(5 lectures)**

Unit 5: Cyanophyta

Brief account of ecology and occurrence; Range of thallus organization; Cell structure; Reproduction, Morphology and life-cycle of *Nostoc* and *Oscillatoria*.   **(4 lectures)**

Unit 6: Chlorophyta, Charophyta and Xanthophyta

Brief account of general characteristics; Occurrence; Range of thallus organization; Cell structure; Reproduction Morphology and life-cycles of *Chlamydomonas, Volvox, Oedogonium, Chara, Vaucheria*.   **(7 lectures)**

Unit 7: Phaeophyta and Rhodophyta

Brief account of characteristics; Occurrence; Range of thallus organization; Cell structure; Reproduction. Morphology and life-cycles of *Ectocarpus* and *Polysiphonia*.   **(5 lectures)**

Mycology:

Unit 8: Introduction to Fungi

Classification –Ainsworth (1966, 1973).

Brief account of allied fungi and applied mycology. Brief account of evolution. Brief account and life cycle pattern of *Synchytrium, Phytophthora, Erysiphe, Claviceps, Peziza, Puccinia, Ustilago*, *Alternaria*.

(11 lectures)

Unit 9: Phytopathology

Terms and concepts; General symptoms; Etiology; Symptomology; Host-Pathogen relationships; Disease cycle and environmental relation; prevention and control of plant diseases, and role of quarantine. Bacterial diseases – Citrus canker. Viral diseases – Tobacco Mosaic viruses. Fungal diseases – Early blight of potato, Black stem rust of wheat.

(10 lectures)

Reference Books:
1.   Wiley JM, Sherwood LM and Woolverton CJ. (2013) Prescott's Microbiology. 9th Edition. McGrawHill International.
2.   Pelczar, M.J. (2001) Microbiology, 5th edition, Tata McGraw-Hill Co, New Delhi.
3.   Lee, R.E. (2008). Phycology, Cambridge University Press, Cambridge. 4th edition.
4.   Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West Press, Delhi.
5.   Sharma, O.P. (2018). A text book of algae. TATA McGRAW – HILL.
6.   Bilgrami, K. S. and Saha, L. C. (2020). A textbook of Algae, CBS.
7.   Agrios, G.N. (1997) Plant Pathology, 4th edition, Academic Press, U.K.
8.   Agrios, G.N. (2011) Plant Pathology, 6th edition, Academic Press, U.K.
9.   Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley & Sons (Asia)Singapore. 4th edition.
10.   Webster, J. and Weber, R. (2007). Introduction to Fungi, Cambridge Univ Press, Cambridge. 3rd Ed.

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11.   Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi and Their Allies, Macmillan Pub. India Ltd.
12.   Sharma, P.D. (2011). Plant Pathology, Rastogi Publication, Meerut, India.

XXVII.   SKILL ENHANCEMENT COURSE- SEC 1:
FLORICULTURE & LANDSCAPING

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objectives:
1. Familiarize with the cultivation of flowers and ornamental crops from the time of planting to the time of harvesting.
2. It also includes production of planting materials through seeds, cuttings, budding, grafting, etc, up to the marketing of the flower and flower produce.

Course Learning Outcomes:
1. learns about identification and study important commercial varieties of the flowering crops. Preparation of ground and beds for planting specific flower crops. Layout of plots and gardens, planning for home gardens, landscape gardens. Preparation and execution of landscape plants maintenance of gardens and lawns.
2. Protected cultivation of flowers. Identifications and study of poly house, shed net house, mulching.

Course Content:
1. Global and Indian floriculture scenario with special reference to Jharkhand.   **(3 lectures)**

2. Technology intervention:
Breeding: General methods of breeding suitable for sexually and asexually propagated flower crops and ornamental plants; Breeding constraints and achievements made in commercial flowers and its management and global trades in ornamental plants – Rose, China rose, Tuberose, Marigold, Gladiolus.

Micropropagation: Rose, Orchid; Harvesting and Packaging of commercial flowers (Rose, China rose, Tuberose, Marigold, Gladiolus).   **(15 lectures)**

3. Production technology of important flowers and foliage: Rose, China rose, Tuberose, Marigold, Gladiolus, Palm, Asparagus, Dracaena.   **(05 lectures)**

4. Landscaping: Landscape designs, Styles of garden, formal, informal and free style gardens, types of gardens; Urban landscaping; Garden plant components, arboretum, shrubbery, fernery, palmatum, arches and pergolas, edges and hedges, climbers and creepers, cacti and succulents, herbs, annuals, flower borders and beds, bamboo groves; Bio-aesthetic planning, eco-tourism, theme parks (Nakshatra Van), indoor gardening, therapeutic gardening, non-plant components, water scaping.
(10 Lectures)

5. Protected Floriculture: Prospects of protected floriculture in India; Types of protected structures – Greenhouses, polyhouses, shade houses, rain shelters; Suitable flower crops for protected cultivation; Containers and substrates, soil decontamination, layout of drip and fertigation system, water and nutrient management, weed management (Common local weeds and its control), physiological disorders, IPM and IDM; Staking and netting, Photoperiod regulation; Harvest indices, harvesting techniques, post-harvest handling techniques, Precooling, sorting, grading, packing, storage, quality standards.   **(10 lectures)**

7. Environmental Factors for the floriculture. Biotic (Bacterial, Fungal, Insects and Nematodes) and abiotic factors (Light, Temperature, Humidity).   **(2 lectures)**

PRACTICALS:
1. Identification of local annual, biennial, perennial and bulbous flower plants, herb, shrub, climbers and foliage plants. Identification of indoor plants.
2. Identification of main garden tools and implements.
3. Selection of ornamental plants, draw and practices in preparing designs for home garden, industrial garden, institutional garden, corporate and avenue planting.
4. Propagation techniques for floriculture.

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5.   Plant breeding techniques for floriculture. Growing of flowering plants in pots.

Reference Books:
1.   G. S. Randhawa and A. Mukhopadhyay (1986). Floriculture in India, Allied
     (https://books.google.co.in/books?id=fABzMgAACAAJ)

SEMESTER II

CXXXIII.   MAJOR COURSE- MJ 2:
NON-FLOWERING PLANTS AND PALAEOBOTANY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
On successful completion of this course the student should be able to:
1.   To introduce students with lichens, their ecology, classification, characteristics, reproduction and economic Importance.
2.   Study of morphology, anatomy, reproduction and developmental changes there in through typological study should create a knowledge base in understanding plant diversity, economic values, taxonomy of lower group of plants.

Course Learning Outcomes:
On successful completion of this course the student should know:
3.   To learn the organ formation in early land plants that resulted to diversity of species of Lichens "Bryophytes", "Pteridophytes" and "Gymnosperms".
4.   Information on the Ecological and Economic Importance of bryophytes, pteridophytes and gymnosperms will help to understand their role in ecosystem functioning.

Course Content:
Unit 1: Symbiotic association
Lichen – Occurrence; General characteristics; Growth forms and range of thallus organization; Nature of associations of algal and fungal partners; Reproduction; Mycorrhiza-Ectomycorrhiza, Endomycorrhiza and their significance.   **(10 lectures)**

Unit 2: Bryophytes
General characteristics; Adaptations to land habit; Classification; Range of thallus organization. Morphology, anatomy, reproduction and alternation of generation of *Riccia, Marchantia, Anthoceros, Sphagnum* and *Funaria*. Ecological and economic importance of Bryophytes.   **(13 lectures)**

Unit 3: Pteridophytes
Origin and evolution of land plants, Classification, morphology, anatomy and life cycle and alternation of generation of *Psilotum, Selaginella, Equisetum* and *Pteris*. Ecological and economic importance of pteridophytes.   **(15 lectures)**

Unit 4: Gymnosperms
General characteristics, classification, morphology, anatomy and life cycle of *Cycas* and *Pinus*; Ecological and economic importance.   **(11 lectures)**

Unit 5: Palaeobotany
Brief introduction of palaeobotanist of India. Fossils and Types of fossils; Process of fossilization and its Significance. Geological time scale; General characteristics; Classification; Early land plants (*Cooksonia, Rhynia*)**.**   **(11 lectures)**

Reference Books:

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6.   Vashistha, P.C., Sinha, A.K., Kumar, A. (2010). Pteridophyta. S. Chand. Delhi, India.
7.   Bhatnagar, S.P. & Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.
8.   Parihar, N.S. (1991). An introduction to Embryophyta: Vol. I. Bryophyta. Central Book Depot. Allahabad.
9.   Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R. (2005). Biology. Tata McGraw Hill, Delhi.
10.   Vanderpoorten, A. & Goffinet, B. (2009) Introduction to Bryophytes. Cambridge University Press.

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CXXXIV.   MAJOR COURSE- MJ 3:
PRACTICALS-I:

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Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

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(Credits: Practicals-04)   **120 Hours**

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Instruction to Question Setter for
End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practical:
Unit I: Diversity & Economic Importance of Microbes
Microbiology
1.   Electron micrographs/Models of viruses – T-Phage and TMV, Line drawings/ Photographs of Lytic and Lysogenic Cycle.
2.   Types of Bacteria to be observed from temporary/permanent slides/photographs. Electron micrographs of bacteria, binary fission, endospore, conjugation, root Nodule.
3.   Gram staining.

Phycology
     Study of vegetative and reproductive structures of *Nostoc, Volvox, Oedogonium, Chara* and *Vaucheria* through temporary slide preparations and permanent slides

Fungi
1.   *Aspergillus*: study of asexual stage from temporary mounts. Study of Sexual stage from permanent slides/photographs.
2.   *Peziza*: sectioning through ascocarp.
3.   *Alternaria*: Specimens/photographs and temporary mounts.
4.   *Puccinia*: Herbarium specimens of Black Stem Rust of Wheat and infected Barberry leaves; sections/ mounts of spores on wheat and permanent slides of both the hosts.
5.   Phytopathology: Herbarium specimens of bacterial diseases; Citrus Canker; Viral diseases: TMV, Fungal diseases: Early blight of potato, Black stem rust of wheat.

Unit II: Non-Flowering Plants and Palaeobotany
     Lichens: Study of growth forms of lichens (crustose, foliose and fruticose) on different substrates. Study of thallus and reproductive structures (soredia and apothecium) through permanent slides. Mycorrhizae: ectomycorrhiza and endomycorrhiza (Photographs)
     Archegoniate: *Riccia, Marchantia, Anthoceros, Sphagnum, Funaria, Selaginella, Equisetum, Pteris, Cycas, Pinus.*
Botanical excursion.

Reference Books
1.   Wiley JM, Sherwood LM and Woolverton CJ. (2013) Prescott's Microbiology. 9th Edition. McGraw Hill International.
2.   Pelczar, M.J. (2001) Microbiology, 5th edition, Tata McGraw-Hill Co, New Delhi.
3.   Lee, R.E. (2008). Phycology, Cambridge University Press, Cambridge. 4th edition.
4.   Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West Press, Delhi.

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5.   Sharma, O.P. (). A text book of algae. TATA McGRAW – HILL.
6.   Agrios, G.N. (1997) Plant Pathology, 4th edition, Academic Press, U.K.
7.   Agrios, G.N. (2011) Plant Pathology, 6th edition, Academic Press, U.K.
8.   Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley & Sons (Asia)Singapore. 4th edition.
9.   Webster, J. and Weber, R. (2007). Introduction to Fungi, Cambridge University Press, Cambridge. 3rd Ed.
10.   Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi and Their Allies, Macmillan Publishers India Ltd.
11.   Sharma, P.D. (2011). Plant Pathology, Rastogi Publication, Meerut, India.
12.   Vashistha, P.C., Sinha, A.K., Kumar, A. (2010). Pteridophyta. S. Chand. Delhi, India.
13.   Bhatnagar, S.P. & Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, N. Delhi.
14.   Parihar, N.S. (1991). An introduction to Embryophyta: Vol. I. Bryophyta. Central Book Depot. Allahabad.
15.   Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R. (2005). Biology. Tata McGraw Hill, Delhi.
16.   Vanderpoorten, A. & Goffinet, B. (2009) Introduction to Bryophytes. Cambridge University Press.

CXXXV.   SKILL ENHANCEMENT COURSE- SEC 2:
MINOR FOREST PRODUCE

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objectives:
1.   The purpose of this course is to familiarize with Minor Forest Products, management, collection, storage and post-harvest processing.

Course Learning Outcomes:
On successful completion of this course the student should be able to:
1.   To acquaints with Minor Forest Products (NWFPs) and their scientific extraction, processing and disposal.
2.   Livelihood of indigenous community based on minor forest produce.

Course Content:
Unit 1: Introduction: Forest of Jharkhand and Minor Forest Produce.   **(2 Lectures)**

Unit 2: Forest produce of Jharkhand: **(20 Lectures)**
    Aromatic and Medicinal Plants: Neem, Karanj, Giloy, Munga, Pudina, Van Tulsi, Tulsi, Sweet flag, Kalmegh, Satavar, Lemon grass
    Nutritional Plants: Mushroom, Mahua flower, Imli, Chironjee, Kathal
    Oil Yielding Plants: Sal Seed, Mahua Seed, Neem Seed, Karanj Seed, Kusum, Castor
    Fruit Trees: Kendu, Ber, Sahtoot, Mango, Jamun, Piyar, Karonda, Carombola
    Leafy Vegetables: Chakor Sag, Beng Sag, Konar Sag

Unit 3: Source and Use of Minor Forest Products (MFPs): Gums and Resins, Katha, Dyes, Tannins, Oils. Technologies for extraction of Gums, Resins, Katha, Dyes, Tannins, Oils and other products. **(8 Lectures)**

Unit 5: Post Harvest Technology: Cleaning, Packing, Storage and Processing.   **(3 Lectures)**

Unit 6: Marketing of Minor Forest Produce: Primary Agriculture Credit Society (PACS), Vyapaar Mandal Sahyog Samity (VMSS), Primary Minor Forest Produce Co-Operative Societies (PMFPCS), Women SHG or Repudiated NGO.

Unit 7: Forest Conservation.   **(2 Lectures)**

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Unit 8: Strategy for Minor Forest Produce Management.   **(2 Lectures)**

Unit 9: Livelihood based on Minor Forest Produce of Jharkhand: Bamboos, Canes and Grass.
                                                                              (6 Lectures)
Unit 10: Role of Minor Forest Produce in Sustainable development.   **(2 Lectures)**

Reference Books:
1. Importance of Minor forest produces in tribal life- Manoshi Das (2018).
2. The Significance of Minor forest produce in the Indian tribal economy- K. Mohan Reddy (2018).
3. Tribal settlement and minor forest produce- D. Thakur (2009).
4. Procurement and Marketing of Minor Forest Produce in Tribal Areas- G. Parthasarathy and K. U. Shankar Patnaik (2003).

SEMESTER III

MAJOR COURSE- MJ 4:
PLANT ANATOMY AND EMBRYOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
On completion of this course, the students will be able to understand:
1. To acquaint the students with internal basic structure and cellular composition of the plant body.
2. To correlate structure with important functions of different plant parts.
3. Study of various tissue systems and their development and functions in plants.

Course Learning Outcomes:
On successful completion of this course the student shall know:
1. Knowledge of various cells and tissues, meristem, epidermal and vascular tissue system in plants.
2. Various aspects of growth, development of the tissues and differentiation of various plant organs.
3. Knowledge of basic structure and organization of plant parts in angiosperms.
4. Correlation of structure with morphology and functions.

Course Content:
Plant Anatomy
Unit 1: Introduction and scope of Plant Anatomy   **(2 Lectures)**

Unit 2: Tissues and its types (Permanent and Meristematic).   **(4 Lectures)**

Unit 3: Apical meristems Evolution of concept of organization of shoot apex and root apex (Theories).
                                                                              (6 Lectures)
Unit 4: Vascular Cambium and Wood Structure, function and seasonal activity of cambium; Secondary growth and anomalous secondary growth in root and stem. Sapwood and heartwood; Ring and diffuse porous wood; Early and late wood, tyloses. Development and composition of periderm.   **(12 Lectures)**

Unit 5: Morphological and Anatomical adaptations of xerophytes and hydrophytes.   **(6 Lectures)**

Embryology
Unit 1: **Introduction**
Brief account of embryology and contributions of W. Hofmeister, E. Strasburger, S.G. Nawaschin,
P. Maheshwari, B.M. Johri and scope**.**   **(3 lectures**)

Unit 2: Anther and pollen biology

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Anther wall: Structure and functions, microsporogenesis and its significance. Microgametogenesis.

(5 lectures)

Unit 3: Ovule
Structure; Types; Special structures–endothelium, obturator, aril, caruncle and hypostase; Female gametophyte– megasporogenesis and megagametogenesis.

(6 lectures)

Unit 4: Pollination and fertilization
Brief account of Pollination and double fertilization.   **(3 lectures)**

Unit 6: Embryo, Endosperm and Seed
Structure and types; General pattern of development of dicot and monocot embryo, endosperm types and function, Seed structure (Monocot and Dicot).   **(10 lectures)**

Units 7: Polyembryony and apomixis
Introduction; Classification; Causes and applications.   **(3 lectures)**

Reference Books:
1. Dickison, W.C. (2000). Integrative Plant Anatomy. Harcourt Academic Press, USA.
2. Fahn, A. (1974). Plant Anatomy. Pergmon Press, USA.
3. Mauseth, J.D. (1988). Plant Anatomy. The Benjammin/Cummings Publisher, USA.
4. Evert, R.F. (2006) Esau's Plant Anatomy: Meristems, Cells, and Tissues of the Plant Body: Their Structure, Function and Development. John Wiley and Sons, Inc
5. Bhojwani, S.S. and Bhatnagar, S.P. (2011). The Embryology of Angiosperms, Vikas Pub. House. Delhi. 5th edition.
6. Shivanna, K.R. (2003). Pollen Biology and Biotechnology. Oxford and IBH Pub. Co. Pvt. Ltd. Delhi.
7. Raghavan, V. (2000). Developmental Biology of Flowering plants, Springer, Netherlands.
8. Johri, B.M. l (1984). Embryology of Angiosperms, Springer-Verlag, Netherlands

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CXXXVII.   MAJOR COURSE- MJ 5:
PRACTICALS-II:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

<u>*End Semester Examination (ESE):*</u>
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:

Study of anatomical details through permanent slides/temporary stain mounts/ macerations/ museum specimens with the help of suitable examples.

1. Distribution and types of parenchyma, collenchyma and sclerenchyma.
2. Xylem: Tracheary elements-tracheids, vessel elements; thickenings; perforation plates; xylem fibres.
3. Phloem: Sieve tubes-sieve plates; companion cells; phloem fibers.
4. Epidermal system: cell types, stomata types.
5. Root: monocot, dicot, secondary growth.
6. Stem: monocot, dicot - primary and secondary growth.
7. Leaf anatomy: isobilateral, dorsiventral.
8. Adaptive Anatomy: xerophytes, hydrophytes.
9. Anther: Wall structure, MMC, spore tetrads.
10. Pollen germination.
11. Ovule: Types and embryo dissection.

Reference Books

1. Dickison, W.C. (2000). Integrative Plant Anatomy. Harcourt Academic Press, USA.
2. Fahn, A. (1974). Plant Anatomy. Pergmon Press, USA.
3. Mauseth, J.D. (1988). Plant Anatomy. The Benjammin/Cummings Publisher, USA.
4. Evert, R.F. (2006) Esau's Plant Anatomy: Meristems, Cells, and Tissues of the Plant Body: Their Structure, Function and Development. John Wiley and Sons, Inc
5. Bhojwani, S.S. and Bhatnagar, S.P. (2011). The Embryology of Angiosperms, VikasPublishing House, Delhi. 5th edition.
6. Shivanna, K.R. (2003). Pollen Biology and Biotechnology. Oxford and IBH Publishing Co.Pvt. Ltd. Delhi.
7. Raghavan, V. (2000). Developmental Biology of Flowering plants, Springer, Netherlands.
8. Johri, B.M. l (1984). Embryology of Angiosperms, Springer-Verlag, Netherlands

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CXXXVIII.   SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

A Common Syllabus for FYUGP   (Credits: Theory-03) **45 Hours**

Course Objectives:
The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

AA.   INTRODUCTION TO COMPUTER SYSTEM
1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU)   **(3 Lecture)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer   **(4 Lecture)**

3. Operating system: What is an Operating System, Operating System Examples, Functions of Operating System(Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting   **(6 Hours)**

4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages   **(4 Hours)**

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails.   **(6 Hours)**

AB.   MICROSOFT OFFICE 2016 AND LATEST VERSIONS
6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents   **(7 Hours)**

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation, slide show, Master Slides, Creating photo album, Rehearse timing and record narration   **(5 Hours)**

9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning   **(4 Hours)**

Reference Books
103.   Nishit Mathur, Fundamentals of Computer, APH publishing corporation (2010)
104.   Neeraj Singh, Computer Fundamentals (Basic Computer), T Balaji, (2021)
105.   Joan Preppernau, Microsoft Power Point 2016 step by step, Microsoft press (2015)

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106.   Douglas E Corner, The Internet Book 4th Edition, prentice –Hall (2009)
107.   Steven Welkler, Office 2016 for beginners, Create Space Independent Publishing Platform (2016)
108.   Wallace Wang, Microsoft Office 2019, Wiley (January 2018)
109.   Noble Powell, Windows 11 User Guide For Beginners and Seniors, ASIN, (October 2021)

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SEMESTER IV

CXXXIX.   MAJOR COURSE- MJ 6:
ECOLOGY AND ENVIRONMENTAL STUDIES

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Course Objectives:
1. This course aims to introduce the students to the concepts and principles of ecology, biological diversity, conservation, sustainable development, population, community and ecosystem structure and function, application of these concepts to solve environmental problems.
2. To make them understand complex community patterns, processes, and ecosystem functioning.

Course Learning Outcomes:
1. It will acquaint the students with complex interrelationship between organisms and environment; make them understand methods to studying vegetation, community patterns and processes, ecosystem functions, and principles of phytogeography. What are the limiting factors controlling distribution and growth of organisms?
2. What are the characteristics of organisms as population, community and ecosystems? What are the intra- and inter-specific interactions? What are the ecosystem functions? What are applications of ecological knowledge for the benefit of anthropogenic society?

Course Content:
Unit 1: Introduction Basic concepts of ecology and environmental biology.   **(2 lectures)**

Unit 2: Abiotic interactions
Soil: Importance and Soil profile. Water: Importance and Hydrological Cycle. Light and temperature.
                                                                                    (6 lectures)

Unit 5: Biotic interactions
Trophic organization, basic source of energy, autotrophy, heterotrophy; symbiosis, commensalism, parasitism; food chains and webs; ecological pyramids; biomass, standing crop.   **(6 lectures)**

Unit 6: Population ecology
Characteristics and Dynamics. Ecological Speciation   **(4 lectures)**

Unit 7: Plant communities
Concept of ecological amplitude; Habitat and niche; Characters: analytical and synthetic; Ecotone and edge effect; Dynamics: succession (Hydrosere and Xerosere).   **(6 lectures)**

Unit 8: Ecosystems Structure and function; Trophic organization; Food chains and Food webs; Ecological pyramids. Pond ecosystem, grassland ecosystem and forest ecosystem, Biogeochemical cycles (Carbon, Nitrogen and Phosphorus cycle), Energy flow and productivity.   **(9 lectures)**

Unit 10: Phytogeography
Phytogeographical regions of India; Local Vegetation and Endemism; hotspots.   **(5 lectures)**

Unit 11: Pollution and Climate change
Introduction to pollutants, pollution, causes, control and impact of air, water, soil, noise. Role of Biotechnology in pollution control. Major global environmental issues: Climate change, ozone depletion, global warming, acid rain, carbon emission; Objectives of United Nations Framework Convention on Climate Change (UNFCC).
(12 lectures)
Unit 13: Biodiversity and Conservation Biodiversity: Definition, threats and importance, natural resources: renewable and non-renewable, conservation- in-situ and ex-situ methods. IUCN conservation category:

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Endangered, threatened, vulnerable, Biodiversity management committees, people's biodiversity register; Red Data Book, sustainable development goals: Biofuel and Green hydrogen. Convention on Biological Diversity, National Biodiversity Authority and Botanical Survey of India.   **(10 lectures)**

Reference Books:

1. Raziuddin, M.., Mishra P.K. 2014, A Handbook of Environmental Studies, Akanaksha Publications, Ranchi.
2. Mukherjee, B. 2011: Fundamentals of Environmental Biology. Silverline Publications, Allahabad.
3. Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt.
4. Gadgil, M., & Guha, R.1993. This Fissured Land: An Ecological History of India. Univ. of California Press.
5. Gleeson, B. and Low, N. (eds.) 1999.Global Ethics and Environment, London, Routledge.
6. Gleick, P. H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
7. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. Principles of Conservation Biology. Sunderland: Sinauer Associates, 2006.
8. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science, 339: 36---37.
9. McCully, P. 1996. Rivers no more: the environmental effects of dams (pp. 29---64). Zed Books.
10. McNeill, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.
11. Odum, E.P., Odum, H.T. & Andrews, J. 1971.Fundamentals of Ecology. Philadelphia: Saunders.
12. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. Environmental and Pollution Science. Academic Press.
13. Rao, M.N. & Datta, A.K. 1987. Waste Water Treatment. Oxford and IBH Publishing Co. Pvt. Ltd.
14. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012.Environment. 8th edition. John Wiley & Sons.
15. Rosencranz, A., Divan, S., & Noble, M. L. 2001. Environmental law and policy in India. Tripathi 1992.
16. Sengupta, R. 2003. Ecology and economics: An approach to sustainable development. OUP.
17. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. Ecology, Environmental Science and Conservation. S. Chand Publishing, New Delhi.
18. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. Conservation Biology: Voices from the Tropics. John Wiley & Sons.
19. Thapar, V. 1998. Land of the Tiger: A Natural History of the Indian Subcontinent.
20. Warren, C. E. 1971. Biology and Water Pollution Control. WB Saunders.
21. Wilson, E. O. 2006.The Creation: An appeal to save life on earth. New York: Norton.
22. World Commission on Environment and Development. 1987. Our Common Future. Oxford University
23. Odum, E.P. (2005). Fundamentals of ecology. Cengage Learning India Pvt. Ltd., New Delhi. 5th edition.
24. Singh, J.S., Singh, S.P., Gupta, S. (2006). Ecology Environment and Resource Conservation. Anamaya Publications, New Delhi, India.
25. Sharma, P.D. (2010). Ecology and Environment. Rastogi Publications, Meerut, India. 8th edition.
26. Wilkinson, D.M. (2007). Fundamental Processes in Ecology: An Earth Systems Approach. Oxford University Press. U.S.A.
27. Das, M.C. Kormondy, E.J. (1996). Concepts of ecology. PHI Learning Pvt. Ltd., Delhi, India. 4th edition.

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CXL. MAJOR COURSE- MJ 7:
PLANT TAXONOMY & ECONOMIC BOTANY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
After completion of the course, the learner shall be able to understand:
1. To gain the knowledge on the taxonomy, phylogeny of plants.
2. To make the students familiar with economic importance of diverse plants that offer resources to human life.
3. It emphasizes the plants used as- food for man, fodder for cattle, feed for poultry, plants having medicinal value and also plant source of huge economic value etc.

Course Learning Outcomes:
On successful completion of this course the student should know the:
1. Understanding of systematics its importance in bioresource utilization and biodiversity management. Nomenclature pattern, Phylogeny, Classification systems of the plants.
2. After studying Economic Botany, students would have first-hand information of plants used as food, the various kinds of nutrients available in the plants. The dietary requirements of proteins, fats, amino-acids, vitamins etc. that can be met by plants.
3. The students will learn to perform the micro-chemical tests to demonstrate various components.
4. The students will learn about the use of fiber plants, beverages, fruits and vegetables that are integral to day to day life of plants.
5. Students will learn to explore the regional diversity in food crops and other plants and their ethno-botanical importance as well.

Course Content:
Plant Taxonomy
Unit 1: Introduction to Plant Taxonomy
1. Fundamental components of taxonomy (identification, nomenclature, classification)
2. Botanical Nomenclature- Principles and rules of ICN (ranks and names; principle of priority, binomial system; type method (Typification), author citation and valid-publication).
3. Taxonomic resources: Herbarium- functions & important herbaria, Botanical gardens, Flora.

(4 lectures)

Unit 2: Taxonomic hierarchy, Types of classification and Evidences
1. Concept of taxa (family, genus, species); Categories and taxonomic hierarchy; Species concept.
2. Types of classification- Artificial, Natural and Phylogenetic.
3. Bentham & Hooker's system of classification - merits and demerits.
4. Engler & Prantle's system of classification - merits and demerits.
5. Hutchinson classification - merits and demerits.
6. Taxonomic evidences from morphology, cytology and phytochemistry.   **(10 lectures)**

Unit 3: Plant Systematics
1. Diagnostic characteristics, Systematic Phylogeny and economic importance of families: Ranunculaceae, Apocynaceae, Lamiaceae, Magnoliaceae, Poaceae, Cyperaceae.   **(11 lectures)**

Unit 4: Modern trends in Plant taxonomy:
1. Phenetics and Cladistics: Brief idea on Phenetics, Numerical taxonomy- methods, Operational Taxonomic Units (OUT's).
2. Origin and evolution of angiosperms; Methods of illustrating evolutionary relationship (phylogenetic tree, cladogram).   **(5 lectures)**

Economic Botany
Study of following economically important plants with special reference to Jharkhand:
Unit 1: Cereals and Millets: Wheat, Rice, Ragi and Jowar – morphology and uses.   **(4 Lectures)**

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Unit 2: Pulses & Vegetables General account with special reference to Gram, soybean and Potato.

(4 Lectures)

Unit 3: Spices: General account with special reference to clove, black pepper, cinnamon, Ginger and Turmeric (Botanical name, family, part used, morphology and uses)   **(4 Lectures)**

Unit 4: Beverages Tea and Coffee (morphology, processing, uses)   **(5 Lectures)**

Unit 5: Oils and Sugar General description with special reference to groundnut and sugarcane   **(4 Lectures)**

Unit 6: Timber and Fiber and Yielding Plants General description (Botanical name, family, parts used, morphology and uses)   **(4 Lectures)**

Unit 7: Medicinal Plants Brief account of *Ocimum, Turmeric, Tinospora, Aloe, Rauvolfia, Emblica* and *Cathranthus* (Botanical name, family, parts used and uses)   **(5 Lectures)**

Reference Books
1.   Singh, (2012). Plant Systematics: Theory and Practice Oxford & IBH Pvt. Ltd., New Delhi.3rdedition.
2.   Jeffrey, C. (1982). An Introduction to Plant Taxonomy. Cambridge University Press,Cambridge.
3.   Judd, W.S., Campbell, C.S., Kellogg, E.A., Stevens, P.F. (2002). Plant Systematics-A Phylogenetic Approach. Sinauer Associates Inc., U.S.A. 2nd edition.
4.   Maheshwari, J.K. (1963). Flora of Delhi. CSIR, New Delhi.
5.   Radford, A.E. (1986). Fundamentals of Plant Systematics. Harper and Row, New York.
6.   Kochhar, S.L. (2012). Economic Botany in Tropics, MacMillan & Co. New Delhi, India.
7.   Wickens, G.E. (2001). Economic Botany: Principles & Practices. Kluwer AcademicPublishers, The Netherlands.

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CXLI. MAJOR COURSE- MJ 8:
PRACTICALS-III:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

Underline End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	*= 60 marks*
Practical record notebook	*= 15 marks*
Viva-voce	*= 25 marks*

Practical:
1. Study of instruments used to measure microclimatic variables: Soil thermometer, anemometer, rain gauge, lux meter.
2. Determination   of pH of various soil and water samples (pH   meter and pH paper)
3. Comparison of water holding capacity, porosity and rate of infiltration of water in soils of three habitats.
4. Determination of minimal quadrat size for the study of herbaceous vegetation in the college campus, by species area curve method (species to be listed).
5. Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law.
6. Quantitative analysis of herbaceous vegetation for density and abundance in the college campus.
7. Field visit to familiarize students with ecology of different sites
8. Study of common plants, insects, birds and basic principles of identification. Study of simple ecosystems--pond, river etc.

Plant Taxonomy & Economic Botany
1.   Systematic study of locally available plants belonging to the families prescribed in theorysyllabus with reference to vegetative and floral characters of the following families (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification)
2.   Mounting of a properly dried and pressed specimen of any wild plant with herbarium label (to be submitted in the record book).
3.   Study of economically important plants: Wheat, Rice, Gram, Soybean, Potato, Black pepper, Clove, Cinnamon, Ginger, Turmeric, Tea, Coffee, Cotton, Groundnut, Sugarcane, Mustard and Medicinal plants (Tulsi, Neem, Karanj, Haldi, Ghritkumari, Kalmegh) through specimens, sections.

Reference Books
1.   Raziuddin, M., Mishra P.K. 2014, *A Handbook of Environmental Studies*, Akanaksha Publications, Ranchi.
2.   Mukherjee, B. 2011: *Fundamentals of Environmental Biology*. Silverline Publications, Allahabad.
3.   Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
4.   Gadgil, M., & Guha, R.1993. *This Fissured Land: An Ecological History of India*. Univ. of California Press.
5.   Gleeson, B. and Low, N. (eds.) 1999.*Global Ethics and Environment*, London, Routledge.
6.   Gleick, P. H. 1993. *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
7.   Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. *Principles of Conservation Biology*.Sunderland: Sinauer Associates, 2006.
8.   Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. *Science,* 339: 36---37.
9.   McCully, P. 1996. *Rivers no more: the environmental effects of dams* (pp. 29---64). Zed Books.
10.   McNeill, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.

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11.   Odum, E.P., Odum, H.T. & Andrews, J. 1971.*Fundamentals of Ecology*. Philadelphia: Saunders.
12.   Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. Environmental and Pollution Science. Academic Press.
13.   Rao, M.N. & Datta, A.K. 1987. *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
14.   Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012.*Environment*. 8th edition. John Wiley & Sons.
15.   Rosencranz, A., Divan, S., & Noble, M. L. 2001. *Environmental law and policy in India*. *Tripathi 1992*.
16.   Sengupta, R. 2003. *Ecology and economics*: An approach to sustainable development. OUP.
17.   Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
18.   Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. *Conservation Biology*: *Voices from the Tropics*. John Wiley & Sons.
19.   Thapar, V. 1998. *Land of the Tiger*: *A Natural History of the Indian Subcontinent*.
20.   Warren, C. E. 1971. *Biology and Water Pollution Control*. WB Saunders.
21.   Wilson, E. O. 2006.*The Creation: An appeal to save life on earth*. New York: Norton.
22.   World Commission on Environment and Development. 1987. *Our Common Future*. Oxford University
23.   Odum, E.P. (2005). Fundamentals of ecology. Cengage Learning India Pvt. Ltd., New Delhi. 5th edition.
24.   Singh, J.S., Singh, S.P., Gupta, S. (2006). Ecology Environment and Resource Conservation. Anamaya Publications, New Delhi, India.
25.   Sharma, P.D. (2010). Ecology and Environment. Rastogi Publications, Meerut, India. 8th edition.
26.   Wilkinson, D.M. (2007). Fundamental Processes in Ecology: An Earth Systems Approach. Oxford University Press. U.S.A.
27.   Das, M.C. Kormondy, E.J. (1996). Concepts of ecology. PHI Learning Pvt. Ltd., Delhi, India. 4th edition.
28.   Singh, (2012). Plant Systematics: Theory and Practice Oxford & IBH Pvt. Ltd., New Delhi. 3rdedition.
29.   Jeffrey, C. (1982). An Introduction to Plant Taxonomy. Cambridge University Press, Cambridge.
30.   Judd, W.S., Campbell, C.S., Kellogg, E.A., Stevens, P.F. (2002). Plant Systematics-A Phylogenetic Approach. Sinauer Associates Inc., U.S.A. 2nd edition.
31.   Maheshwari, J.K. (1963). Flora of Delhi. CSIR, New Delhi.
32.   Radford, A.E. (1986). Fundamentals of Plant Systematics. Harper and Row, New York.
33.   Kochhar, S.L. (2012). Economic Botany in Tropics, MacMillan & Co. New Delhi, India.
34.   Wickens, G.E. (2001). Economic Botany: Principles & Practices. Kluwer Academic Publishers, The Netherlands.

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SEMESTER V

CXLII.   MAJOR COURSE- MJ 9:
CELL BIOLOGY & BIOCHEMISTRY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Course Objectives:
After completion of the course, the learner shall be able to understand:
1. Cell biology study will provide inside into the organization of cell, its features and regulation at different levels.
2. Through the study of cell organelles, they will be able to understand the various metabolic processes such as respiration, photosynthesis etc. which are important for life.
3. The objective of the present course content is to provide a foundation and background in cellular and acellular entities of plants, cell structure in relation to functions, eukaryotic genome structure (including nuclear and organellar), and regulatory mechanisms.

Course Learning Outcomes:
On successful completion of this course the student should know:
1. This course will be able to demonstrate foundational knowledge in understanding of cell.
2. Understanding of Cell metabolism, chemical composition, physiochemical and functional organization of organelle
3. Contemporary approaches in modern cell and molecular biology.

Course Content:
Cell Biology

Unit1: The cell- Cell as a unit of structure and function; Characteristics of prokaryotic and eukaryotic cells.
(3 lectures)

Unit 2: Cell wall and plasma membrane
Chemistry, structure and function of Plant cell wall. Overview of membrane function; fluid mosaic model; Chemical composition of membranes.   **(5 lectures)**

Unit 3: Cell organelles
Nucleus: Structure-nuclear envelope, nuclear pore complex, nuclear lamina, molecular organization of chromatin; nucleolus. **Chloroplast, mitochondria and peroxisomes:** Structural organization; Function; Semiautonomous nature of mitochondria and chloroplast. **Endomembrane system**: Endoplasmic Reticulum – Structure, targeting and insertion of proteins in the ER, protein folding, processing; Smooth ER, export of proteins and lipids. **Golgi Apparatus** – organization, protein glycosylation, protein sorting and export from Golgi Apparatus; Lysosomes.   **(12 lectures)**

Unit 4: Cell division Phases of eukaryotic cell cycle, mitosis and meiosis; Regulation of cell cycle-checkpoints.   **(7 lectures)**

Biochemistry:
Unit 6: Biomolecules Types and significance of chemical bonds; Structure and properties of water; pH and buffers.
Carbohydrates: Nomenclature and classification; Monosaccharides; Disaccharides; Oligosaccharides and polysaccharides and its significance.
Lipids: Definition and major classes of storage and structural lipids; Fatty acids structure and functions; Essential fatty acids; Triacyl glycerols structure, functions and properties; Phosphoglycerides.
Proteins: Structure of amino acids; Levels of protein structure-primary, secondary, tertiary and quaternary and biological roles of proteins.nitrogenous bases; Structure and function of nucleotides; Types of nucleic acids;

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Structure of A, B, Z types of DNA; Types of RNA; Structure of tRNA.   **(23 lectures)**

Unit 7: Enzymes
Structure of enzyme: holoenzyme, apoenzyme, cofactors, coenzymes and prosthetic group; Classification of enzymes; Features of active site, substrate specificity, mechanism of action (activation energy, lock and key hypothesis, induced - fit theory).   **(6 lectures)**

Unit 8: Vitamins General characteristics of vitamins. Nomenclature and classification of vitamins and its significance.   **(4 lectures)**

Reference Books:
1. Karp, G. (2010). Cell Biology, John Wiley & Sons, U.S.A. 6th edition.
2. Hardin, J., Becker, G., Skliensmith, L.J. (2012). Becker's World of the Cell, Pearson Education Inc. U.S.A. 8th edition.
3. Cooper, G.M. and Hausman, R.E. (2009) The Cell: A Molecular Approach. 5th edition. ASM Press &Sunderland, Washington, D.C.; Sinauer Associates, MA.
4. 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
5. Chrispeels, M.J. and Sadava, D.E. 1994 Plants, Genes and Agriculture. Jones & Bartlett Publishers)

CXLIII.   MAJOR COURSE- MJ 10:
GENETICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
2. The paper will deal with heredity inheritance pattern among the organism.
3. Linkage and genetic recombination.
4. Gene mapping
5. Chromosomal structure.

Course Learning Outcomes:
1. The unit will enable the students to learn about the use of linkage and recombination frequencies to map genes.
2. The unit will provide an understanding of:
   - Morphology of chromosomes and its relevance in genetics.
   - Chromosomal and their role in genome evolution with special reference to crop plants.

Genetics

Unit 1: Mendelian genetics and its extension
Mendelism: History; Principles of inheritance; Chromosome theory of inheritance; Autosomes and sex chromosomes; Probability and pedigree analysis; Incomplete dominance and codominance; Multiple alleles, Lethal alleles, Epistasis, Pleiotropy, Recessive and Dominant traits; Polygenic inheritance.   **(10 lectures)**

Unit 2: Extrachromosomal Inheritance
Chloroplast mutation: Variegation in Four o'clock plant; Mitochondrial mutations in yeast; Maternal effects-shell coiling in snail; Infective heredity- Kappa particles in Paramecium.   **(4 lectures)**

Unit 3: Linkage, crossing over, genetic recombination and chromosome mapping
Linkage and crossing over-Cytological basis of crossing over; two factor and three factor crosses; genetic recombination, Recombination frequency, Interference and coincidence; Numericals based on gene mapping; Sex Linkage.   **(5 lectures)**

Unit 4: Variation in chromosome number and structure
Deletion, Duplication, Inversion, Translocation, Euploidy and Aneuploidy   **(5 lectures)**

Unit 5: Gene mutations
Types of mutations; Molecular basis of Mutations; Mutagens – physical and chemical (Base analogs, deaminating, alkylating and intercalating agents); Detection of mutations: ClB method. Role of Transposons in mutation. DNA repair mechanisms.   **(8 lectures)**

Unit 6: Fine structure of gene
Classical vs molecular concepts of gene; Cis-Trans complementation test for functional allelism; Structure of Phage T4, rII Locus.   **(6 lectures)**

Unit 7. Population and Evolutionary Genetics
Allele frequencies, Genotype frequencies, Hardy-Weinberg Law, role of natural selection, mutation, genetic drift. Genetic variation and Speciation.   **(5 lectures)**

Plant Breeding and Crop improvement

Unit 1. Plant Breeding: Introduction to plant breeding, steps in plant breeding, various technique of selfing and crossing, methods of plant breeding in self-pollinated, cross pollinated and asexual propagated plants; Parasexuality; sources of variation in plant breeding; mutation breeding; field trial techniques.   **(10 lectures)**

Unit 2. Crop improvement: Methods of crop improvement for disease and pest resistance; Breeding and improvement in rice, wheat, maize, millets, sugarcane and potato. Biofortification.   **(8 lectures)**

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Reference Books:

1. Karp, G. (2010). Cell Biology, John Wiley & Sons, U.S.A. 6th edition.
2. Hardin, J., Becker, G., Skliensmith, L.J. (2012). Becker's World of the Cell, Pearson Education Inc. U.S.A. 8th edition.
3. Cooper, G.M. and Hausman, R.E. (2009) The Cell: A Molecular Approach. 5th edition. ASM Press &Sunderland, Washington, D.C.; Sinauer Associates, MA.
4. 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
5. Chrispeels, M.J. and Sadava, D.E. 1994 Plants, Genes and Agriculture. Jones & Bartlett Publishers)
6. P K Gupta, Plant Breeding, Rastogi Publication.
7. B D Singh, Plant Breeding, Kalyani Publication.
8. Kumar and Sinha, A cytogenetics plant breeding and evolutionary biology.

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CXLIV.   MAJOR COURSE- MJ 11:
PRACTICALS-IV:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Cell Biology & Biochemistry and Cytogenetics & Plant Breeding
1. Study of cell and its organelles with the help of electron micrographs.
2. Stain preparation and different types of strains used in cytogenetics (Acetocarmine).
3. Study the phenomenon of plasmolysis and deplasmolysis.
4. Study the effect of organic solvent and temperature on membrane permeability.
5. Pollen viability test.
6. Preparation of temporary slides to study different stages of mitosis (Onion root tip/Provided material) and meiosis (Onion floral buds/Provided materials) using squash technique.
7. Mendel's laws through seed ratios. Laboratory exercises in probability and chi-square.
8. Chromosome mapping using point test cross data.
9. Incomplete dominance and gene interaction through seed ratios. (9:7, 9:6:1,13:3, 15:1, 12:3:1, 9:3:4).
10. Photographs/Permanent Slides showing stages of mitosis and meiosis, Translocation Ring, Laggards andInversion Bridge.
11. Biochemical test of carbohydrate, lipid and protein.
12. Demonstration of hybridization techniques (Emasculation, Bagging and tagging)

Reference Books:
1. Karp, G. (2010). Cell Biology, John Wiley & Sons, U.S.A. 6th edition.
2. Hardin, J., Becker, G., Skliensmith, L.J. (2012). Becker's World of the Cell, Pearson Education Inc. U.S.A. 8th edition.
3. Cooper, G.M. and Hausman, R.E. (2009) The Cell: A Molecular Approach. 5th edition. ASM Press &Sunderland, Washington, D.C.; Sinauer Associates, MA.
4. 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
5. Chrispeels, M.J. and Sadava, D.E. 1994 Plants, Genes and Agriculture. Jones & Bartlett Publishers)

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SEMESTER VI

CXLV.   MAJOR COURSE- MJ 12:
PLANT PHYSIOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
1. The course aims at making students realize how plants function, namely the importance of water, minerals, hormones, and light in plant growth and development; understand transport mechanisms and translocation in the phloem, and appreciate the commercial applications of plant physiology.
2. Current understanding of regulation and integration of metabolic processes in plants with reference to crop productivity. To gain the knowledge of physiological and biochemical processes in the plant system

Course Learning Outcomes:
On successful completion of this course the student should be able to:
1. To understand water and nutrient uptake and movement in plants, role of mineral elements, translocation of sugars. Role of various plant growth regulator as, phytochrome cytochromes and phototropins, and flowering stimulus. Students will gain the knowledge on reproductive strategies in higher plants along with physiology of flowering, molecular and hormonal basis of flowering mechanism.

Course Content:
Unit 1: Plant-water relations Water Potential and its components, mechanism of water absorption-active and passive absorption, aquaporins, pathway of water movement, symplast, apoplast, transmembrane pathways, root pressure, guttation. Ascent of sap– cohesion-tension theory. Transpiration and factors affecting transpiration, antitranspirants, mechanism of stomatal movement.
        (9 lectures)

Unit 2: Mineral nutrition
Essential and beneficial elements, macro and micronutrients, methods of study and use of nutrient solutions, criteria for essentiality, mineral deficiency symptoms, roles of essential elements, chelating agents.   **(7 lectures)**

Unit 3: Nutrient Uptake Soil as a nutrient reservoir, transport of ions across cell membrane, passive absorption, electrochemical gradient, facilitated diffusion, active absorption, role of ATP, carrier systems, proton ATPase pump and ion flux, uniport, co-transport, symport, antiport.
        (7 lectures)

Unit 4: Phloem Translocation Experimental evidence in support of phloem as the site of sugar translocation. Pressure–Flow Model; Phloem loading and unloading; Source–sink relationship.   **(5 lectures)**

Unit 5: Photosynthesis
Photosynthesis as a chemical process – Light and Dark reaction; mechanism of absorption of light. The pigment system – PS I and PS II. Phosphorylation – Electron Transport System and Photophosphorylation (Cyclic and Non-cyclic). Hatch and Slack Pathway. CAM Cycle; Significance of C4 cycle and CAM. Factors affecting rate of photosynthesis. Significance of photosynthesis.   **(9 lectures)**

Unit 6: Respiration Types of respiration, mechanism (Glycolysis). Kreb's cycle: Electron Transport System, Oxidative phosphorylation, fermentation. Factors affecting rate of respiration. Photorespiration. **(7 lectures)**

Unit 7: Plant growth regulators Discovery, chemical structure and physiological roles of Auxin, Gibberellins, Cytokinin, Abscisic acid, Ethylene.   **(7 lectures)**

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Unit 8: Physiology of flowering
Photoperiodism, flowering stimulus, florigen concept, vernalization, seed dormancy.   **(6 lectures)**

Unit 9: Phytochrome, cryptochromes and phototropins
Discovery, chemical nature and structure, role in photomorphogenesis.   **(3 lectures)**

Reference Books:
1. Hopkins, W.G. and Huner, A. (2008). Introduction to Plant Physiology. John Wiley and Sons.
2. U.S.A. 4thedition.
3. Taiz, L., Zeiger, E., MØller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
4. Bajracharya D. (1999). Experiments in Plant Physiology-A Laboratory Manual. Narosa Publishing House, New Delhi.
5. Campbell, MK (2012) Biochemistry, 7th ed., Published by Cengage Learning
6. Campbell, PN and Smith AD (2011) Biochemistry Illustrated, 4th ed., Published by Churchill Livingstone
7. Tymoczko JL, Berg JM and Stryer L (2012) Biochemistry: A short course, 2nd ed., W.H. Freeman
8. Berg JM, Tymoczko JL and Stryer L (2011) Biochemistry, W.H. Freeman and Company
9. Nelson DL and Cox MM (2008) Lehninger Principles of Biochemistry, 5th Edition., W.H. Freeman and Company
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CXLVI.   MAJOR COURSE- MJ 13:
MOLECULAR BIOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
1. To gain the knowledge of structure and functions of DNA and RNA.

Course Learning Outcomes:
1. Understanding of nucleic acid, organization of DNA in prokaryotes and Eukaryotes, DNA replication mechanism, genetic code and transcription process.
2. Processing and modification of RNA and translation process, function and regulation of expression. Application in biotechnology.

Course Content:
Unit 1: Nucleic acids: Carriers of genetic information. Introduction, DNA as the carrier of genetic information (Griffith's, McLeod & McCarty experiment).
        (4 lectures)

Unit 2. The Structures of DNA and RNA / Genetic Material
DNA Structure: Watson and Crick model, Salient features of double helix, denaturation and renaturation, Organization of DNA- Prokaryotes, Viruses, Eukaryotes. RNA Structure Organelle DNA -- mitochondria and chloroplast DNA. The Nucleosome Chromatin structure- Euchromatin, Heterochromatin- Constitutive and Facultative heterochromatin.   **(15 lectures)**

Unit 3: The replication of DNA
Chemistry of DNA synthesis (Kornberg's discovery); General principles – bidirectional, semiconservative and semi discontinuous replication; Various models of DNA replication, including rolling circle, replication of linear ds-DNA, replication of the 5'end of linear chromosome; Enzymes involved in DNA replication.   **(10 lectures)**

Unit 4: Genetic code Genetic code (deciphering and salient features)   **(2 lectures)**

Unit 4: Transcription
Concept of central dogma, Transcription in prokaryotes and eukaryotes. Principles of transcriptional regulation; Prokaryotes: Regulation of lactose metabolism and tryptophan synthesis in *E.coli*. Gene silencing.
        (8 lectures)

Unit 5: Processing and modification of RNA
Split genes-concept of introns and exons, removal of introns, spliceosome machinery, splicing pathways, group I and group II intron splicing, alternative splicing eukaryotic mRNA processing (5' cap, 3' polyA tail).
                                                                                       (7 lectures)
Unit 6: Translation
Ribosome structure and assembly, mRNA; aminoacyl tRNA synthetases; Various steps in protein synthesis, proteins involved in initiation, elongation and termination of polypeptides; Fidelity of translation; Inhibitors of protein synthesis; Post-translational modifications of proteins.   **(14 lectures)**

Reference Books:
1. Watson J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M., Losick, R. (2007). Molecular Biology ofthe Gene, Pearson Benjamin Cummings, CSHL Press, New York, U.S.A. 6th edition.
2. Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics. John Wiley and Sons Inc., U.S.A. 5th ed.
3. Klug, W.S., Cummings, M.R., Spencer, C.A. (2009). Concepts of Genetics. Benjamin Cummings. U.S.A. 9th edition.
4. Russell, P. J. (2010). i-Genetics- A Molecular Approach. Benjamin Cummings, U.S.A. 3rd edition.
5. Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2010). Introduction to Genetic Analysis.

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6. W. H. Freeman and Co., U.S.A. 10th edition.

7. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.

8. Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics. John Wiley and Sons, U.K. 5th edition.

CXLVII.   MAJOR COURSE- MJ 14:
PLANT BIOTECHNOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
1. The objective of the course is to give students new knowledge and widening of the knowledge acquired in other course by handling of classical and modern plant biotechnology processes, including tissue culture for healthy plants, plants with improved characteristics.
2. This course explores the use of biotechnology to both generate genetic variation in plants and to understand how factors at the cellular level contribute to the expression of genotypes and hence to phenotypic variation.
3. Understanding of biotechnological processes such as recombinant DNA technology.
4. This knowledge is central to our ability to modify plant responses and properties for global food security and commercial gains in biotechnology and agriculture. In the laboratory classes, students will perform some of the techniques currently used to generate information and detect genetic variation.

Course Learning Outcomes:
1. Learn the basic concepts, principles and processes in plant biotechnology. Have the ability of explanation of concepts, principles and usage of the acquired knowledge in biotechnological and agricultural applications.
2. Use basic biotechnological techniques to explore molecular biology of plants.
3. Understand, how biotechnology is used to for plant improvement and discuss the biosafety concern and ethical issue of that use.

Course Content:
Unit 1: Plant Tissue Culture
Introduction, Composition of media; Nutrient and hormone requirements (role of vitamins and hormones); Totipotency; Organogenesis; Embryogenesis (somatic and zygotic); Protoplast isolation, culture and fusion; Tissue culture applications (micropropagation, androgenesis, virus elimination, secondary metabolite production, haploids, triploids and hybrids; Cryopreservation; Germplasm Conservation).   **(15 lectures)**

Unit 2: Recombinant DNA technology
Restriction Endonucleases (History, Types I-IV, biological role and application); Restriction Mapping (Linear and Circular); Cloning Vectors: Prokaryotic (pUC 18 and pUC19, pBR322, Ti plasmid, BAC); Lambda phage, M13 phagemid, Cosmid, Shuttle vector; Eukaryotic Vectors (YAC).   **(10 lectures)**

Unit 3: Gene Cloning
Recombinant DNA, Bacterial Transformation and selection of recombinant clones, PCR mediated gene cloning; Gene Construct; construction of genomic and cDNA libraries, screening DNA libraries to obtain gene of interest by genetic selection; complementation, colony hybridization; PCR.   **(10 lectures)**

Unit 4: Methods of gene transfer
Biological method (Indirect): Agrobacterium-mediated; Physical methods (Direct): Electroporation, Microinjection, Microprojectile bombardment; Selection of transgenics– selectable marker and reporter genes (Luciferase, GUS, GFP).   **(10 lectures)**

Unit 5: Applications of Biotechnology
Pest resistant (Bt-cotton); herbicide resistant plants (RoundUp Ready soybean); Transgenic crops with improved quality traits (Flavr Savr tomato, Golden rice); Improved horticultural varieties (Moondust carnations); Role of transgenics in bioremediation (Superbug); edible vaccines; Industrial enzymes (Aspergillase, Protease, Lipase); Genetically Engineered Products–Human Growth Hormone; Humulin; Biosafety concerns.   **(15 lectures)**

Reference Books:
1. Watson J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M., Losick, R. (2007). Molecular Biology ofthe Gene, Pearson Benjamin Cummings, CSHL Press, New York, U.S.A. 6th edition.

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2. Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics. John Wiley and Sons Inc., U.S.A. 5th ed.
3. Klug, W.S., Cummings, M.R., Spencer, C.A. (2009). Concepts of Genetics. Benjamin Cummings. U.S.A. 9th edition.
4. Russell, P. J. (2010). i-Genetics- A Molecular Approach. Benjamin Cummings, U.S.A. 3rd edition.
5. Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2010). Introduction to Genetic Analysis.
6. W. H. Freeman and Co., U.S.A. 10th edition.
7. Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands.
8. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.
9. Bhojwani, S.S. and Bhatnagar, S.P. (2011). The Embryology of Angiosperms. Vikas Publication House Pvt. Ltd., New Delhi. 5th edition.
10. Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics. John Wiley and Sons, U.K. 5th edition.
11. Stewart, C.N. Jr. (2008). Plant Biotechnology & Genetics: Principles, Techniques and Applications. John Wiley & Sons Inc. U.S.A.

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CXLVIII.   MAJOR COURSE- MJ 15:
PRACTICALS-V:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:

Plant Physiology
1. Determination of osmotic potential of plant cell sap by plasmolytic method.
2. Determination of water potential of given tissue (potato tuber) by weight method.
3. Study of the effect of wind velocity and light on the rate of transpiration in excisedtwig/leaf.
4. Calculation of stomatal index and stomatal frequency from the two surfaces of leaves of a mesophyte and xerophyte.
5. To study the phenomenon of seed germination (effect of light).
6. To study the effect of different concentrations of IAA on *Avena* coleoptile elongation (IAA Bioassay).
7. To study the induction of amylase activity in germinating barley grains.
8. Perform rate of photosynthesis and oxygen evolution by Wilmott's bubbler. Perform Moll's experiment.

Demonstration experiments
1. To demonstrate suction due to transpiration.
2. Bolting experiment/Avena coleptile bioassay (demonstration).
3. Study of plant cell structure with the help of epidermal peel mount of Onion/Rhoeo/Crinum.
4. Demonstration of the phenomenon of protoplasmic streaming in *Hydrilla* leaf.
5. Measurement of cell size by the technique of micrometry.

MOLECULAR BIOLOGY & PLANT BIOTECHNOLOGY
1. Isolation of genomic DNA from *E.Coli.*
2. DNA isolation from plant leaves.
3. DNA estimation by diphenylamine reagent/UV Spectrophotometry.
4. Study of DNA replication mechanisms through photographs (Rolling circle, Theta replication and semi-discontinuous replication).
5. Study of structures of prokaryotic RNA polymerase and eukaryotic RNA polymerase II through photographs.
6. Photographs establishing nucleic acid as genetic material (Messelson and Stahl's, Avery et al, Griffith's, Hershey & Chase's and Fraenkel & Conrat's experiments)
7. Study of the following through photographs: Assembly of Spliceosome machinery; Splicing mechanism in group I & group II introns; Ribozyme and Alternative splicing
8. (a) Preparation of MS medium.
   (b) Demonstration of in vitro sterilization and inoculation methods using leaf and nodal explants of tobacco, *Datura, Brassica* etc.
9. Study of anther, embryo and endosperm culture, micropropagation, somatic embryogenesis &artificial seeds through photographs.
10. Isolation of protoplasts.

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11. Study of methods of gene transfer through photographs: Agrobacterium-mediated, direct gene transfer by electroporation, microinjection, microprojectile bombardment.

12. Study of steps of genetic engineering for production of Bt cotton, Golden rice, Flavr Savr tomato through photographs.

Reference Books

1. Watson J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M., Losick, R. (2007). Molecular Biology of the Gene, Pearson Benjamin Cummings, CSHL Press, New York, U.S.A. 6th edition.
2. Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics. John Wiley and Sons Inc., U.S.A. 5th ed.
3. Klug, W.S., Cummings, M.R., Spencer, C.A. (2009). Concepts of Genetics. Benjamin Cummings. U.S.A. 9th edition.
4. Russell, P. J. (2010). i-Genetics- A Molecular Approach. Benjamin Cummings, U.S.A. 3rd edition.
5. Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2010). Introduction to Genetic Analysis.
6.   W. H. Freeman and Co., U.S.A. 10th edition.
7. Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands.
8. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.
9. Bhojwani, S.S. and Bhatnagar, S.P. (2011). The Embryology of Angiosperms. Vikas Publication House Pvt. Ltd., New Delhi. 5th edition.
10. Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics. John Wiley and Sons, U.K. 5th edition.
11. Stewart, C.N. Jr. (2008). Plant Biotechnology & Genetics: Principles, Techniques and Applications. John Wiley & Sons Inc. U.S.A.

SEMESTER VII

CXLIX.   MAJOR COURSE- MJ 16:
BIOINFORMATICS & COMPUTATIONAL BIOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
1. To familiarize the students with the fundamental principles of Bioinformatics and Computational biology.
2. Various potential application of Bioinformatics and Computational tools in biology.

Course Learning Outcomes:
1. Ability to carry out research /investigation independently in specialized area of Bioinformatics and Computational Biology.

Course Content:
Bioinformatics   **(30 Lectures)**
1. Bioinformatics: Introduction – genomics – transcriptome – proteome.
2. Biological databases: Generalized and specialized databases – DNA, protein and carbohydrate databases – nucleic acid sequence databases – premier institutes for databases – nucleic acid codes used in database formats; Collection and down loading of information from databases – literature search.
3. Sequence alignment and its evolutionary basis: Simple alignment and multiple sequence alignment - searching the database for sequence similarity – search programmes with special reference to FASTA, BLAST, CLUSTAL W. Application of bioinformatics in phylogenetic analysis.

Computational Biology   **(30 lectures)**
1. Computer assisted drug design- concept, methods and practical approaches.
2. Diagrammatic, graphical and tabular representations of data; measures of central tendency, dispersion, skewness and kurtosis.
3. Basic concepts of hypothesis testing, two kinds of error, level significance, p value, t- Test for mean and difference between two means, partial t-test., and Chi square test for goodness of fit.

Reference Books
1. Xiong, Essential Bioinformatics, Cambridge University Press.
2. Marketa J Zvelebil, Understanding Bioinformatics, Garland Sciences.
3. Shui Quing Ye, Bioinformatics: A practical approach.
4. Anna Tramantano, Introduction to Bioinformatics.
5. David W Mount, Bioinformatics. CBS.
6. Mani K and Vijayaraj N, Bioinformatics, Kalaikathir Achchagam.

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CL.   MAJOR COURSE- MJ 17:
ADVANCED MOLECULAR BIOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:
1. To familiarize the students with the fundamental principles of molecular tools and techniques, and various potential application of molecular biology.

Course Learning Outcomes:
1. Use the techniques, skills, and modern tools necessary for imbalances in various life processes, design a molecular cell biology research project, collect and analyze data, and interpret results.

Course Content:
Unit 1: Introduction to Molecular Cloning
Vectors: Characteristics of cloning vectors, Plasmids (pBR322, pUC18/I9) and Ti plasmid. Shuttle vectors and Expression vectors: *E. coli lac* and T7 promoter-based vectors.
Enzymes used in Molecular Cloning: Restriction enzymes. Types I, II and III, nomenclature, use of Type II restriction enzymes in cloning. Reverse transcriptase.
Methods used in Molecular Cloning: Agarose gel electrophoresis of DNA, Southern, Northern and Western blotting. RFLP (Restriction Fragment Length Polymorphism).
Molecular probes: cDNA probes – RNA probes   **(15 Lectures)**

Unit 2: PCR Techniques
Principle of Polymerase Chain Reaction, RT-PCR, Real-Time PCR and their applications.   **(10 lectures)**

Unit 3: Gene Expression
Regulation of gene expression in Prokaryotes: various models - operon - details of lac operon-negative and positive control lac operon. Regulation gene expression in eukaryotes: Regulation of transcription - regulation of RNA processing and translation. Microarray and gene expression analysis.   **(20 lectures)**

Unit 4: DNA Sequencing
DNA sequencing: Maxam Gilbert chemical method - Sanger's enzymatic chain termination method – foot printing.   **(8 Lectures)**

Unit 5: Gene Silencing and Genome Editing
Introduction to gene silencing (RNAi)/ post-transcriptional gene silencing (PTGS) and its mechanism.
Introduction and Principle of genome editing   **(7 Lectures)**

Reference Books:
1. Brown TA. (2010) Gene Cloning and DNA Analysis. 6th edition. Blackwell Publishing, Oxford, U.K.
2. Primrose SB and Twyman RM. (2006) Principles of Gene Manipulation and Genomics, 7th edition. Blackwell Publishing, Oxford, U.K.
3. Sambrook J and Russell D. (2001) Molecular Cloning-A Laboratory Manual. 3rd edition. Cold Spring Harbor Laboratory Press.
4. Walker J M and Gringold EB, Molecular Biology and Biotechnology. Panima.
5. Benjamin Lewin. Genes 1X. John Wiley.
6. Hartwell L H et al., Genetics: From Genes to Genome. Mc Graw Hill.
7. Watson J D et al., Molecular Biology of the Gene. The Benjamin / Cummings.
8. Lodish H et al., Molecular Cell Biology. Scientific American Books. W H Freeman.
9. David Freid felder, Molecular Biology. Narosa.
10. Adrin J Harwood, Methods in Molecular Biology, Vol.58, Basic DNA and RNA protocols. Humana Press.
11. Chris R Calladine et al., Understanding DNA. Elsevier.
12. Micklos D A et al., DNA Science. Cold Spring Harbour.
13. Cox et al, Molecular Biology, Principles and Practice, Freeman
14. Tropp, Molecular Biology, Genes to proteins, Jones and Bartlett
15. Allison, Fundamental Molecular Biology, Wiley.

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16. Ernst L Winnacker, from genes to clones, Panim

CLI.   MAJOR COURSE- MJ 18:
APPLIED BOTANY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective:
1. To discuss the application of botany in various fields including the role of microbes and plants in the production of various products for the well-being of humans.
2. To acquaint with the recent technologies and methods in the field of improvement of crops and environment.

Course Learning Outcome:
1. The students will be able to know the basic as well as advanced trends in the field of botany to remediate the environment with the help of microbes and their various applications.
2. Various recent trends to improve the plants quality and its products.
3. To analyse the basic knowledge regarding the proteins and genome of the plants.

Course Content:
1. Role of microbes in Industries and Human Welfare   **(10 lectures)**
(i) Production and application of organic acids; lactic acid, citric acid and acetic acid. Concept of antibiosis, secondary metabolites, antibiotic fermentation.

(ii) Biological wastewater treatment: Upflow Anaerobic Sludge Blanket (USAB), Reactor and Fluidized Bed Reactor (FBR).

(iii) Food toxicology: Microbial toxins (Endotoxin and exotoxin). Source of microbial toxin in contamination of food grains and food products, spoilage of food.

(iv) Basic concept in brief FDA (Food and Drug Administration), EPA (Environment Protection Act), HACCP (Hazard Analysis and Critical Control Points) and FSA (Flexible Spending Account).

2. Application of microbes in fermentation processes: Types, design and maintenance of bioreactors. Application of fermentation technology in industry.   **(4 lectures)**

3. Fossil fuels and their environmental impact; Biofuels: Microbial enhanced oil recovery, Bio-ethanol and bio-diesel production, commercial production from lignocellulosic waste, Biogas production – Methane and hydrogen production using microbial culture. Extremophiles and their biotechnological applications.
                    (10 lectures)

4. Production of antibiotics, vaccines, and biocides: Bioreactors; Bioprocess engineering; Production of non-microbial origin products by genetically engineered microorganisms. Concept of probiotics and applications of new tools of biotechnology for quality feed/food production. Single cell protein, Bioinsecticides; Biofertilizers; Recent advances in microbial biotechnology. Mass cultivation of *Spirulina, Chlorella* and *Scenedesmus,* Commercial potential of *Spirulina, Duneliella* and *Porphyra*.
          (10 lectures)

5. A brief account on Phytochemical and Pharmacological aspects and uses of following medicinal plants: *Andrographis paniculata, Bacopa monnieri, Centella asiatica, Curcuma longa, Momordica charantia, Ocimum sanctum, Phylanthus niruri, Tinospora cordifolia, Withania somnifera.*   **(10 lectures)**

6. Conventional versus non-conventional methods for crop improvement. Genetic engineering for resistance against abiotic and biotic stresses; Genetic engineering for increasing crop productivity; Genetic engineering for quality improvement. Molecular breeding: constructing molecular maps, physical and

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molecular maps; diversity assessment and phylogenetic analysis; molecular tagging of genes/traits.
(10 lectures)

7. Classical ways of genome analysis. DNA chips and their use in transcriptome analysis. General uses and application of Crystallography. Genomics and proteomics of cyanobacteria, yeast and *fusarium*. Applications of genomics and proteomics in agriculture, human health and industry.　　　　　　　**(6 lectures)**

Reference Book:

1. Brown TA. (2010) Gene Cloning and DNA Analysis. 6th edition. Blackwell Publishing, Oxford, U.K.
2. Primrose SB and Twyman RM. (2006) Principles of Gene Manipulation and Genomics, 7th edition. Blackwell Publishing, Oxford, U.K.
3. Sambrook J and Russell D. (2001) Molecular Cloning-A Laboratory Manual. 3rd edition. Cold Spring Harbor Laboratory Press.
4. Walker J M and Gringold EB, Molecular Biology and Biotechnology. Panima.
5. Benjamin Lewin. Genes 1X. John Wiley.
6. Hartwell L H et al., Genetics: From Genes to Genome. Mc Graw Hill.
7. Watson J D et al., Molecular Biology of the Gene. The Benjamin / Cummings.
8. Lodish H et al., Molecular Cell Biology. Scientific American Books. W H Freeman.
9. David Freid felder, Molecular Biology. Narosa.
10. Adrin J Harwood, Methods in Molecular Biology, Vol.58, Basic DNA and RNA protocols. Humana Press.
11. Chris R Calladine et al., Understanding DNA. Elsevier.
12. Micklos D A et al., DNA Science. Cold Spring Harbour.
13. Cox et al, Molecular Biology, Principles and Practice, Freeman
14. Tropp, Molecular Biology, Genes to proteins, Jones and Bartlett
15. Allison, Fundamental Molecular Biology, Wiley.
16. Ernst L Winnacker, from genes to clones, Panim
17. Lee, R.E. (2008). Phycology, Cambridge University Press, Cambridge. 4th edition.
18. Wiley JM, Sherwood LM and Woolverton CJ. (2013) Prescott's Microbiology. 9th Edition. McGrawHill International.
19. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West Press, Delhi.
20. Sahoo, D. (2000). Farming the ocean: seaweeds cultivation and utilization. Aravali International, New Delhi.
21. Campbell, N.A., Reece J.B., Urry L.A., Cain M.L., Wasserman S.A. Minorsky P.V., Jackson R.B. (2008).
22. Biology, Pearson Benjamin Cummings, USA. 8th edition.
23. Pelczar, M.J. (2001) Microbiology, 5th edition, Tata McGraw-Hill Co, New Delhi.
24. Campbell, MK (2012) Biochemistry, 7th ed., Published by Cengage Learning
25. Campbell, PN and Smith AD (2011) Biochemistry Illustrated, 4th ed., Published by Churchill Livingstone
26. Tymoczko JL, Berg JM and Stryer L (2012) Biochemistry: A short course, 2nd ed., W.H.Freeman
27. Berg JM, Tymoczko JL and Stryer L (2011) Biochemistry, W.H.Freeman and Company
28. Nelson DL and Cox MM (2008) Lehninger Principles of Biochemistry, 5th Edition., W.H. Freeman andCompany.
29. Karp, G. (2010). Cell Biology, John Wiley & Sons, U.S.A. 6th edition.
30. Hardin, J., Becker, G., Skliensmith, L.J. (2012). Becker's World of the Cell, Pearson Education Inc. U.S.A.
31. 8th edition.
32. Cooper, G.M. and Hausman, R.E. (2009) The Cell: A Molecular Approach. 5th edition. ASM Press &Sunderland, Washington, D.C.; Sinauer Associates, MA.
33. Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. (2009) The World of the Cell. 7th edition.
34. Pearson Benjamin Cummings Publishing, San Francisco
35. Watson J.D., Baker, T.A., Bell, S.P., Gann, A., Levine, M., Losick, R. (2007). Molecular Biology ofthe Gene, Pearson Benjamin Cummings, CSHL Press, New York, U.S.A. 6th edition.
36. Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics. John Wiley and Sons Inc., U.S.A. 5th ed.
37. Klug, W.S., Cummings, M.R., Spencer, C.A. (2009). Concepts of Genetics. Benjamin Cummings. U.S.A. 9th edition.
38. Russell, P. J. (2010). i-Genetics- A Molecular Approach. Benjamin Cummings, U.S.A. 3rd edition.
39. Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2010). Introduction to Genetic Analysis.
40. W. H. Freeman and Co., U.S.A. 10th edition.
41. Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands.
42. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.
43. Bhojwani, S.S. and Bhatnagar, S.P. (2011). The Embryology of Angiosperms. Vikas Publication House Pvt. Ltd., New Delhi. 5th edition.
44. Snustad, D.P. and Simmons, M.J. (2010). Principles of Genetics. John Wiley and Sons, U.K. 5th edition.
45. Stewart, C.N. Jr. (2008). Plant Biotechnology & Genetics: Principles, Techniques and Applications. John Wiley & Sons Inc. U.S.A.

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CLII. MAJOR COURSE- MJ 19:
PRACTICALS-VI:

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

<u>End Semester Examination (ESE):</u>
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
BIOINFORMATICS AND COMPUTATIONAL BIOLOGY

1. Gene identification by using Genbank (NCBI).
2. Sequence alignment and construction of phylogenetic tree by using tools (BLAST, MEGA, Bioedit).
3. Student t-test and Chi square test.

ADVANCED MOLECULAR BIOLOGY

1. Isolation of plasmid/genomic DNA.
2. Agarose Gel Electrophoresis of plasmid/genomic DNA.
3. Digestion of plasmid DNA using restriction enzymes and analysis by agarose gel electrophoresis.

Reference Books
1. Brown TA. (2010) Gene Cloning and DNA Analysis. 6th edition. Blackwell Publishing, Oxford, U.K.
2. Primrose SB and Twyman RM. (2006) Principles of Gene Manipulation and Genomics, 7th edition. Blackwell Publishing, Oxford, U.K.
3. Sambrook J and Russell D. (2001) Molecular Cloning-A Laboratory Manual. 3rd edition. Cold Spring Harbor Laboratory Press.

SEMESTER VIII

CLIII. MAJOR COURSE- MJ 20:
ADVANCED BIOTECHNOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective
To familiarize the students with the fundamental principles of Biotechnology, various developments in Biotechnology and its potential applications.

Course Learning Outcomes
Ability to carry out research /investigation independently in specialized area of Biotechnology.

Course Content:
Unit 1: History of plant cell and tissue culture; Culture media; Various types of culture; callus, suspension, nurse, root, meristem, etc.; In vitro differentiation: organogenesis and somatic embryogenesis; Plant growth regulators: mode of action, effects on in vitro culture and regeneration; Molecular basis of plant organ differentiation.   **(10 Lectures)**

Unit 2: Micropropagation; Anther and microspore culture; Somaclonal variation; In vitro mutagenesis; In vitro fertilization; In vitro germplasm conservation; Production of secondary metabolites; Synthetic seeds.
                                                                                                            (10 Lectures)

Unit 3: Embryo rescue and wide hybridization; Protoplast culture and regeneration; Somatic hybridization: protoplast fusion, cybrids, asymmetric hybrids, etc.   **(8 Lectures)**

Unit 4: Methods of plant transformation; Vectors for plant transformation; Genetic and molecular analyses of transgenics; Target traits and transgenic crops; Biosafety issues, testing of transgenics, regulatory procedures for commercial approval.   **(15 Lectures)**

Unit 5: Secondary Agriculture Biotechnology: Biotech feed, Silage, Biomanure, biogas, biofuels – advantages and processing parameters.   **(5 Lectures)**

Unit 6: GM crops: Advantages, social and environmental aspects, Bt crops, golden rice, transgenic animals.
                                                                                                             (5 Lectures)

Unit 7: Bioethics and Biosafety   **(3 Lectures)**

Unit 8: Intellectual Property Right in Biotechnology   **(4 Lectures)**

Reference Books:
1. Bhojwani SS. 1983. Plant Tissue Culture: Theory and Practice. Elsevier.
2. Christou P & Klee H. 2004. Handbook of Plant Biotechnology. John Wiley & Sons.
3. Dixon RA. 2003. Plant Cell Culture. IRL Press.
4. George E F, Hall MA & De Klerk GJ. 2008. Plant Propagation by Tissue Culture. Agritech Publ.
5. Gupta PK. 2004. Biotechnology and Genomics. Rastogi Publ.
6. Herman EB. 2005-08. Media and Techniques for Growth, Regeneration and Storage. Agritech Publ.
7. Pena L. 2004. Transgenic Plants: Methods and Protocols. Humana Press.
8. Pierik RLM. 1997. In vitro Culture of Higher Plants. Kluwer.
9. Singh BD. 2007. Biotechnology: Expanding Horizon. Kalyani.

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CLIV. ADVANCED MAJOR COURSE- AMJ 1:
BIOLOGICAL INSTRUMENTATION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective
1. Understand the Principles of microscopy.
2. Understand the structure and functioning of various biological instruments.
3. Get enlighten their knowledge in various biochemical methods

Course Learning Outcomes
1. Skill in operating laboratory equipment, their upkeep, and adept at various biological techniques.
2. Ability to prepare molar, molal, normal solutions and solutions of different dilutions. Interpreting
3. scientific results, and ability to present results in a scientific way through graphs, photographs, poster presentations and power point presentations.

Course Content:
Unit 1: Imaging and related techniques: Principles of microscopy; Light microscopy; Fluorescence microscopy; Electron Microscopy (a) Flow cytometry (b) Applications of fluorescence microscopy: Chromosome banding, FISH, chromosome painting; Transmission and Scanning electron microscopy – sample preparation for electron microscopy, cryofixation, negative staining, shadow casting, freeze fracture, freeze etching.   **(15 lectures)**

Unit 2: pH and Centrifugation: pH meter: Principles and instrumentation, Centrifugation: Principles, types of centrifuges, types of rotors, differential and density gradient centrifugation, application. Sonication, Freeze drying.   **(10 lectures)**

Unit 3: Spectrophotometry: Principle involved in Spectrophotometer; Spectrophotometric techniques, Instrumentation: ultraviolet and visible spectrophotometry (single and double beam, double wavelength spectrophotometers), Infrared spectrometers - Luminometry and densitometry – principles and their applications - Mass Spectroscopy-principles of analysis, application in Biology.   **(15 lectures)**

Unit 4: Chromatography: Chromatographic techniques: Principle and applications – Column - thin layer – paper, affinity and gas chromatography - Gel filtration - Ion exchange and High-performance liquid chromatography techniques– Examples of application for each chromatographic system - Basic principles of electrophoresis.   **(10 lectures)**

Unit 5: Preparation of molar, molal and normal solutions, buffers, the art of scientific writing: Understanding the details on the label of reagent bottles. Molarity and normality of common acids and bases. Preparation of solutions. Dilutions. Percentage solutions. Molar, molal and normal solutions. Technique of handling micropipettes; Knowledge about common toxic chemicals and safety measures in their handling. The art of scientific writing and presentation of scientific matter. Scientific writing and ethics. Writing references. PowerPoint presentation. Poster presentation. Introduction to copyright-academic misconduct/plagiarism in scientific writing.   **(10 lectures)**

Reference Books:
1. Dawson, C. (2002). Practical research methods. UBS Publishers, New Delhi.
2. Stapleton, P., Yondeowei, A., Mukanyange, J., Houten, H. (1995). Scientific writing for agricultural research scientists – a training reference manual. West Africa Rice Development Association, Hong Kong.
3. Ruzin, S.E. (1999). Plant micro technique and microscopy. Oxford University Press, New York, U.S.A.
4. Bajpai, P.K. 2006. Biological Instrumentation and methodology. S. Chand & Co. Ltd.
5. K. Wilson and J. Walker Eds. 2005. Biochemistry and Molecular Biology. Cambridge University Press.
6. K. Wilson andKHGoulding. 1986. Principles and techniques of Practical Biochemistry. (3 edn) Edward Arnold, London.
7. Stapleton, P., Yondeowei, A., Mukanyange, J., Houten, H. (1995). Scientific writing for agricultural research scientists – a training reference manual. West Africa Rice Development Association, Hong Kong.

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8. Ruzin, S.E. (1999). Plant micro technique and microscopy. Oxford   University Press, New York, U.S.A

CLV. ADVANCED MAJOR COURSE- AMJ 2:
NANOBIOTECHNOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objective
To familiarize the students with the fundamental principles of Nanobiotechnology, various potential application of Nanobiotechnology.

Course Learning Outcomes
Ability to carry out research /investigation independently in specialized area of Nanobiotechnology.

Course Content:

NANO-BIOTECHNOLOGY

1. Introduction of Nanobiotechnology and its applications. Various types of nanomaterial utilized in agriculture.
2. Synthesis of nanoparticle: Physical, Chemical and Biological.
3. Structural characterization techniques: X-ray diffraction (XRD) technique, particle size determination using XRD, Applications of XRD, Electron diffraction and its application, neutron diffraction and its applications. Zeita particle analyser and its application.
4. Electron Microscopy: Introduction to Scanning Electron Microscopy, FESEM, Transmission Electron Microscopy, Scanning Tunneling Microscopy.
5. Spectroscopic Techniques: UV visible spectroscopy, Infrared Spectroscopy and Fourier Transform Infrared Spectroscopy.
6. Nanoparticles in agricultural and food diagnostics: Biopesticides, biofertilizers, Biosensors and Diagnostics - DNA-Based Biosensors and Diagnostics, Radiofrequency Identification.
7. Nanotechnology in food production: Food and new ways of food production. Efficient fractionation of crops, Efficient product structuring, Optimizing Nutritional Values, Applications of Nanotechnology in Foods: Sensing, Engineering Food Ingredients to Improve Bioavailability, Nanocrystalline Food Ingredients – Nano-emulsions – Nano Engineered Protein Fibrils as Ingredient Building Blocks.
8. Nanotechnology in food packaging: Reasons to Package Food Products. Smart nanomaterials for packaging.
9. Application of nanotechnology in synthesis of drug.
10. Regulatory and safety measures for nanotechnology based agriculture products.

Reference Books:
1.   The 2018-2023 World Outlook for Nanobiotechnology Paperback – December 18, 2017, Icon group international.
2.   Arunava Goswami and Samrat Roy Choudhury, Nanobiotechnology, Basic and Applied Aspects.
3.   Clive Jarvis, Nanobiotechnology: An Introduction.
4. H B Singh, S Mishra, L F Fraceto, R D D Lima; Emerging Trends in Agri-Nanotechnology.
5.   Elements of X-ray diffraction, B D Cullity- Addison-Wesley Publishing Company, Inc.
6.   Encyclopedia of Materials Characterization, C. Richard Brundle and Charles A. Evans, Jr.
7.   Willard, Merritt, Dean, Settle - Instrumental Methods of Analysis, 7th edition.

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CLVI. ADVANCED MAJOR COURSE- AMJ 3:
PRACTICALS-VII:

Marks: Pr (ESE: 3Hrs) =100	**Pass Marks: Pr (ESE) = 40**

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
1. Preparation of nutrient media; handling and sterilization of plant material; inoculation, sub-culturing and plant regeneration.
2. Anther and pollen culture.
3. Embryo rescue.
4. Suspension cultures and production of secondary metabolites.
5. Protoplast isolation, culture and fusion.
6. Gene cloning and vector construction Gene transfer using different methods, reporter gene expression, selection of transformed tissues/plants, molecular analysis.
7. The art of imaging of samples through microphotography and field photography.
8. Poster presentation on defined topics.
9. Technical writing on topics assigned.

Reference Books
1. Bhojwani SS. 1983. Plant Tissue Culture: Theory and Practice. Elsevier.
2. Christou P & Klee H. 2004. Handbook of Plant Biotechnology. John Wiley & Sons.
3. Dixon RA. 2003. Plant Cell Culture. IRL Press.
4. George E F, Hall MA & De Klerk GJ. 2008. Plant Propagation by Tissue Culture. Agritech Publ.
5. Gupta PK. 2004. Biotechnology and Genomics. Rastogi Publ.
6. Herman EB. 2005-08. Media and Techniques for Growth, Regeneration and Storage. Agritech Publ.
7. Pena L. 2004. Transgenic Plants: Methods and Protocols. Humana Press.
8. Pierik RLM. 1997. In vitro Culture of Higher Plants. Kluwer.
9. Singh BD. 2007. Biotechnology: Expanding Horizon. Kalyani.

COURSES OF STUDY FOR FYUGP IN **"BOTANY" MINOR**

MINOR COURSE-1A   **(SEM-I)**

CLVII.   MINOR COURSE- MN 1A:
BIODIVERSITY

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objectives:
1. To introduce the students with diversity of plants such as microbes, algae, fungi, archegoniates.

Course Learning Outcomes:
1. It acquaints the students with diversity of plants like microbes, algae, fungi, archegoniates and, complex interrelationship between organisms and environment; community patterns andprocesses, ecosystem functions, and principles of phytogeography.

Course Content:

Unit 1: Microbes
General characteristic and economic importance of microorganism. Viruses –Lytic and lysogenic cycle, RNA virus (TMV); Bacteria – cell structure; Reproduction – vegetative, asexual and recombination (conjugation, transformation and transduction).   **(6 lectures)**

Unit 2: Algae
Classification of algae, General characteristics; Range of thallus organization and life cycle pattern; Life cycle of Nostoc, Chlamydomonas and Batrachospermum. Economic importance of algae.   **(7 lectures)**

Unit 3: Fungi
Classification of fungi, General characteristics; Range of thallus organization and life cycle pattern; True Fungi- life cycle of Albugo, Puccinia, Alternaria, Agaricus; economic importance of fungi.
Symbiotic Associations-Lichens: General account, reproduction and significance; Mycorrhiza and their significance   **(10 lectures)**

Unit 4: Introduction to Archegoniate
Unifying features of archegoniates, Transition to land habit, Alternation of generations.   **(2 lectures)**

Unit 5: Bryophytes
General characteristics, adaptations to land habit, Classification. Life cycle of Marchantia and Sphagnum. Economic importance of Bryophytes.   **(6 lectures)**

Unit 6: Pteridophytes
General characteristics, classification. Life cycle of Lycopodium, Selaginella and Pteris. heterospory and Seed habit. Types of stele.   **(8 lectures)**

Unit 4: Gymnosperms
General characteristics; Classification. Life cycle of Cycas and Pinus. Economic importance.   **(6 lectures)**

Reference Books:
1. Botany for degree students; A.C. Dutta
2. College Botany; Vol I, Ganguly, Das and Dutta
3. College Botany; Vol. II, Ganguly, Kar and Santra

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4.   Study of Botany; Mitra, Mitra and Guha
5.   A text book of Botany; K. S. Bilgrami
6.   A text book of Botany; Vol. I & II, Hait, Bhattacharya and Ghosh
7.   Practical botany: Bendre and Kumar, and S. P. Lal

CLVIII.   MINOR COURSE- MN 1A PR:
MINOR PRACTICALS-1A PR

Marks: Pr (ESE: 3Hrs) = 25	**Pass Marks: Pr (ESE) = 10**

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:
1. EMs/Models of viruses – T-Phage and TMV, Line drawing/Photograph of Lytic and Lysogenic Cycle.
2. Types of Bacteria from temporary/permanent slides/photographs; EM bacterium; Binary Fission; Conjugation; Structure of root nodule.
3. Gram staining
4. Study of vegetative and reproductive structures of Nostoc, Chlamydomonas (electron micrographs), through temporary preparations and permanent slides.
5. Alternaria: Specimens/photographs and tease mounts.
6. Puccinia: Herbarium specimens of Black Stem Rust of Wheat and infected Barberryleaves; section/tease mounts of spores on Wheat and permanent slides of both the hosts.
7. Agaricus: Specimens of button stage and full grown mushroom; Sectioning of gills of Agaricus.
8. Lichens: Study of growth forms of lichens (crustose, foliose and fruticose)
9. Marchantia- morphology of thallus, w.m. rhizoids and scales, v.s. thallus throughgemma cup, w.m. gemmae (all temporary slides), v.s. antheridiophore, archegoniophore, l.s. sporophyte (all permanent slides).
10. Sphagnum- morphology, w.m. leaf, rhizoids, operculum, peristome, annulus, spores (temporary slides); permanent slides showing antheridial and archegonial heads, l.s. capsule and protonema.
11. 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).
12. Equisetum- morphology, t.s. internode, l.s. strobilus, t.s. strobilus, w.m. sporangiophore,w.m. spores (wet and dry)(temporary slides); t.s rhizome (permanent slide).
13. Pteris- morphology, t.s. rachis, v.s. sporophyll, w.m. sporangium, w.m. spores (temporary slides), t.s. rhizome, w.m. prothallus with sex organs and young sporophyte (permanent slide).
14. Cycas- morphology (coralloid roots, bulbil, leaf), t.s. coralloid root, t.s. rachis, v.s. leaflet,v.s. microsporophyll, w.m. spores (temporary slides), l.s. ovule, t.s. root (permanent slide).
15. Pinus- morphology (long and dwarf shoots, w.m. dwarf shoot, male and female), w.m.dwarf shoot, t.s. needle, t.s. stem, , l.s./t.s. male cone, w.m. microsporophyll, w.m. microspores (temporary slides), l.s. female cone, t.l.s. & r.l.s. stem (permanent slide).

Reference Books:
1. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West. Press Pvt. Ltd. Delhi. 2nd edition.
2. Tortora, G.J., Funke, B.R., Case, C.L. (2010). Microbiology: An Introduction, Pearson Benjamin Cummings, U.S.A. 10th edition.
3. Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, MacMillan Pub. Pvt. Ltd., Delhi.

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4. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley and Sons (Asia), Singapore. 4th edition.
5. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R., (2005). Biology. Tata McGraw Hill, Delhi, India.
6. Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India.
7. Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.
8. Parihar, N.S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Central Book Depot, Allahabad.

MINOR COURSE-1B   (SEM-III)

CLIX. MINOR COURSE- MN 1B:
PLANT ECOLOGY AND TAXONOMY

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	**Pass Marks: Th (SIE + ESE) = 30**

(Credits: Theory-03) **45 Hours**

Course Objectives:
1. To make them understand complex community patterns and processes, and ecosystem functioning.
2. environmental factors affecting the plants, the basic principles of ecology and phytogeography.
3. Objective of this paper is to make students aware about the diversity of plant life and their role in economical, ecological and biotechnological aspects with focus on restoration of ecosystems and sustainable development.

Course Learning Outcomes:
1. This knowledge is critical in evolving strategies for sustainable natural resource management and biodiversity conservation.
2. Students will be able to learn the diversity of plant kingdom and scientific nomenclature of plants. Acquaintance of students with micro to macro flora of different groups along with their utilization for human welfare.

Course Content:
Unit 1: Introduction   **(2 lectures)**

Unit 2: Ecological factors

Soil: Origin, formation, composition, soil profile. Water: States of water in the environment, precipitation types. Light and temperature: Variation Optimal and limiting factors; Shelford law of tolerance. Adaptation of hydrophytes and xerophytes.   **(7 lectures)**

Unit 3: Plant communities

Succession: Hydrosere and Xerosere.   **(5 lectures)**

Unit 4: Ecosystem

Structure and function of ecosystem; energy flow trophic organisation; Food chains and food webs, Ecological pyramids; Biogeochemical cycling; Cycling of carbon, nitrogen and phosphorous.   **(6 lectures)**

Unit 5: Phytogeography

Phytogeographical regions of India.

.
Unit 6 Introduction to plant taxonomy

Classification (Bentham and Hooker), Identification, Nomenclature). Functions of Herbarium, important herbaria and botanical gardens of India. Principle of ICN. Ranks, categories and taxonomic groups.

(2 lectures)

Unit 7 Taxonomic evidences

Taxonomic evidences from morphology and anatomy.   **(3 lectures)**

Reference Books:

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1. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West. Press Pvt. Ltd. Delhi. 2nd edition.
2. Tortora, G.J., Funke, B.R., Case, C.L. (2010). Microbiology: An Introduction, Pearson BenjaminCummings, U.S.A. 10th edition.
3. Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, MacMillan Publishers Pvt.Ltd., Delhi.
4. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley and Sons (Asia), Singapore. 4th edition.
5. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R., (2005). Biology. Tata McGraw Hill, Delhi,India.
6. Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India.
7. Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers,New Delhi, India.
8. Parihar, N.S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Central Book Depot,Allahabad.
9. Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
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11. Gleeson, B. and Low, N. (eds.) 1999.*Global Ethics and Environment*, London, Routledge.
12. Gleick, P. H. 1993. *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security.Stockholm Env. Institute, Oxford Univ. Press.
13. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll.*Principles of Conservation Biology*.Sunderland: Sinauer Associates, 2006.
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17. Odum, E.P., Odum, H.T. & Andrews, J. 1971.*Fundamentals of Ecology*. Philadelphia: Saunders.
18. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. Environmental and Pollution Science. AcademicPress.
19. Rao, M.N. & Datta, A.K. 1987. *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
20. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012.*Environment*. 8th edition. John Wiley & Sons.
21. Rosencranz, A., Divan, S., & Noble, M. L. 2001. *Environmental law and policy in India. Tripathi1992*.
22. Sengupta, R. 2003. *Ecology and economics*: An approach to sustainable development. OUP.
23. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. *Ecology, Environmental Science and Conservation*.
24. S. Chand Publishing, New Delhi.
25. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. *Conservation Biology*: *Voices from the Tropics*.John Wiley & Sons.
26. Thapar, V. 1998. *Land of the Tiger*: *A Natural History of the Indian Subcontinent*.
27. Warren, C. E. 1971. *Biology and Water Pollution Control*. WB Saunders.
28. Wilson, E. O. 2006.*The Creation: An appeal to save life on earth*. New York: Norton.
29. World Commission on Environment and Development. 1987. *Our Common Future*. OxfordUniversity
30. Kormondy, E.J. (1996). Concepts of Ecology. Prentice Hall, U.S.A. 4th edition.
31. Sharma, P.D. (2010) Ecology and Environment. Rastogi Publications, Meerut, India. 8th edition

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CLX. MINOR COURSE- MN 1B PR:
MINOR PRACTICALS-1B PR

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

Practicals:
1. Study of instruments used to measure microclimatic variables: Soil thermometer, anemometer, rain gauge and lux meter.
2. Determination of pH of soil sample.
3. Comparison of water holding capacity in soil of three habitats.
4. Study of morphological adaptations of hydrophytes and xerophytes (four each).
5. Determination of minimal quadrat size for the study of herbaceous vegetation in the college campus by species area curve method. (species to be listed)
6. Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law
7. Study of vegetative and floral characters of the following families (Description, V.S. flower, sectionof ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification): Local available flora.
8. Mounting of a properly dried and pressed specimen of any wild plant with herbarium label (to be submitted in the record book).

Reference Books
1. Kormondy, E.J. (1996). Concepts of Ecology. Prentice Hall, U.S.A. 4th edition.
2. Sharma, P.D. (2010) Ecology and Environment. Rastogi Publications, Meerut, India. 8th edition.
3. Simpson, M.G. (2006). Plant Systematics. Elsevier Academic Press, San Diego, CA, U.S.A. Singh, G. (2012).
4. Plant Systematics: Theory and Practice. Oxford & IBH Pvt. Ltd., New Delhi. 3rd edition.

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MINOR COURSE-1C   **(SEM-V)**

CLXI. MINOR COURSE- MN 1C:
PLANT ANATOMY & EMBRYOLOGY

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objectives:
1. The Objective of this paper is to provide basic knowledge of plant internal architecture, cellular composition and reproduction.
2. This help them to understand how different plant tissue structure evolve and modify their functions with respect to their environment. Also, to make them aware about identification, nomenclature and classification.

Course Learning Outcomes:
1. Knowledge regarding anatomy equipped the students to identify different types of tissues and make them able to correlate their physiology in a better away.
2. This will also help them to understand how different plant tissue evolve and modify their structure and functions with respect to their environment.
3. Knowledge regarding embryology make them understand how reproduction play significant role in defining population structure and natural diversity.
4. Also, after successful completion of the course the student shall have adequate knowledge about the basic principle and nomenclature of plant classification, herbarium preparation.

Course Content:
Unit 1: Meristematic and permanent tissues
Root and shoot apical meristems; Simple and complex tissues   **(8 lectures)**

Unit 2: Organs Structure of dicot and monocot root stem and leaf.   **(4 lectures)**

Unit 3: Secondary Growth
Vascular cambium – structure and function, seasonal activity. Secondary growth in root and stem, Wood (heartwood and sapwood)   **(8 lectures)**

Unit 4: Adaptive and protective systems
Epidermis, cuticle, stomata; General account of adaptations in xerophytes and hydrophytes. **(8 lectures)**

Unit 5: Structural organization of flower
Structure of anther and pollen; Structure and types of ovules; Types of embryo sacs, organization and ultrastructure of mature embryo sac.   **(8 lectures)**

Unit 6: Pollination and fertilization
Pollination mechanisms and adaptations; Double fertilization; Seed-structure appendages and dispersal mechanisms.   **(8 lectures)**
Unit 7: Embryo and endosperm
Endosperm types, structure and functions; Dicot and monocot embryo; Embryo endosperm relationship
(8 lectures)

Unit 8: Apomixis and polyembryony
Definition, types and Practical applications   **(8 lectures)**

Reference Books:
1. Bhojwani, S.S. & Bhatnagar, S.P. (2011). Embryology of Angiosperms. Vikas Publication House Pvt. Ltd New

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Delhi. 5th edition.
2. Mauseth, J.D. (1988). Plant Anatomy. The Benjamin/Cummings Publisher, USA.

CLXII.   MINOR COURSE- MN 1C PR:
MINOR PRACTICALS-1C PR

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:
1. Study of meristems through permanent slides and photographs.
2. Tissues (parenchyma, collenchyma and sclerenchyma); Macerated xylary elements, Phloem (Permanent slides, photographs)
3. Stem: Monocot: Zea mays; Dicot: Helianthus; Secondary: Helianthus (only Permanent slides).
4. Root: Monocot: Zea mays; Dicot: Helianthus; Secondary: Helianthus (only Permanent slides).
5. Leaf: Dicot and Monocot leaf (only Permanent slides).
6. Adaptive anatomy: Xerophyte (Nerium leaf); Hydrophyte (Hydrilla stem).
7. Structure of anther (young and mature), tapetum (amoeboid and secretory) (Permanent slides).
8. Types of ovules: anatropous, orthotropous, circinotropous, amphitropous/ campylotropous.
9. Female gametophyte: Polygonum (monosporic) type of Embryo sac Development (Permanent slides/photographs).
10. Ultrastructure of mature egg apparatus cells through electron micrographs.
11. Pollination types and seed dispersal mechanisms (including appendages, aril, caruncle) (Photographs and specimens).
12. Dissection of embryo/endosperm from developing seeds.
13. Calculation of percentage of germinated pollen in a given medium.

Reference Books:
1. Bhojwani, S.S. & Bhatnagar, S.P. (2011). Embryology of Angiosperms. Vikas Publication House Pvt. Ltd. New Delhi. 5th edition.
2. Mauseth, J.D. (1988). Plant Anatomy. The Benjamin/Cummings Publisher, USA.

MINOR COURSE-1D   (SEM-VII)

CLXIII.   MINOR COURSE- MN 1D:
PLANT PHYSIOLOGY & METABOLISM

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Learning Objectives:
1. The course aims at making students realize how plants function, namely the importance of water, minerals, hormones, and light in plant growth and development.
2. Understand transport mechanisms and translocation in the phloem, and appreciate the commercial applications of plant physiology.
3. Also, students acquired knowledge about handling of classical and modern plant biotechnology processes, including tissue culture for healthy plants, plants with improved characteristics.

Learning Outcomes:
1. The students are able to correlate morphology, anatomy, cell structure and biochemistry with plant functioning.
2. The link between theory and practical syllabus is established, and the employability of youth would be enhanced.
3. The youth can also begin small-scale enterprises.
4. Have the ability of explanation of concepts, principles and usage of the acquired knowledge in biotechnological, pharmaceutical, medical, ecological and agricultural applications.

Course Content:
Unit 1: Plant-water relations
Importance of water, water potential and its components; Transpiration types and its mechanism, significance; Factors affecting transpiration; Root pressure and guttation.   **(2 lectures)**

Unit 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.   **(2 lectures)**

Unit 3: Translocation in phloem
Composition of phloem sap, girdling experiment; Pressure flow model; Mechanism of translocation of Organic solutes.   **(2 lectures)**

Unit 4: Photosynthesis
Photosynthetic Pigments (Chla, Chlb, xanthophylls, carotene); Photosystem I and II, reaction center, antenna molecules; Photophosphorylation; C3, C4 and CAM pathways of carbon fixation; Photorespiration.
(3 lectures)

Unit 5: Respiration
Glycolysis, anaerobic respiration, TCA cycle; Oxidative phosphorylation, Glyoxylate, Oxidative Pentose Phosphate Pathway.   **(3 lectures)**

Unit 6: Enzymes
Structure and properties; Mechanism and mode of enzyme action, factors.   **(2 lectures)**

Unit 7: Nitrogen metabolism
Biological nitrogen fixation; Nitrate and ammonia assimilation.   **(3 lectures)**

Unit 8: Plant growth regulators
Discovery and physiological roles of Auxins, Gibberellins, Cytokinins, ABA, Ethylene.   **(3 lectures)**

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Unit 9: Plant response to light and temperature
Photoperiodism (SDP, LDP, Day neutral plants); Phytochrome (discovery and structure), red and far red light responses on photomorphogenesis; Vernalization.   **(3 lectures)**

Reference Books:
1. Taiz, L., Zeiger, E., (2010). Plant Physiology. Sinauer Associates Inc., U.S.A. 5th Edition.
2. Hopkins, W.G., Huner, N.P., (2009). Introduction to Plant Physiology. JohnWiley & Sons, U.S.A. 4th ed.
3. Bajracharya, D., (1999). Experiments in Plant Physiology- A LaboratoryManual. Narosa Publishing House, New Delhi.
4. Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory andPractice. Elsevier Science Amsterdam. The Netherlands.
5. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles andApplications of recombinant DNA. ASM Press, Washington.

CLXIV.   MINOR COURSE- MN 1D PR:
MINOR PRACTICALS-1D PR

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) 30 Hours

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

Practicals:
1. Determination of osmotic potential of plant cell sap by plasmolytic method.
2. Measurement of rate of transpiration; Farmers photometer/Ganogs photometer.
3. Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophyte.
4. Demonstration of Hill reaction.
5. To study the effect of light intensity and bicarbonate concentration on O2 evolution inphotosynthesis.
6. Separation of amino acids / pigments by paper chromatography.
7. To determine the absorption of water by Oily and starchy seed.

Demonstration experiments
1. Effect of auxins on rooting.
2. Suction due to transpiration.
3. R.Q.
4. Respiration in roots.

Reference Books:

1. Taiz, L., Zeiger, E., MØller, I.M. and Murphy, A (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
2. Hopkins, W.G., Huner, N.P., (2009). Introduction to Plant Physiology. John Wiley & Sons, U.S.A. 4th Edition.
3. Bajracharya, D., (1999). Experiments in Plant Physiology- A Laboratory Manual. Narosa Publishing House, New Delhi.

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FYUGP

ZOOLOGY HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

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Members of Board of Studies for preparing Provisional Syllabus of the Four-Year Undergraduate Programme (FYUGP)

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Alumnus: Dr. Abhijit Dutta (Retd.)
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                      University Department of Zoology, R.U.

Head of Department 16/08/2022

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Table of Content

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Students are Instructed to

Refer Syllabus of Allied/ Opted Subjects from R.U. Website

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HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
- The session shall commence from **1st of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.
- UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.
  - Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

- An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).
- **Academic Year:** Two consecutive (one odd + one even) semesters constitute one academic year.
- **Semester:** The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.
- Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.
- In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the

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Academic Calendar may be scheduled for academic activities as below:

ac) Odd Semester: **From first Monday of August to third Saturday of December**

ad) Even Semester: **From first Monday of January to third Saturday of May**

- An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
  - ➢ UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,
  - ➢ UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,
  - ➢ Bachelor's Degree after a 3-year (6 semesters) programme of study,
  - ➢ Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.
  - ➢ Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

ac) One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.

One credit for Theory   = 15 Hours of Teaching i.e., 15 Credit Hours

One credit for Practicum   = 30 Hours of Practical work i.e., 30 Credit Hours

ad) For credit determination, instruction is divided into three major components:

Hours (L) – Classroom Hours of one-hour duration.

Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration

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Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.
- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

cxxxix.   The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

cxl.   No student will be detained in odd Semesters (I, III, V & VII).

cxli.   To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

cxlii.   To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

cxliii.   To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

cxliv.   However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

cxlv.   Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

cxlvi.   To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year. a student has to pass in minimum 3 papers out of the total 4 papers.

cxlvii.   It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

- The result if the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.
- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

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- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)													
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)													
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree													
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4

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	Exit Point: Bachelor's Degree with Hons. /Hons. with Research	160	224

Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

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COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME   2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		Credits
	Code	**Papers**	
I	AEC-1	Language and Communication Skills (MIL-1; Modern Indian language including TRL)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (English)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (MIL-2; Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4

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IV	AEC-3	Language and Communication Skills (MIL-2/ English-2)	2
	VAC-2	Value Added Course-2	2
	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4

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	RC/	Research Internship/Field Work/Dissertation OR	12/
	AMJ-1	Advanced Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	AMJ-2	Advanced Major paper-2 (Disciplinary/Interdisciplinary Major)	4
	AMJ-3	Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**160**

NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	xxix. Discipline/ Interdisciplinary courses and xxx. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64
Minor	xxix. Discipline/ Interdisciplinary courses and xxx. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8

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SEC	Courses to be developed by the University	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4

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			Total Credit	**64**

Abbreviations:

AEC	Ability Enhancement Courses
SEC	Skill Enhancement Courses
IAP	Internship/Apprenticeship/ Project
MDC	Multidisciplinary Courses
MJ	Major Disciplinary/Interdisciplinary Courses
DMJ	Double Major Disciplinary/Interdisciplinary Courses
MN	Minor Disciplinary/Interdisciplinary Courses
AMJ	Advanced Major Disciplinary/Interdisciplinary Courses
RC	Research Courses

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AIMS OF BACHELOR'S DEGREE PROGRAMME IN ZOOLOGY

The aim of bachelor's degree programme in Zoology are as follows:

Zoology is the study of all animal life; from primitive microscopic malaria-causing protozoa to large advanced mammals, across all environmental spheres from red deer in mountain forests to dolphins in deep oceans, and from underground burrowing voles to golden eagles in the skies. Some of these animals are useful to us and we nurture them as pets or livestock; some are serious pests or disease-causing; and some are simply splendid and awe-inspiring. No matter what our relation with the animals is, we need to understand their behaviour, population dynamics, physiology and the way they interact with other species and their environments. It provides students with the knowledge and skill base that would enable them to undertake further studies in Zoology and related areas or in multidisciplinary areas that involve advanced or modern biology and help develop a range of generic skills that are relevant to wage employment, self-employment and entrepreneurship.

The modern era requires a classical zoologist with a modern approach to master many subjects of Zoology. There is a need for the students to compete with the globe, therefore, the main focus of this curriculum is to enable the student to be professionally competent and successful in a career. Having Zoology as backbone of the curriculum, this course, with the department centric electives will enhance the skills required to perform research in laboratory and experimental research. The students can choose to focus on a "whole animal" or a "bits of animals" approach. The "whole animal" pathway makes the students proficient in the identification and study of animals while the latter approach provides the skills required to pursue laboratory and experimental work such as disease research, DNA technologies, wildlife forensics etc. The curriculum can be modified to such extent that a student at B.Sc. level can be a specialist in immunology, ornithology, animal behaviour or entomology. For such specializations, the curriculum needs to focus on special skills to maximise the students' employment probability; for example, few skills needed by industry may include the species-specific monitoring for key species, handling of dangerous/ poisonous/ wild animals and the use of Geographic Information Systems (GIS) for data collection.

PROGRAM LEARNING OUTCOMES

The programme learning outcomes relating to Honours/Research Degree in Zoology:

Knowledge and Understanding

Demonstrate:

(i) in-depth knowledge and understanding about the fundamental concepts, principles and processes underlying the academic field of Zoology and its different subfields (animal diversity, principles of ecology, comparative anatomy and developmental biology of vertebrates, physiology and biochemistry, genetics and evolutionary biology, animal biotechnology, applied Zoology, aquatic biology, immunology, reproductive biology, and insect, vectors and diseases, apiculture, aquarium fish keeping, medical diagnostics, and sericulture)

(ii) procedural knowledge that creates different types of professionals in the field of Zoology and related fields such as, apiculture, aquarium fish keeping, medical diagnostics, and sericulture, etc.

(iii) skills related to specialization areas within Zoology as well as within subfields of Zoology, including broader interdisciplinary subfields (Chemistry, Physics and Mathematics).

- ➢ Over the years, Zoologists were able to find many differences within the same breed of an animal species. As a Zoology professional one can study extinct animals by specializing in Paleozoology, on the different types of birds in Ornithology opt for studying Herpetology and Arachnology, the branches dealing with the study of snakes and spiders, respectively or
- ➢ Appreciate the complexity of life processes, their molecular, cellular and physiological processes, their genetics, evolution and behaviour and their interrelationships with the environment.
- ➢ Study concepts, principles and theories related with animal behaviour and welfare.
- ➢ Understand and interpret data to reach a conclusion
- ➢ Design and conduct experiments to test a hypothesis.
- ➢ Understand scientific principles underlying animal health, management and welfare.
- ➢ Accept the legal restrictions & ethical considerations placed for animal welfare.
- ➢ Understand fundamental aspects of animal science relating to management of animals.

The core courses would fortify the students with in-depth subject knowledge concurrently; the discipline specific electives will add additional knowledge about applied aspects of the program as well as its applicability in both academia and industry. Generic electives will introduce integration among various interdisciplinary courses. The skill enhancement courses would further add additional skills related to the subject as well as other than subject. In brief, the students graduated with this type of curriculum would be able to disseminate subject knowledge along with necessary skills to suffice their capabilities for academia, entrepreneurship and Industry. For each syllabus, the course content has been divided into four units with a breakup of the topics to be covered to provide the students better understanding of the main theme represented in the title of each unit. Such type of design is to indicate the breadth of content to be taught thus ensuring more or less uniform coverage of information on a certain theme. The teacher has to take up the contents in such a manner by asking questions and answering them that the whole process appears to be an interesting narrative with

topics falling in line rather than appearing as unrelated complex terms. Learning will be more enjoyable and imbibing if appropriate examples are cited from our daily lives.

SEMESTER WISE COURSES IN ZOOLOGY MAJOR-1 FOR FYUGP   <u>2022 onwards</u>

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Courses			Examination Structure		
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	NON –CHORDATES AND CHORDATES	4	25	75	---
II	MJ-2	ECOLOGY AND BIOCHEMISTRY	4	25	75	---
	MJ-3	**Practical-I (To prepare from UG Syllabus)**	4	---	---	100
III	MJ-4	CELL BIOLOGY AND BIOSTATISTICS	4	25	75	---
	MJ-5	**Practical-II (To prepare from UG Syllabus)**	4	---	---	100
IV	MJ-6	ANIMAL PHYSIOLOGY	4	25	75	---
	MJ-7	COMPARATIVE ANATOMY	4	25	75	---
	MJ-8	**Practical-III (To prepare from UG Syllabus)**	4	---	---	100
V	MJ-9	MOLECULAR BIOLOGY	4	25	75	---
	MJ-10	GENETICS & EHTOLOGY	4	25	75	---
	MJ-11	**Practical-IV (To prepare from UG Syllabus)**	4	---	---	100
VI	MJ-12	DEVELOPMENTAL BIOLOGY	4	25	75	---
	MJ-13	EVOLUTION	4	25	75	---
	MJ-14	ENDOCRINOLOGY & IMMUNOLOGY	4	25	75	---
	MJ-15	**Practical-V (To prepare from UG Syllabus)**	4	---	---	100
VII	MJ-16	INSECTA, FISH & FISHERIES	4	25	75	---
	MJ-17	**PG-1 (To prepare from PG Syllabus)**	4	25	75	---

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	MJ-18	**PG-2 (To prepare from PG Syllabus)**	4	25	75	---
	MJ-19	**Practical-VI (To prepare from PG Syllabus)**	4	---	---	100
VIII	MJ-20	**PG-3 (To prepare from PG Syllabus)**	4	25	75	---
	AMJ-1	**PG-4 (To prepare from PG Syllabus)**	4	25	75	---
	AMJ-2	**PG-5 (To prepare from PG Syllabus)**	4	25	75	---
	AMJ-3	**Practical-VII (To prepare from PG Syllabus)**	4	---	---	100
	or RC-1	Research Methodology	4	25	75	---
	RC-2	Project Dissertation/ Research Internship/ Field Work	8	---	---	200
		Total Credit	**92**			

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	WILDLIFE CONSERVATION AND MANAGEMENT	3	---	75	---
II	SEC-2	SERICULTURE & APICULTURE	3	---	75	---
III	SEC-3	ELEMENTARY COMPUTER APPLICATION SOFTWARES	3	---	---	75
		Total Credit	**9**			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	INTRODUCTORY ZOOLOGY	4	15	60	25
III	MN-1B	ANIMAL DIVERSITY	4	15	60	25

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V	MN-1C	FOOD NUTRITION AND HEALTH	4	15	60	25
VII	MN-1D	ENVIRONMENT & PUBLIC HEALTH	4	15	60	25
		Total Credit	16			

INSTRUCTION TO QUESTION SETTER

SEMESTER INTERNAL EXAMINATION (SIE):

There will be <u>Only One Semester Internal Examination</u> in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

AC.   (SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

AD.   (SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.
Conversion of Attendance into score may be as follows:
Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

AQ.   (ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

AR.   (ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three

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questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

AS.   (ESE 100 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

<table>
<tr><td colspan="3" align="center">**Subject/ Code**</td></tr>
<tr><td>**F.M.** =10</td><td align="center">**Time**=1Hr.</td><td align="right">Exam Year</td></tr>
<tr><td colspan="3">

General Instructions:
lxxi. **Group A** carries very short answer type compulsory questions.
lxxii.**Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
lxxiii.   Answer in your own words as far as practicable.
lxxiv.   Answer all sub parts of a question at one place.
lxxv.Numbers in right indicate full marks of the question.

Group A
</td></tr>
<tr><td>43.</td><td></td><td align="right">[5x1=5]</td></tr>
<tr><td colspan="3">

      lxxi.   ....
      lxxii.   ....
      lxxiii. ....
      lxxiv. ....
      lxxv.   ....

Group B
</td></tr>
<tr><td>44. ....</td><td></td><td align="right">[5]</td></tr>
<tr><td>45. ....</td><td></td><td align="right">[5]</td></tr>
<tr><td colspan="3">

Note: There may be subdivisions in each question asked in Theory Examination.
</td></tr>
</table>

Question format for **20 Marks**:

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Subject/ Code

F.M. =20   Time=1Hr.   Exam Year

General Instructions:
lxxi. **Group A** carries very short answer type compulsory questions.
lxxii. **Answer 1 out of 2** subjective/ descriptive questions given in **Group B**.
lxxiii.   Answer in your own words as far as practicable.
lxxiv.   Answer all sub parts of a question at one place.
lxxv. Numbers in right indicate full marks of the question.

Group A

57.   [5x1=5]

    lxxi.   ....
    lxxii.   ....
    lxxiii.   ....
    lxxiv.   ....
    lxxv.   ....

58. ....   [5]

Group B

59. ....   [10]
60. ....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION
Question format for **50 Marks**:

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Subject/ Code

<u>**F.M.** =50</u>   **Time**=3Hrs.   <u>Exam Year</u>

General Instructions:

xxvii.   **Group A** carries very short answer type **compulsory** questions.

xxviii.   **Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.

xlv. Answer in your own words as far as practicable.

xlvi. Answer all sub parts of a question at one place.

xlvii.Numbers in right indicate full marks of the question.

<u>**Group A**</u>

85.   [5x1=5]

lxxi.   ....

lxxii.   ....

lxxiii.   ....

lxxiv.   ....

lxxv.   ....

<u>**Group B**</u>

86. ....   [15]

87. ....   [15]

88. ....   [15]

89. ....   [15]

90. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

<u>Question format for **60 Marks**</u>:

Subject/ Code

<u>**F.M.** =60</u>   **Time**=3Hrs.   <u>Exam Year</u>

General Instructions:

xxix.   **Group A** carries very short answer type **compulsory** questions.

xxx.**Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.

xlv. Answer in your own words as far as practicable.

xlvi. Answer all sub parts of a question at one place.

xlvii.Numbers in right indicate full marks of the question.

<u>**Group A**</u>

113.   [5x1=5]

lxxi.   ....

lxxii.   ....

lxxiii.   ....

lxxiv.   ....

lxxv.   ....

114...............   [5]

115...............   [5]

<u>**Group B**</u>

116...............   [15]

117...............   [15]

118...............   [15]

119...............   [15]

120...............   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

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Question format for **75 Marks**:

	Subject/ Code

F.M. = 75   **Time**=3Hrs.   Exam Year

General Instructions:
xxix.   **Group A** carries very short answer type **compulsory** questions.
xxx.**Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
xlv. Answer in your own words as far as practicable.
xlvi. Answer all sub parts of a question at one place.
xlvii.Numbers in right indicate full marks of the question.

Group A

127.   [5x1=5]

      lxxi.   ....
      lxxii.   ....
      lxxiii.   ....
      lxxiv.   ....
      lxxv.   ....

128...............   [5]
129...............   [5]

Group B

130...............   [15]
131...............   [15]
132...............   [15]
133...............   [15]
134...............   [15]
135...............   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

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Subject/ Code

F.M. = 100	**Time**=3Hrs.	Exam Year

General Instructions:

xxix.   **Group A** carries very short answer type **compulsory** questions.

xxx. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.

xlv.   Answer in your own words as far as practicable.

xlvi. Answer all sub parts of a question at one place.

xlvii. Numbers in right indicate full marks of the question.

Group A

15.   [10x1=10]

      lxxi. ....   vi.   ....

      lxxii. ....   vii.   ....

      lxxiii. ....   viii.   ....

      lxxiv. ....   ix.   ....

30. ..lxxv...............   x   ....   [5]

31. ....   [5]

Group B

88. ....   [20]

89. ....   [20]

90. ....   [20]

91. ....   [20]

92. ....   [20]

93. ....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

SEMESTER I

XXVIII. MAJOR COURSE –MJ 1:

NON –CHORDATES AND CHORDATES

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Learning outcomes

After successfully completing this course, the students will be able to:

1. Develop understanding on the diversity of life with regard to protists, non-chordates and chordates.
2. Group animals on the basis of their morphological characteristics/ structures.
3. Develop critical understanding how animals changed from a primitive cell to a collection of simple cells to form a complex body plan.
4. Examine the diversity and evolutionary history of a taxon through the construction of a basic phylogenetic/ cladistics tree.
5. Understand how morphological change due to change in environment helps drive evolution over a long period of time.
6. The project assignment will also give them a flavour of research to find the process involved in studying biodiversity and taxonomy besides improving their writing skills.

Course Content:

GROUP A

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UNIT I: Kingdom Protista   **(04 Lecture)**
1. General introduction and classification upto class
2. Locomotion in Protista
3. Reproduction and Nutrition in Protista

UNIT II: Phylum Porifera, Cnidaria, Ctenophora.   **(04 Lecture)**
1. General characters and classification upto class
2. Canal system in Porifera
3. Coral and coral Reef formation.
4. Alteration of Generation in cnidarian.
5. Evolutionary significance of ctenophore

UNIT III: Helminthes   **(04 Lecture)**
1. General characters and classification of Platyhelminthes, Nemathelminthes and Aschelminthes. upto class
2. Life cycle of Fasciola hepatica

UNIT IV: Annelida   **(04 Lecture)**
1. Segmentation in Annelids
2. Origin of coelom

UNIT V: Arthropoda   **(04 Lecture)**
1. General characters, Classification upto class
2. vision in Arthropods, Appendages in Arthropods

UNIT VI: Mollusca   **(05 Lecture)**
1. General characteristic of Mollusca. Classification upto class
2. Torsion and Detorsion in Mollusca

UNIT VII: Echinodermata   **(05 Lecture)**
1. General characters, classification upto class
2. Water vascular system in Echinodermata

GROUP B
Chordates (Pisces to Mammals)

UNIT I: Chordata   **(04 Lecture)**
Introduction to chordates and its origin general characters and outline classification

UNIT II: Protochordates   **(04 Lecture)**
1. General characters of Hemichordates Urochordates and Cephalochordates.

UNIT III: Agnatha   **(03 Lecture)**
General characters and classification of cyclostomes.

UNIT IV: Pisces   **(03 Lecture)**
1. General classification of chondricthyes and Osteicthyes
2. Parental care in fishes

UNIT V: Amphibia   **(04 Lecture)**
1. General Classes and classification of Amphibia

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2. Parental care in Amphibians.

UNIT VI: Reptilia   **(04 Lecture)**

Poison apparatus and Biting mechanism in snakes.

UNIT VII: Aves   **(04 Lecture)**

1.   General characters of Aves
2.   Flight adaptations in birds
3.   Flightless Birds, a brief idea.

UNIT VIII: Mammalia   **(04 Lecture)**

CLXV.**General characters and classification up to classes, Dentition in mammals.**

Reference Books:

1.   Barnes, R.D. (1982). Invertebrate Zoology, V Edition. Holt Saunders International Edition.
2.   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
3.   Barrington, E.J.W. (1979). Invertebrate Structure and Functions. II Edition, E.L.B.S. and Nelson
4.   Boradale, L.A. and Potts, E.A. (1961). Invertebrates: A Manual for the use of Students. Asia Publishing Home.
5.   Singh, S. Keshari S. and Abhishek, K.S. (2016). Medical Zoology and Parasitology, Jharkhand Jharokha, Classical Publishing Company.
6.   Young, J. Z. (2004). The Life of Vertebrates. III Edition. Oxford university press.
7.   Pough H. Vertebrate life, VIII Edition, Pearson International.
8.   Darlington P.J. The Geographical Distribution of Animals, R.E. Krieger Pub. Co.
9.   Hall B.K. and Hallgrimsson B. (2008). Strickberger's Evolution. IV Edition. Jones and Bartlett Publishers Inc.

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SEMESTER II

CLXVI.   MAJOR COURSE- MJ 2:
ECOLOGY AND BIOCHEMISTRY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Learning outcomes
After successfully completing this course, the students will be able to:
1. Know the evolutionary and functional basis of animal ecology.
2. Understand what makes the scientific study of animal ecology a crucial and exciting endeavour.
3. Solve the environmental problems involving interaction of humans and natural systems at local or global level.
4. Understand about the importance and scope of biochemistry.
5. Understand the structure and biological significance of carbohydrates, amino acids, proteins, lipids and nucleic acids.
6. Understand the structure and function of immunoglobulins.
7. Understand the concept of enzyme, its mechanism of action and regulation.
8. Learn biochemical tests for amino acids, carbohydrates, proteins and nucleic acids.
9. Learn measurement of enzyme activity and its kinetics.

Course Content:

GROUP A: Ecology
UNIT I: An Overview of Ecology   **(06 Lecture)**
1. Structure and function of an ecosystem
2. Energy flow in an ecosystem: Lindeman"s trophic dynamic concept
3. Laws of limiting factor: Shelfords law of tolerance
4. Food chain and Food web
5. Productivity and its management
6. Biome: An introduction and its type.

UNIT II: Population Ecology: **(06 Lecture)**
1. Population its attributes, Survivorship curve.
2. Exponential and logistic growth.
3. Population Regulation –Density and density independent factors/

UNIT III: Community Ecology: **(06 Lecture)**
1. Community Characters, Analytical and synthetic characters
2. Community Diversity Indices
3. Community Interactions –positive and Negative interactions
4. Niche concept: Niche overlap. Gause's principle with laboratory and field examples.
5. Community Dynamics-Succession and climax concept

UNIT IV: Environment Management: **(06 Lecture)**
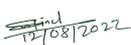
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1. Natural resources-types
2. Biogeochemical cycles –Water, Carbon, Nitrogen
3. Biodiversity-Alpha, Beta, Gamma. Hotspots
4. Environmental Degradation causes and its management including air, Water, Soil. and Noise

UNIT V: Environmental movements: **(06 Lecture)**

1. Chipko movement
2. Silent valley
3. Sardar Sarovar Mega Dam project.
4. Role of Gender and cultures in environmental conservation

GROUP B
Biochemistry
UNIT I: Biomolecules: A brief account of Carbohydrates, protein and lipids. (06 Lecture)

UNIT II: Carbohydrates: **(06 Lecture)**

1. Structure and classification. Metabolism of carbohydrates. Glycohysis, Kreb's cycle, ETS and ATP synthesis.
2. Glycogenesis, Gluconeosis. Glycogenesis HMP shunt.

UNIT III: Lipids   **(06 Lecture)**

Structure and classification. Steroids ketogenesis and synthesis of Palmitic Acid.

UNIT IV: Proteins   **(06 Lecture)**

1. Composition, structure and Biological significance.
2. Amino acids: structure and classification.
3. Catabolism of Amino acid: Transamination & Deamination.

UNIT V: Enzymes   **(06 Lecture)**

1. Nomenclature and classification.
2. Enzyme kinetics. Regulation of Enzyme action Coenzymes and Isoenzymes.
3. Enzyme inhibition and Km equation Organic reactions and their mechanism: Addition, Elimination and Substitution reactions.

Reference Books:
Group A

1. 1.Raziuddin, M.., Mishra P.K. 2014, A Handbook of Environmental Studies, Akanaksha Publications, Ranchi.
2. 2.Mukherjee, B. 2011: Fundamentals of Environmental Biology.Silverline Publications, Allahabad.
3. 3.Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt.
4. 4.Gadgil, M., &Guha, R.1993. This Fissured Land: An Ecological History of India. Univ. of California Press.
5. 5.Gleeson, B. and Low, N. (eds.) 1999.Global Ethics and Environment, London, Routledge.
6. 6.Gleick, P. H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
7. 7.Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll.Principles of Conservation Biology. Sunderland: Sinauer Associates, 2006.
8. 8.Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science, 339: 36--37.

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9.   9.McCully, P. 1996. Rivers no more: the environmental effects of dams(pp. 29--64). Zed Books.
10. 10.McNeill, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.
11. 11.Odum, E.P., Odum, H.T. & Andrews, J. 1971.Fundamentals of Ecology. Philadelphia: Saunders.

Group B
1.   1.Cox, M.M and Nelson, D.L. (2008). Lehninger Principles of Biochemistry, V Edition, W.H. Freeman and Co., New York.
2.   2.Berg, J.M., Tymoczko, J.L. and Stryer, L. (2007). Biochemistry, VI Edition, W.H. Freeman and Co., New York.
3.   3.Murray, R.K., Bender, D.A., Botham, K.M., Kennelly, P.J., Rodwell, V.W. and Well, P.A. (2009,). Harper's Illustrated Biochemistry, XXVIII Edition, International Edition, The McGraw-Hill Companies Inc.
4.   4.Hames, B.D. and Hooper, N.M. (2000). Instant Notes in Biochemistry, II Edition, BIOS Scientific Publishers Ltd., U.K.

CLXVII.   MAJOR COURSE- MJ 3:
PRACTICALS-I

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04)   **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
1. Purification of organic compounds by crystallization using the following solvents:
   a. Water   b. Alcohol   c. Alcohol-Water

Reference Books
5. Mann, F.G. & Saunders, B.C. *Practical Organic Zoology,* Pearson Education (2009)
6. Furniss, B.S., Hannaford, A.J., Smith, P.W.G., Tatchell, A.R. *Practical Organic Zoology,* 5th Ed., Pearson (2012)

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SEMESTER III

CLXVIII.   MAJOR COURSE- MJ 4:
CELL BIOLOGY AND BIOSTATISTICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) 60 Hours

Learning outcomes

After successfully completing this course, the students will be able to

1. Understand the functioning of nucleus and extra nuclear organelles and understand the intricate cellular mechanisms involved.
2. Acquire the detailed knowledge of different pathways related to cell signaling and apoptosis thus enabling them to understand the anomalies in cancer.
3. Develop an understanding how cells work in healthy and diseased states and to give a 'health forecast' by analyzing the genetic database and cell information.
4. Get new avenues of joining research in areas such as genetic engineering of cells, cloning, vaccines development, human fertility programme, organ transplant, etc.
5. Understand how tissues are produced from cells in a normal course and about any malfunctioning which may lead to benign or malignant tumor.
6. Know basic concepts of probability and statistics
7. Understand data mining tool and its practical application in a case study
8. Apply the knowledge in future course of their career development in higher education and research

Course Content:

GROUP A

UNIT I: A general concept of prokaryotic and eukaryotic cells   **(03 Lecture)**
Cell theory, General structure of different cell organelles including Mitochondria, Golgi complex,

UNIT II: Endoplasmic reticulum, Nucleus. Ribosome, Lysosome   **(05 Lecture)**

UNIT III: Cytoskeleton-Composition and function. Microtubules and microfilaments GERL system
(04 Lecture)

UNIT IV: Cell membrane structure: Chemical composition of Plasma membrane of Erythrocyte, Active and Passive transport, (Diffusion and osmosis) ATPase Pump and Exchange.   **(10 Lecture)**

UNIT V: Cell Adhesion molecules and ECM   **(05 Lecture)**

UNIT VI: Cell cycle, cell signaling, and cell culture: **(15 Lecture)**
1. A brief introduction to cell cycle, its various phases
2. Mitosis and Meiosis, Cell division, Check points and its regulation.
3. Apoptosis and Cancer
4. Cell signaling, Regulation of signaling pathways. (GPCR and RTR)
5. Cell Cell communication

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UNIT VII: Types of culture media: Sterlization methods   (08 Lecture)
Somatic cell hybridization.

GROUP B:
Biostatistics   **(10 Lecture)**

1. Types of data: Primary and secondary data
2. Mean, Median, Mode, Standard Deviation, Standard error, Chi square test, t-test, f-test, ANOVA, Correlation, Regression Analysis.
3. Basics of statistics software – SPSS and R

Reference Books:
GROUP-A

1. Karp, G. (2010). Cell and Molecular Biology: Concepts and Experiments. VI Edition.
2. John Wiley and Sons. Inc.
3. De Robertis, E.D.P. and De Robertis, E.M.F. (2006). Cell and Molecular Biology. VIII Edition. Lippincott Williams and Wilkins, Philadelphia.
4. Cooper, G.M. and Hausman, R.E. (2009). The Cell: A Molecular Approach. V Edition.
5. ASM Press and Sunderland, Washington, D.C.; Sinauer Associates, MA.
6. Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. (2009). The World of the
7. Cell. VII Edition. Pearson Benjamin Cummings Publishing, San Francisco.
8. Bruce Albert, Bray Dennis, Levis Julian, Raff Martin, Roberts Keith and Watson James (2008). Molecular Biology of the Cell, V Edition, Garland publishing Inc., New York and London

GROUP B

1. W.W. (2012) Biostatistics: A Foundation for Analysis in Health Sciences (10th edition) John Wiley.
2. Milton, J.S. & Tsokos, J.O. (1992) Statistical Methods in the Biological and Health
3. Sciences (2nd edition) McGraw Hill.
4. Zar, J.H. (2013) Biostatistical Analysis (5th edition) Pearson.

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CLXIX.   MAJOR COURSE- MJ 5:
PRACTICALS-II

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
1. Purification of organic compounds by crystallization using the following solvents:
   a. Water   b. Alcohol   c. Alcohol-Water

Reference Books
7. Mann, F.G. & Saunders, B.C. *Practical Organic Zoology,* Pearson Education (2009)
8. Furniss, B.S., Hannaford, A.J., Smith, P.W.G., Tatchell, A.R. *Practical Organic Zoology,* 5th Ed., Pearson (2012)

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SEMESTER IV

CLXX.   MAJOR COURSE- MJ 6:
ANIMAL PHYSIOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Learning outcomes
After successfully completing this course, the students will be able to:
1. Develop an understanding of the evolution of various organ systems which work in coordination.
2. Have a detailed discussions of major organ systems.
3. Understand how cells, tissues, and organs function at different levels.
4. Develop an understanding of the related disciplines, such as cell biology, neurophysiology, pharmacology, biochemistry etc.
5. Get a flavor of research besides improving their writing skills and making them well versed with the current trends.
6. Undertake research in any aspect of animal physiology in future.

Course Content:

UNIT I: Tissue   **(06 Lecture)**
   Structure and classification, Bone and Cartilage

UNIT II: Digestive System   **(06 Lecture)**
   Gastrointestinal tract and its associated glands, Mechaninal and Chemical digestion of food, Absorption of Carbohydrate, Protein and Lipid

UNIT III: Respiratory System   **(06 Lecture)**
   Histology of trachea and Lungs, Respiratory volumes, Respiratory Pigments, Diffusion of respiratory gases and Transport of O_2 and CO_2

UNIT IV: Circulatory System   **(06 Lecture)**
   Structure and Working of Mammalian Heart
   Blood groups, Rh factor Blood and its components, Blood clotting Mechanism
   Cardiac cycle

UNIT V: Skeletal system   **(06 Lecture)**
   Ultra-structure of Skeletal Muscle, chemical basis of muscle contraction.

UNIT VI: Excretory System   **(06 Lecture)**
   Kidney: structure and function, Mechanism of urine formation, Counter- Current theory, Ornithine-Arginine cycle

UNIT VII: Reproductive System   **(08 Lecture)**
   Histology of male and female reproductive organs, physiology of reproduction in male and female, Accessory Reproductive organs, Methods of Contraception, Reproductive Hormone.

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UNIT VIII: Endocrine system: **(08 Lecture)**

Basics of Endocrine glands (Pituitary, Pineal, Thyroid, Pancreas Adrenal, Thymus, and Gonads). Classification of hormone

Mode of hormone action. (TSH/Adrenaline)

UNIT IX: Nervous System   **(08 Lecture)**

Ultrastructure of Neuron, Physiology of nerve conduction, Reflex Action,

Reference Books:

1. Guyton, A.C. & Hall, J.E. (2006). Textbook of Medical Physiology. XI Edition. Hercourt Asia PTE Ltd. /W.B. Saunders Company.
2. Tortora, G.J. & Grabowski, S. (2006). Principles of Anatomy & Physiology. XI Edition John Wiley & sons.
3. Victor P. Eroschenko. (2008). diFiore's Atlas of Histology with Functional correlations. XII Edition. Lippincott W. & Wilkins.
4. Arey, L.B. (1974). Human Histology. IV Edition. W.B. Saunders.
5. DeFiore Atlas of Human histology. Physiology Vandor

CLXXI.   MAJOR COURSE- MJ 7:
COMPARATIVE ANATOMY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Learning outcomes

After successfully completing this course, the students will be able to:

1. Develop an understanding of the evolution of vertebrates thus integrating structure, function and development.
2. Have an overview of the evolutionary concepts including homology and homoplasy, and detailed discussions of major organ systems.
3. Understand how cells, tissues, and organisms function at different levels. The course content also provides the basis of understanding their abnormal function in animal and human diseases and new methods for treating those diseases.
4. Get a flavor of research besides improving their writing skills and making them well versed with the current trends. It will further enable the students to think and interpret individually due to different aspects chosen.

Course Content:

UNIT I: Integumentary System   **(06 Lecture)**
Structure Function and Derivatives of integument

UNIT II: Skeletal System   **(07 Lecture)**
An Overview of Axial and Appendicular Skeleton, Jaw suspensorium

UNIT III: Digestive System   **(07 Lecture)**
Alimentary Canal and associated gland, Dentition

UNIT IV: Respiratory System   **(08 Lecture)**
Skin, Gills, Lungs, Air Sacs and accessory respiratory organs

UNIT V: Circulatory System   **(08 Lecture)**
Evolution of Heart and Aortic arches, General plan of Circulation

UNIT VI: Urinogenital System   **(08 Lecture)**
Succession of Kidney, Evolution of Urinogenital duct

UNIT VII: Nervous system   **(08 Lecture)**
Comparative account of brain, Autonomic Nervous System, Spinal Cord, Cranial Nerves in Mammals

UNIT VIII: Sense Organs   **(08 Lecture)**
Brief account of Visual and Auditory receptors

Reference Books:

1. Kardong, K.V. (2005) Vertebrates' Comparative Anatomy, Function and Evolution. IV Edition. McGraw-Hill Higher Education.
2. Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies.
3. Weichert C.K and William Presch (1970). Elements of Chordate Anatomy, Tata McGraw Hills

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4.   Hilderbrand, M and Gaslow G.E. Analysis of Vertebrate Structure, John Wiley and Sons.
5.   Walter, H.E. and Sayles, L.P; Biology of Vertebrates, Khosla Publishing House.

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CLXXII.   MAJOR COURSE- MJ 8:
PRACTICALS-III

Marks: Pr (ESE: 3Hrs) =100	**Pass Marks: Pr (ESE) = 40**

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
7.   Purification of organic compounds by crystallization using the following solvents:
     a. Water   b. Alcohol   c. Alcohol-Water

Reference Books
8. Mann, F.G. & Saunders, B.C. *Practical Organic Zoology,* Pearson Education (2009)
9. Furniss, B.S., Hannaford, A.J., Smith, P.W.G., Tatchell, A.R. *Practical Organic Zoology,* 5th Ed., Pearson (2012)

SEMESTER V

CLXXIII.   MAJOR COURSE- MJ 9:
MOLECULAR BIOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Learning outcomes

After successfully completing this course, the students will be able to:

1. Develop an understanding of concepts, mechanisms and evolutionary significance and relevance of molecular biology in the current scenario.
2. Get well versed in recombinant DNA technology which holds application in biomedical & genomic science, agriculture, environment management, etc. Therefore, a fundamental understanding of Molecular Biology will help in career building in all these fields.
3. Apply their knowledge in problem solving and future course of their career development in higher education and research.
4. Get new avenues of joining research in related areas

Course Content:

UNIT I: DNA- Chemistry of nucleic acids (DNA & RNA):   (08 Lecture)

N-bases, Pentose sugar, Nucleosides & Nucleotides, Watson-Crick model of DNA, Types of DNA (A, B & Z), Base pairing, Major & minor grooves of DNA, uninterrupted genes.

UNIT II: DNA synthesis in E. coli: (08 Lecture)

Semi-conservative DNA replication, Replication fork, DNA polymerases, Phases- initiation, elongation and termination. Errors in DNA and their repair (base excision repair & nucleotide excision repair)

UNIT III: Transcription in E. coli: (08 Lecture)

Consensus sequences, Promoter (-35 & -10 elements), RNA polymerase, Phases- initiation, elongation and termination. RNA processing of mRNA.

UNIT IV: RNA: (08 Lecture)

chemistry of RNA, types of RNA (mRNA, rRNA, tRNA, snoRNA), Structure of mRNA &tRNA (clover-leaf model), Basics of RNA edit, RNAi.

UNIT V: Genetic codes: (08 Lecture)

History of genetic codes, Features of genetic codes, Wobble hypothesis. Central dogma.

UNIT VI: Translation in E. coli: (05 Lecture)

Translation factors, charging of tRNAs, Phases- initiation, elongation and termination.

UNIT VII: Gene recombination: (05 Lecture)

Homologous recombination.

UNIT VIII: Operon concept: (05 Lecture)

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Operon and its types, Lac operon – inducible, constitutive & non-inducible.

UNIT IX: Basics of the genetics of cancer: **(05 Lecture)**

Proto-oncogenes, Gene regulation of the cell cycle. Gene therapy, Stem cell therapy, BLAST.

Reference Books:

1. Lenhinger Principles of biochemistry: Cox & Nelson, MacMillan & Freeman, USA
2. Molecular biology of Gene: Watson et al., Pearson Publication, USA
3. Strickberger's Genetics, Prinitis Hall of India (PHI), Delhi
4. Principles of Genetics: Snustad& Simmons, John Wiley & Sons, USA
5. Modern Genetics Analysis: Integrating Genes and Genomes, Griffith et al., W. H. Freeman & Company, USA
6. Genetics: Russell & Benjamin, Cummings Publishing Company, USA.
7. Genetics: PK Gupta, Rastogi Publication, New Delhi.
8. Gene regulation: Latchmann, Taylor & Francis, USA
9. Molecular biology of cancer: Lecorino, Oxford University Press, UK.

CLXXIV.   MAJOR COURSE- MJ 10:
GENETICS & EHTOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Learning outcomes

After successfully completing this course, the students will be able to:

1. Understand how DNA encodes genetic information and the function of mRNA and tRNA
2. Apply the principles of Mendelian inheritance.
3. Understand the cause and effect of alterations in chromosome number and structure.
4. Relate the conventional and molecular methods for gene manipulation in other biological systems.
5. Discuss and analyse the epigenetic modifications and imprinting and its role in diseases.
6. Get new avenues of joining research in related areas such as genetic engineering of cells, cloning, genetic disorders, human fertility programme, genotoxicity, etc
7. Learn a wide range of theoretical and practical techniques used to study animal behaviour. • Develop skills, concepts and experience to understand all aspects of animal behaviour.
8. Objectively understand and evaluate information about animal behaviour and ecology encountered in our daily lives.
9. Understand and be able to objectively evaluate the role of behaviour in the protection and conservation of animals in the wild.

Course Content:

GROUP A: Genetics

UNIT I: Pre-Mendelian genetics, Mendel's life, Symbols, and terminologies, Laws of dominance, segregation & independent assortment, Back cross & test cross, Multiple alleles, and Incomplete Dominance.   **(05 Lecture)**

UNIT II: Linkage:

Coupling & repulsion hypothesis, Morgan's view of linkage, kinds of linkage, Chromosomal theory of linkage, Human chromosomal maps.   **(05 Lecture)**

UNIT III: Crossing over or Gene recombination:

Somatic & germinal crossing over, kinds of crossing over, Theories of the mechanism of crossing over.   **(06 Lecture)**

UNIT IV: Eukaryotic Chromosomes:

Structure & chemical composition of chromosomes. Karyotype, Ideogram, Human karyotype, Lampbrush chromosome   **(06 Lecture)**

UNIT V: Sex determination:

Genic balance theory, Chromosomal theory &, Types of sex determination, Environmental sex determination, Role of SRY gene in sex determination, and developing gonads.   **(06 Lecture)**

UNIT VI: Sex-linked inheritance:

Sex chromosomes, X-linked genes (colour blindness & haemophilia in humans), Y-linked inheritance, Sex-limited & Sex influenced traits.   **(04 Lecture)**

UNIT VII: Pedigree analysis:

Penetrance & expressivity, Symbols, Pedigree analysis of dominance inheritance (polydactyly in

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man), Recessive inheritance (cystic fibrosis), and sex-linked inheritance (colour blindness).

(06 Lecture)

UNIT VIII: Mutation:

Historical background, Mutagens, Chromosomal mutation & gene mutation, Chromosomal aberrations in humans, Euploidy& aneuploidy.   **(06 Lecture)**

GROUP B: Ethology
UNIT I: General concepts of Ethology:

Motivation; Fixed Action Pattern, Imprinting   **(02 Lecture)**

UNIT II: Behaviour and its types:

Individual and social interaction, Social organization, Innate and learned behavior, **(04 Lecture)**

UNIT III: Orientation in animals - its nature and types   **(02 Lecture)**

UNIT IV: Biological rhythms – occurrence and significance: **(02 Lecture)**

Reference Books:
GROUP A

1.Strickberger's Genetics, Prinitis Hall of India (PHI), Delhi
2.Principles of Genetics: Snustad & Simmons, John Wiley & Sons, USA
3.Modern Genetics Analysis: Integrating Genes and Genomes, Griffith et al.,
4.W. H. Freeman & Company, USA
5.Genetics: Russell & Benjamin, Cummings Publishing Company, USA.
6.Principles of Genetics: Tamerin, Tata McGraw Hills, Delhi
7.Genetics: PK Gupta, Rastogi Publication, New Delhi.

GROUP B

1. Manning A. & Dawkins M.S. – An Introduction to Animal Behaviour. Cambridge 1995
2. Prasad S. – Animal Behaviour. CBS 2004
3. Mathur R. – Animal Behaviour. Rastogi 2002

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CLXXV.   MAJOR COURSE- MJ 11:
PRACTICALS-IV

Marks: Pr (ESE: 3Hrs) =100   **Pass Marks: Pr (ESE) = 40**

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
10.   Purification of organic compounds by crystallization using the following solvents:
    a. Water   b. Alcohol   c. Alcohol-Water

Reference Books
11. Mann, F.G. & Saunders, B.C. *Practical Organic Zoology,* Pearson Education (2009)
12. Furniss, B.S., Hannaford, A.J., Smith, P.W.G., Tatchell, A.R. *Practical Organic Zoology, 5th Ed.,* Pearson (2012)

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SEMESTER VI

CLXXVI.   MAJOR COURSE- MJ 12:
DEVELOPMENTAL BIOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Learning outcomes

After successfully completing the course, the students will be able to
1. Develop critical understanding how a single-celled fertilized egg becomes an embryo and then a fully formed adult by going through three important processes of cell division, cell differentiation and morphogenesis.
2. Understand how developmental processes and gene functions within a particular tissue or organism can provide insight into functions of other tissues and organisms.
3. Realize that very similar mechanisms are used in very diverse organisms; and development is controlled through molecular changes resulting in variation in the expression and function of gene networks
4. Understand how the field of developmental biology has changed since the beginning of the 19th century with different phases of developmental research predominating at different times.
5. Understand the relevance of developmental biology in medicine or its role in development of diseases.

Course Content:

UNIT I: Basic concept of Development   **(20 Lecture)**
1. Basic concept of Development- Potency, Commitment, Specification, Induction, Competence.
2. Phase of Development: Embryogenesis, Organogenesis, Blastogenesis in sea urchin & chick.
3. Period of Development: Embroynic period, Post embryonic period.
4. History of Embryology: Baer's law, theory of preformation, theory of epigenesist, mosaic theory.
5. Pattern & axes formation in amphibian.
6. Differential gene expression: cytoplasmic determinants and asymmetric cell division.

UNIT II: Early Embryonic Development   **(20 Lecture)**
1. Gametes: sperm or male gametes: types of sperms, Eggs or Female gametes: types of eggs.
2. Gametogenesis: Spermatogenesis, Oogenesis.
3. Egg membranes.
4. Fertilization (External sea urchin and Internal Chick) & its mechanism.
5. Planes and patterns of cleavage.
6. Types of Blastula.
7. Fate Maps
8. Early development of frog and chick up to gastrulation.

UNIT III: Late Embryonic Development   **(05 Lecture)**
1. Extra embryonic membranes in birds.
2. Implantation of embryo in humans.

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3. Placenta: Structure, types and functions of placenta.

UNIT IV: Post embryonic Development   (10 Lecture)
1. Metamorphosis:
Types of Metamorphosis.
Metamorphosis in amphibians
Hormonal control of metamorphosis in amphibians
2. Regeneration: Types of Regeneration
3. Epimorphosis
4. Morphallaxis
5. Compensatory regeneration
6. Ageing: Concepts and Theories.

UNIT V: Implications of Developmental Biology   (05 Lecture)
1. Teratogensis: Teratogenic agents and their effect on embryonic development.
2. In vitro: fertilization (IVF)
3. Embryonic stem cells (Esc)
4. Amniocentesis.

Reference Books:
1. 1.Gilbert, S. F. (2010). Developmental Biology, IX Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA.
2. 2.Balinsky B.I. and Fabian B. C. (1981). An Introduction to Embryology, V Edition, International Thompson Computer Press.
3. 3.Kalthoff (2008). Analysis of Biological Development, II Edition, McGraw-Hill Publishers.
4. 4.Lewis Wolpert (2002). Principles of Development. II Edition, Oxford University Press
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CLXXVII.   MAJOR COURSE- MJ 13:
EVOLUTION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Learning outcomes
After successfully completing the course, the students will be able to
1. Develop a holistic appreciation on the phylogeny and adaptations in animals.
2. Enable the students to understand the evolution of universe and life.
3. Understanding on the process and theories in evolutionary biology.
4. Examine the evolutionary history of the taxa based on developmental affinities.
5. Understand the process of evolution
6. Evolution of life forms in through geological time scale
7. To trace the phylogeny of species.

Course Content:

UNIT I: Introduction to Evolutionary Theories   **(06 Lecture)**
1. History of Evolution.
2. Historical review of evolutionary concept:
3. Lamarkism, Darwinism, Mordern synthetic theory

UNIT II: Evidence of Evolution   **(10 Lecture)**
1. Evidence of Evolution:
2. Geological time   and scale
3. Fossil record (types of fossils, transitional forms,)
4. Adaptive Radiation, Homology and analogy
5. Evolution of horse.

UNIT III: Process of Evolutionary change   **(06 Lecture)**
1. Sources of Variations:
2. Heritable variations and their role in evolution.
3. Concept of co evolution, parallel evolution.

UNIT IV: Principles of Population genetics   **(10 Lecture)**
1. Population genetics.
2. Hardy – Weinberg law (statement and derivation of equation, application of law to human population)
3. Evolutionary forces upsetting H-W equilibrium
4. Natural selection
5. Genetic Drift

UNIT V: Species concept   **(10 Lecture)**
1. Product of Evolution:
2. Micro evolutionary changes (Inter population variations, clines, races)
3. Species concept

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4. Isolating mechanism
5. Modes of speciation- allopatric, sympatric.
6. Macro evolution (Adaptive Radiation)

UNIT VI: Extinctions   **(06 Lecture)**
1. Back ground and Mass extinctions (causes and effects)
2. Detailed example of K-T extinctions

UNIT VII: Origin and Evolution of Man   **(06 Lecture)**
1. Unique hominin characteristics contrasted with primate characteristics.
2. Primate phylogeny from Dryopithecus leading to Homo sapiens.

UNIT VIII: Phylogenetic trees   **(06 Lecture)**
1. Multiple sequence alignment
2. Construction of Phylogenetic trees.
3. Interpretation of phylogenetic trees.

Reference Books:
1.Ridley, M. (2004). Evolution. III Edition. Blackwell Publishing
2.Barton, N. H., Briggs, D. E. G., Eisen, J. A., Goldstein, D. B. and Patel, N. H. (2007). Evolution. Cold Spring, Harbour Laboratory Press.
3.Hall, B. K. and Hallgrimsson, B. (2008). Evolution. IV Edition. Jones and Bartlett Publishers
4.Pevsner, J. (2009). Bioinformatics and Functional Genomics. II Edition. Wiley- Blackwell.
5.Campbell, N. A. and Reece J. B. (2011). Biology. IX Edition, Pearson, Benjamin, Cummings.
6.Douglas, J. Futuyma (1997). Evolutionary Biology. Sinauer Associates.
7.Minkoff, E. (1983). Evolutionary Biology. Addison-Wesley.

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CLXXVIII.   MAJOR COURSE- MJ 14:
ENDOCRINOLOGY & IMMUNOLOGY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Learning outcomes
After successfully completing the course, the students will be able to
1. Understand neurohormones and neurosecretions.
2. Learn about hypothalamo and hypapophysial axis.
3. Understand about different endocrine glands and their disorders.
4. Understand the mechanism of hormone action.
5. Carry out common procedures for culturing, purifying and diagnostics of micro-organisms understand the disease-causing potential of bacteria and viruses, and the responses of the immune system.
6. Describe the mechanisms for transmission, virulence and pathogenicity in pathogenic micro-organisms.
7. Assess the importance of incidence, prevalence and epidemiology in microbiological diagnostic activities.
8. Know how resistance development and resistance transfer occur.
9. Identify the major cellular and tissue components which comprise the innate and adaptive immune system.
10. Understand how are immune responses by T cells and B cells initiated and regulated.
11. Understand how does the immune system distinguish self from non-self.

Course Content:

Endocrinology

UNIT I: Introduction to Endocrinology   (05 Lecture)
1. Definition and Classification of hormones.
2. Endocrine, paracrine and merocrine modes of hormone delivery
3. Feedback mechanisms

UNIT II: Epiphysis, Hypothalamo- hypophysial Axis.   (20 Lecture)
1. Structure of the pineal gland, secretions and their function in biological rhythms and reproduction.
2. Structure of hypothalamus, hypothalamic nuclei and their functions, Regulatoin of neuroendocrine glands.
3. Structure of pituitary gland, hormones of pituitary gland and their functions.
4. Hypothalamo- hypophysial portal system.
5. Hypothalamic control of adenohypophysis

UNIT III: Structure and functions of endocrine glands in Mammals.   (20 Lecture)
1. Structure, hormones, functions and regulation of endocrine glands:
2. Pituitary
3. Pineal
4. Thyroid
5. Parathyroid
6. Adrenal

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7. pancreas
8. Testis
9. Ovary
10. Local endocrine gland

UNIT IV: Mechanism of Hormone Action   (10 Lecture)
1. General mechanism of hormone action
2. Regulation of Hormone action: Hormone action at cellular level, Hormone receptors, Transduction and regulation of hormone action at molecular level, molecular mediators, genetic control of hormone action

UNIT V: Hormonal dysfunction and diseases   (05 Lecture)
1. Dwarfism and acromegaly
2. Goiter
3. Addison's disease
4. Diabetes mellitus

Immunology

UNIT I: Overview of Immune System   (08 Lecture)
1. Introduction-Concept of Health & Disease.
2. Cells & Organs of the Immune System

UNIT II: Innate and Adaptive Immunity   (08 Lecture)
1. Anatomical Barriers
2. Inflammation
3. Cells & Molecules involved in Innate Immunity
4. Adavtive Immununity (Cell mediated + humoral)

UNIT III: Antigens   (08 Lecture)
1. Antigencity & Immunogenicity
2. Immunogens, Adjuvants and Haptens
3. Factors offending Immunogenicity
4. B and T cell Epritopes.

UNIT IV: Immunoglobulls.   (08 Lecture)
1. Structure, Function of different types of Ig
2. Antigen – antibody Interactions
3. Immuno assays (ELISA and RIA)
4. MAB

UNIT V: Major Histocompatibility Complex (MHL)   (08 Lecture)
1. Structure & function of MHC molecules.
2. Structure of T-cell receptor and its signaling.
3. T Cell development and selections

UNIT VI: Cytokines   (05 Lecture)

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Types, Properties and functions of Cytokines.

UNIT VII: Complement system   (05 Lecture)
Components and path ways of complement activation.

UNIT VIII: Hypersensitivity   (05 Lecture)
Gell and coombs classification and brief description of various types of hypersensitivity.

UNIT IX: Vaccines   (05 Lecture)
1. Introduction to vaccine
2. Various types of vaccines.

Reference Books:
1. Kindit, T.J., Golds by R.A., Osborne, B.A. and Kuby, J (2006). Immunology, VI Edition. W.H. Freeman and Company.
2. David, M., Jonathan, B., David, R.B. and Ivan R. (2006). Immunology, VII Edition, Mosby, Elsevier Publication.
3. Abbas, K. Abul and Lechtman H. Andrew (2003) Cellular and Molecular Immunology. V edition. Saunders Publication.

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CLXXIX.   MAJOR COURSE- MJ 15:
PRACTICALS-V

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
1.   Purification of organic compounds by crystallization using the following solvents:
     a. Water   b. Alcohol   c. Alcohol-Water

Reference Books
1.   Mann, F.G. & Saunders, B.C. *Practical Organic Zoology,* Pearson Education (2009)
2.

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SEMESTER VII

CLXXX.   MAJOR COURSE- MJ 16:
INSECTA, FISH & FISHERIES

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04) **60 Hours**

Learning outcomes
After completing this course, the students will be able to
1. Identify the types of insects.
2. Know the general physiology of insects.
3. Understand the importance of insects in environment.
4. Understand the interaction of insects with animal and plant kingdom.

Course Content:

Insecta

UNIT I: Introduction   (04 Lecture)
1. General features of insects
2. Distribution and success of Insect on earth

UNIT II: Insect Taxonomy   (08 Lecture)
1. Basics of insects classification: Classification of insects up to orders (Orthroptera, Coleoptera, Dictyoptera, Lepidoptera)

UNIT III: General Morphology of Insects   (08 Lecture)
1. External features of a typical insect
2. Structure & Type of antennae
3. Structure & Types of Mouthparts w.r.t feeding habits Type of legs adapted to diverse habitat

UNIT IV: Physiology of Insects   (10 Lecture)
1. Reproductive system
2. Endocrine system
3. Nervous system
4. Sensory receptors – vision and sound receptors

UNIT V: Insect Animal Interaction   (10 Lecture)
1. Social economic insects (honey bees and termites) – Social organization & Social behaviour.
2. Insects as a vector – Mechanical and biological vectors
3. (Muscadomestica, Anopheles & Culex)

UNIT VI: Insect Plant Interaction   (10 Lecture)
1. Role of allochemicals & pheromones in host plant mediation.

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2. Host plant selection by phytophagous insects
3. Insect as plant pests & concept integrated pest management
4. (IPM)

UNIT VII: Developmental Biology of Insects   **(10 Lecture)**
1. Developmental biology of Insects – oogenesis &
2. spermatogenesis. Structure of egg and sperm
3. Fertilization, Growth, types of Metamorphosis and its hormonal regualtion

Reference Books:
1. A general textbook of entomology. Imms. A. D. Chapman & Hall, UK
2. The insects: Structure and functions. Chapman. R.F. Cambridge University Press, UK
3. Principles of insect morphology. Snodgrass. R.F. Cornell University Press, USA.
4. Introduction to the study of insects. Norro. D.J. Triplehorn. C.A. and Johanson. N.F. Saunders. College Publication, USA.
5. Developmental Biology. Gilbert. Sinauer Associates, Inc., Publishers. Sunderland, Massachusetts U.S.A.
6. The insect Societies. Wilson. Howard University Press. UK
7. Host selection by Phytophagous insects. Bernays and Chapman. Chapman and Hall. NY, USA.
8. Advances in Insect Physiology. Russell Jurenka. Academic Press, London, UK
9. Insect Physiology and Biochemistry. James L. Nation. CRC Press, London, UK

Learning outcomes
 After successfully completing this course, the students will be able to:
1. Understand and apply relevant scientific principles in the area of aquatic biology
2. Understand the basic taxonomy and physiology of fishes
3. Critically analyse, interpret and evaluate information relevant to aquatic biology
4. Appreciate the multidisciplinary nature of the study of aquatic biology and engage positively with people and ideas beyond their own discipline.
5. Explore some of the unique environmental problems dealing with aquatic environments.
6. Develop employable skills in freshwater biological water quality analysis.

Course Content:

GROUP A: Fish
UNIT I: Taxonomy of Fin Fish   **(08 Lecture)**
1. Major taxa of inland and Marine fishes upto order.
2. Commercially important fresh water and marine fishes of India and their morphological characteristics.

UNIT II: Biology of Fin fish   **(10 Lecture)**
1. A brief idea of Circulatory, respiratory, Nervous, Urinogenital system, endocrine system, skeletal system and sensory system of fin fishes.

UNIT III: Physiology of Fin fish   **(10 Lecture)**
1. Effects of environmental factors on physiology of Fin fish.
2. Study of Osmoregulation, excretion and stress related changes, bioluminisence, electric organs

3. ARO (accessory respiratory organs)
4. Lateral line organ system

UNIT IV: Fish pathology and Health management   **(04 Lecture)**
1. A brief idea of Fish parasites, diseases, and their treatment

GROUP B: Fisheries

UNIT I: Inland Fisheries   **(04 Lecture)**
1. Hill stream fishes
2. Cold water fisheries of India.
3. Fishing crafts and gears.

UNIT II: Marine fishery   **(04 Lecture)**
1. Marine fishery resources in india
2. Estuarine fishes.

UNIT III:I: Aquaculture   **(10 Lecture)**
1. Principles of Aquaculture: Definition and scope
2. Systems of Aquaculture – Pond culture, Pen culture, Cage culture, Biofloc culture
3. Extensive and intensive fish culture
4. Monoculture, Polyculture and integrated culture system, Composite fish culture system of India.

UNIT IV: Fish technology and research   **(10 Lecture)**
1. Preservation and processing of harvested fish, fishery by-products, transgenic fish, Zebra fish as a model of research.
2. Introductory Ornamental fish culture and aquarium maintenance.

Reference Books:
1. An Introduction to the Study of Fishes – Albert C.L.G. Gunther, Discovery Publishing House, New Delhi – 110 002
2. Q Bone and R Moore, Biology of Fishes, Talyor and Francis Group, CRC Press, U.K.
3. D.H. Evans and J.d. Claiborne, The Physiology of Fishes, Taylor and Francis Group, CRC Press, UK von der Emde, R.J. Mogdans and B.G. Kapoor. The Senses of Fish: Adaptations for the Reception of Natural Stimuli, Springer, Netherlands
4. C.B.L. Srivastava, Fish Biology, Narendra Publishing House
5. J.R. Norman, A history of Fishes, Hill and Wang Publishers
6. S.S. Khanna and H.R. Singh, A text book of Fish Biology and Fisheries, Narendra Publishing House
7. Modern Ichthyology, S.M. Shafi, Inter India Publications
8. Feeding and Digestive Functions of Fishes, J.E.P. Cyrino, D.P. Bureau, B.G. Kapoor, CRC Press, Taylor & Francis Group, Boca Raton, London, New York

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CLXXXI.   MAJOR COURSE- MJ 17:
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Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:

On completion of this course, the students will be able to understand understand
12. Atomic theory and its evolution.
13. Learning scientific theory of atoms, concept of wave function.
14.

Course Learning Outcomes:
On successful completion of this course the student should know:
14. Electronic configuration of various elements in periodic table
15. Predicting structure of molecules
16.

Course Content:

Atomic Structure: (10 classes each of 60 minutes duration)
Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: de Broglie equation, Heisenberg's Uncertainty Principle and its significance, Schrödinger's wave equation,

Reference Books:
11.   Lee, J. D. *Concise Inorganic Zoology,* Wiley, 5th Edn.
12.   Douglas, B.E., McDaniel, D.H., Alexander J.J., *Concepts & Models of Inorganic Zoology,(Third*

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CLXXXII.   MAJOR COURSE- MJ 18:
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Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:

pletion of this course, the students will be able to understand understand
15. Atomic theory and its evolution.
16. Learning scientific theory of atoms, concept of wave function.
17.

Course Learning Outcomes:
On successful completion of this course the student should know:
17. Electronic configuration of various elements in periodic table
18. Predicting structure of molecules
19.

Course Content:

Atomic Structure: (10 classes each of 60 minutes duration)
Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: de Broglie equation, Heisenberg's Uncertainty Principle and its significance, Schrödinger's wave equation,

Reference Books:
13.   Lee, J. D. *Concise Inorganic Zoology,* Wiley, 5th Edn.
14.   Douglas, B.E., McDaniel, D.H., Alexander J.J., *Concepts & Models of Inorganic Zoology,(Third*

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CLXXXIII.   MAJOR COURSE- MJ 19:
PRACTICALS-VI

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
2.   Purification of organic compounds by crystallization using the following solvents:
   a. Water   b. Alcohol   c. Alcohol-Water

Reference Books
3.   Mann, F.G. & Saunders, B.C. *Practical Organic Zoology,* Pearson Education (2009)
4.   Furniss, B.S., Hannaford, A.J., Smith, P.W.G., Tatchell, A.R. *Practical Organic Zoology,* 5th Ed., Pearson (2012)

SEMESTER VIII

CLXXXIV.   MAJOR COURSE- MJ 20:
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Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:

On completion of this course, the students will be able to understand
   18. Atomic theory and its evolution.
   19. Learning scientific theory of atoms, concept of wave function.
   20.

Course Learning Outcomes:
On successful completion of this course the student should know:
   20. Electronic configuration of various elements in periodic table
   21. Predicting structure of molecules
   22.

Course Content:

Atomic Structure: (10 classes each of 60 minutes duration)
Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: de Broglie equation, Heisenberg's Uncertainty Principle and its significance, Schrödinger's wave equation,

Reference Books:
15.   Lee, J. D. *Concise Inorganic Zoology,* Wiley, 5th Edn.
16.   Douglas, B.E., McDaniel, D.H., Alexander J.J., *Concepts & Models of Inorganic Zoology,(Third*

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CLXXXV.   ADVANCE MAJOR COURSE- AMJ 1:
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Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:

Course Objectives:
On completion of this course, the students will be able to understand
21. Atomic theory and its evolution.
22. Learning scientific theory of atoms, concept of wave function.
23.

Course Learning Outcomes:
On successful completion of this course the student should know:
23. Electronic configuration of various elements in periodic table
24. Predicting structure of molecules
25.

Course Content:

Atomic Structure: (10 classes each of 60 minutes duration)
Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: de Broglie equation, Heisenberg's Uncertainty Principle and its significance, Schrödinger's wave equation,

Reference Books:
17.   Lee, J. D. *Concise Inorganic Zoology,* Wiley, 5th Edn.
18.   Douglas, B.E., McDaniel, D.H., Alexander J.J., *Concepts & Models of Inorganic Zoology,(Third*

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CLXXXVI.   ADVANCE MAJOR COURSE- AMJ 2:
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Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **60 Hours**

Course Objectives:

On completion of this course, the students will be able to understand understand
   9.   Atomic theory and its evolution.
   10. Learning scientific theory of atoms, concept of wave function.
   11.

Course Learning Outcomes:
On successful completion of this course the student should know:
   4.   Electronic configuration of various elements in periodic table
   5.   Predicting structure of molecules
   6.

Course Content:

Atomic Structure: (10 classes each of 60 minutes duration)
Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: de Broglie equation, Heisenberg's Uncertainty Principle and its significance, Schrödinger's wave equation,

Reference Books:
1.   Lee, J. D. *Concise Inorganic Zoology,* Wiley, 5th Edn.
2.   Douglas, B.E., McDaniel, D.H., Alexander J.J., *Concepts & Models of Inorganic Zoology,(Third*

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CLXXXVII. ADVANCED MAJOR COURSE- AMJ 3:
PRACTICALS-I

Marks: Pr (ESE: 3Hrs) =100	Pass Marks: Pr (ESE) = 40

(Credits: Practicals-04) **120 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:
Experiment   = 60 marks
Practical record notebook   = 15 marks
Viva-voce   = 25 marks

Practicals:
1.   Purification of organic compounds by crystallization using the following solvents:
      a. Water   b. Alcohol   c. Alcohol-Water

Reference Books
5. Mann, F.G. & Saunders, B.C. *Practical Organic Zoology,* Pearson Education (2009)
6. Furniss, B.S., Hannaford, A.J., Smith, P.W.G., Tatchell, A.R. *Practical Organic Zoology, 5th Ed.,* Pearson (2012)

SKILL ENHANCEMENT COURSES FOR **"ZOOLOGY"** HONOURS

SKILL ENHANCEMENT COURSE-1   (SEM-I)

CLXXXVIII. SKILL ENHANCEMENT COURSE- SEC 1:
WILDLIFE CONSERVATION AND MANAGEMENT

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) **45 Hours**

About the course
1. The course is an introduction to wildlife management and gives an account of the tools used by wildlife managers.
2. Topics covered are to equip students with adequate knowledge of various biodiversity monitoring methodologies, conservation and management issues of vertebrate pests, wildlife conflict and over abundant species, wildlife health and diseases.

Learning outcomes
After successfully completing this course, the students will be able to:
1. Develop an understanding of how animals interact with each other and their natural environment
2. Develop the ability to use the fundamental principles of wildlife ecology to solve local, regional and national conservation and management issues
3. Develop the ability to work collaboratively on team-based projects
4. Demonstrate proficiency in the writing, speaking, and critical thinking skills needed to become a wildlife technician
5. Gain an appreciation for the modern scope of scientific inquiry in the field of wildlife conservation management
6. Develop an ability to analyze, present and interpret wildlife conservation management information.

Course Content:

UNIT I: Value of wildlife and need for its conservation   (20 Lecture)
Definition, value and importance of wildlife; Types of ecosystems. Causes of depletion of wildlife; Inventory and classification of wetland and animal inhabitants; Population vulnerability analysis and its components; Factors responsible for the extinction of animals; Types of protected areas and the concept of zoning within the protected areas; Wildlife Sanctuaries and National Parks in India: general strategies and issues; Theories of population dispersal; Animal movement, concept of home range and territory; Tracking movement by remote sensing and GIS.

UNIT II: Population and prey-predator dynamics   (20 Lecture)
Wildlife conservation, ethics and importance of conservation; Impact of topography, geology, soil and water on wildlife; Impact of habitat destruction and fragmentation on wildlife; Biological parameters such as food, cover, forage and their impact on wild life; Population attributes; concepts of exponential and logistic growth rates of wildlife; Density dependent and independent population regulation; Impact of introduced species on preexisting flora and fauna of wildlife; Identification and estimation of wild animals by fecal sample analysis, hair identification, pug marks and census

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methods. Predator-prey models and impact of predation.

UNIT III: Wildlife Conservation   (20 Lecture)

Wildlife conservation objectives- strategies and issues; Captive breeding techniques and translocation and reintroduction; Inviolate area and critical habitats and their impact on wildlife; Different terrestrial habitats of wildlife in India; Restoration of degraded habitat; Damage caused by wildlife in India and its mitigation; Sick animal refuges in protected areas.

UNIT IV: Rehabilitation and management   (20 Lecture)

Type of wildlife management-manipulative, custodial; Management of over abundant wild animal populations causing damages to nearby inhabitants and their crops and animals; Tools and techniques to control the menace of wild animals; man wildlife conflict resolution and mitigation; Management of exotic and invasive wetland species in India. Habitat manipulation   control and regulation of grazing. Weed eradication; Major diseases of domestic and wild animals and their control and impact of wild life tourism.

PRACTICALS:

1. Identification of flora, mammalian fauna, avian fauna, herpeto-fauna.
2. Demonstration of basic equipment needed in wildlife studies use, care and maintenance (Compass, Binoculars, Spotting scope, Range Finders, Global Positioning System, Various types of Cameras and lenses).
3. Familiarization and study of animal evidences in the field; Identification of animals through pug marks, hoof marks, scats, pellet groups, nest, antlers etc.
4. Demonstration of different field techniques for flora and fauna.
5. Trail / transect monitoring for abundance and diversity estimation of mammals and bird (direct and indirect evidences). Group discussion or Seminar presentation on one or two related topics from the list

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SKILL ENHANCEMENT COURSE-2   (SEM-II)

CLXXXIX.   SKILL ENHANCEMENT COURSE- SEC 2:
SERICULTURE & APICULTURE

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Objectives:

Course Contents:

SERICULTURE

Unit1: Introduction   **(3 Lectures)**

Sericulture: Definition, history and present status; Silk route. Types of silk worms, Distribution and Races. Exotic and indigenous races. Mulberry and non-mulberry Sericulture

Unit2: Biology of Silk worm   **(3 Lectures)**

Life cycle of Bombyxmori
Structure of silk gland and secretion of silk

Unit3: Rearing of Silk worms   **(13 Lectures)**

Selection of mulberry variety and establishment of mulberry garden. Rearing house and rearing appliances. Disinfectants: Formalin, bleaching powder, RKO. Silk worm rearing technology: Early age and Late age rearing. Types of mountages Spinning, harvesting and storage of cocoons

Unit4: Pests and Diseases   **(4 Lectures)**

Pests of silk worm: Uzifly, dermestid beetles and vertebrates Pathogenesis of silk worm diseases: Protozoan, viral, fungal and bacterial Control and prevention of pests and diseases

Unit5: Entrepreneurship in Sericulture   **(2 Lectures)**

Prospectus of Sericulture in India: Sericulture industry in different states, employment, potential in mulberry and non-mulberry sericulture. Visit to various Sericulture centres.

Suggested Readings:

Handbook of Practical Sericulture: S.R. Ullaland 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 —Chunand Chen Da-Chung, Pub. By FAO, Rome 1988.
A Guide for Bivoltine Sericulture; K. Sengupta, Director, CSR & TI, Mysore 1989.
Improved Method of Rearing Young age silkworm; S. Krishnaswamy, reprinted CSB, Bangalore, 1986.

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APICULTURE

Unit1: Biology of Bees

History, Classification and Biology of Honey Bees
Social Organization of Bee Colony

Unit2: Rearing of Bees

Artificial Bee rearing (Apiary), Beehives–Newton and Langstroth
Bee Pasturage
Selection of Bee Species for Apiculture
Bee Keeping Equipment
Methods of Extraction of Honey (Indigenous and Modern)

Unit3: Diseases and Enemies Bee Diseases and Enemies, Control and Preventive measures

Unit4: Bee Economy

Products of Apiculture Industry and its Uses (Honey, Bees Wax, Propolis), Pollen etc

Unit5: Entrepreneurship in Apiculture

Bee Keeping Industry– Recent Efforts, Modern Methods in employing artificial
Beehives for cross pollination in horticultural gardens

Suggested Readings:

Prost, P.J.(1962). *Apiculture*. Oxford and IBH, New Delhi.
Bisht D.S., *Apiculture*, ICAR Publication.
Singh S., *Bee keeping in India*, Indian council of Agricultural Research, New Delhi.

SKILL ENHANCEMENT COURSE-3   (SEM-III)

CXC. SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

A Common Syllabus Prescribed by Ranchi University   (Credits: Theory-03) **45 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):

*There will be **objective type test** consisting of **Seventy-five questions of 1 mark each**. Students are required to mark their answer on **OMR Sheet** provided by the University.*

Course Objectives:

The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

AC.   INTRODUCTION TO COMPUTER SYSTEM

1. Basic Concept of Computer
What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU)   **(3 Lecture)**

2. Concepts of Hardware
Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer   **(4 Lecture)**

3. Operating system
What is an Operating System, Operating System Examples, Functions of Operating System(Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting   **(6 Hours)**

4. Concept of Software
What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages
                                    (4 Hours)

5. Internet & its uses
Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails.   **(6 Hours)**

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AD.   MICROSOFT OFFICE 2016 AND LATEST VERSIONS

6. Microsoft Word

Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents

(7 Hours)

7. Microsoft Excel (Spreadsheet)

Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet   **(6 Hours)**

8. Microsoft Power Point (Presentation Package)

Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation, slide show, Master Slides, Creating photo album, Rehearse timing and record narration   **(5 Hours)**

9. Digital Education

What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning   **(4 Hours)**

Reference Books

110.   Nishit Mathur, Fundamentals of Computer, APH publishing corporation (2010)

111.   Neeraj Singh, Computer Fundamentals (Basic Computer), T Balaji, (2021)

112.   Joan Preppernau, Microsoft Power Point 2016 step by step, Microsoft press (2015)

113.   Douglas E Corner, The Internet Book 4th Edition, prentice –Hall (2009)

114.   Steven Welkler, Office 2016 for beginners, Create Space Independent Publishing Platform (2016)

115.   Wallace Wang, Microsoft Office 2019, Wiley (January 2018)

116.   Noble Powell, Windows 11 User Guide For Beginners and Seniors, ASIN, (October 2021)

COURSES OF STUDY FOR FYUGP IN **"ZOOLOGY" MINOR**

MINOR COURSE-1A   **(SEM-I)**

CXCI. MINOR COURSE- MN 1A:
INTRODUCTORY ZOOLOGY

Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75	Pass Marks: Th (SIE + ESE) = 30

(Credits: Theory-03) **45 Hours**

Course Learning Outcomes:

11. A general concept of the animal world
12. Awareness of students regarding biological mechanism of various processes, functions as well evolutionary significance could be learnt
13. Students will acquire knowledge about the cell in detail along with the different organelles
14. Will understand their own body processes
15. Will get an idea about origin of life and evolution.

Course Content:

UNIT I: General Introduction to Animal World, Need of Classification, General idea of Classification and Taxonomy, Cell theory.

UNIT II: Cell- Structure, Cell theory. Difference between Prokaryotic and Eukaryotic cells
An overview of various cell organelles, including detailed structure of Mitochondria, Golgi body, Endoplasmic Reticulum, Nucleus, Ribosome, and their significant feature. (Any three)

UNIT III: A general introduction to human physiology.

UNIT IV: Basic structure of DNA and RNA,

UNIT V: Mendel's law of Inheritance and variation.

UNIT VI: Evolution: Lamarck's Inheritance theory, Darwin's natural selection theory mutation theory.

UNIT VII: General concept of Ecology, Ecosystem and its various components.

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CXCII.   MINOR COURSE- MN 1A PR: MINOR PRACTICALS-1A PR

Marks: Pr (ESE: 3Hrs) = 25	**Pass Marks: Pr (ESE) = 10**

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

<u>*End Semester Examination (ESE):*</u>
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:

1. Study of Permanent slides.
2. Amoeba, Paramecium, Sycon, Ascaris, Starfish, wall lizard, frog, Columba Bat, Kidney (T.S Mammal) liver, Pancreas, Ovary, Testis.
3. Homologous and Analogous organs.
4. Project on Food chain

Suggested Books.
1. Animal Diversity (Biology of Invertebrates) -Pechnik
2. Cell Biology: De Robersies
3. Cell Biology: Ambrose
4. Cell Biology: C.B. Powar
5. Physiology: Gyton
6. Evolution: V.B. Rastogi
7. Ecology: M.C. Dash, P.D. Sharma

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MINOR COURSE-1B   (SEM-III)

CXCIII.   MINOR COURSE- MN 1B:
ANIMAL DIVERSITY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-03) **45 Hours**

Course Learning Outcomes:
1. Develop understanding on the diversity of life with regard to protista, non-chordates and chordates
2. Grouping of animals on the basis of their morphological characters.
3. will be able to examine evolutionary history of a taxon

Course Content:

UNIT I: Kingdom Protista   **(03 Lecture)**
General characters and classification up to classes; Locomotary Organelles and locomotion in Protozoa

UNIT II: Phylum Porifera   **(03 Lecture)**
General characters and classification up to classes; Canal System in Sycon 3

UNIT III: Phylum Cnidaria   **(03 Lecture)**
General characters and classification up to classes; Polymorphism in Hydrozoa

UNIT IV: Phylum Platyhelminthes   **(03 Lecture)**
General characters and classification up to classes; Life history of Taeniasolium

UNIT V: Phylum Nemathelminthes   **(03 Lecture)**
General characters and classification up to classes; Life history of Ascarislumbricoides and its parasitic adaptations

UNIT VI: Phylum Annelida   **(03 Lecture)**
General characters and classification up to classes; Metamerism in Annelida

UNIT VII: Phylum Arthropoda   **(03 Lecture)**
General characters and classification up to classes; Vision in Arthropoda, Metamorphosis in Insects

UNIT VIII: Phylum Mollusca   **(02 Lecture)**
General characters and classification up to classes; Torsion in gastropods

UNIT IX: Phylum Echinodermata   **(03 Lecture)**
General characters and classification up to classes; Water-vascular system in Asteroidea

UNIT X: Protochordates   **(04 Lecture)**
General features and Phylogeny of Protochordata

UNIT XI: Agnatha   **(04 Lecture)**
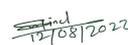
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General features of Agnatha and classification of cyclostomes up to classes

UNIT XII: Pisces   (04 Lecture)
General features and Classification up to orders; Osmoregulation in Fishes

UNIT XIII: Amphibia   (04 Lecture)
General features and Classification up to orders; Parental care

UNIT XIV: Reptiles   (04 Lecture)
General features and Classification up to orders; Poisonous and non-poisonous snakes, Biting mechanism in snakes

UNIT XV: Aves   (05 Lecture)
General features and Classification up to orders; Flight adaptations in birds

UNIT XVI: Mammals   (05 Lecture)
Classification up to orders; Origin of mammals

Reference Books:
1. Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). The
2. Invertebrates: A New Synthesis, III Edition, Blackwell Science
3. Young, J. Z. (2004). The Life of Vertebrates. III Edition. Oxford university press.
4. Pough H. Vertebrate life, VIII Edition, Pearson International.
5. Hall B.K. and Hallgrimsson B. (2008). Strickberger's Evolution. IV Edition. Jones and Bartlett Publishers Inc.
6. Pechnek, J.A.2000. Biology of Invertebrates. Tata McGraw-Hill Publishing Company, New

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CXCIV.   MINOR COURSE- MN 1B PR:
MINOR PRACTICALS-1B PR

Marks: Pr (ESE: 3Hrs) = 25	**Pass Marks: Pr (ESE) = 10**

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:

Study of the following specimens:

1. Amoeba, Euglena, Plasmodium, Paramecium, Sycon, Hyalonema, and Euplectella, Obelia, Physalia, Aurelia, Tubipora, Metridium, Taeniasolium, Male and female Ascarislumbricoides, Aphrodite, Nereis, Pheretima, Hirudinaria, Palaemon, Cancer, Limulus, Palamnaeus, Scolopendra, Julus, Periplaneta, Apis, Chiton, Dentalium, Pila, Unio, Loligo, Sepia, Octopus, Pentaceros, Ophiura, Echinus, Cucumaria and Antedon, Balanoglossus, Herdmania, Branchiostoma, Petromyzon, Sphyrna, Pristis, Torpedo, Labeo, Exocoetus, Anguilla, Ichthyophis/Ureotyphlus, Salamandra, Bufo, Hyla, Chelone, Hemidactylus, Chamaeleon, Draco, Vipera, Naja, Crocodylus, Gavialis.
2. Any six common birds from different orders, Sorex, Bat, Funambulus, Loris

Study of the following permanent slides:

1. T.S. and L.S. of Sycon
2. Study of life history stages of Taenia
3. T.S. of Male and female Ascaris
4. Key for Identification of poisonous and non-poisonous snakes

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MINOR COURSE-1C   (SEM-V)

CXCV.   MINOR COURSE- MN 1C:
FOOD NUTRITION AND HEALTH

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-03) **45 Hours**

Course Learning Outcomes:
1. Will understand the role of food and nutrition in health and diseases
2. Implement strategies for food acess, procurement, preaparation and Strategy.

Course Content:

UNIT I: Nutrition and dietary nutrients   **(10 Lecture)**

Basic concept of Food: Components and nutrients. Concept of balanced diet, nutrient requirements and dietary pattern for different groups viz., adults, pregnant and nursing mothers, infants, school children, adolescents and elderly people.

UNIT II: Macro nutrients and micronutrients   **(10 Lecture)**

Nutritional Biochemistry: Macronutrients. Carbohydrates, Lipids, Proteins- Definition, Classification, their dietary source and role. Micronutrients. Vitamins- Water-soluble andFat-soluble vitamins- their sources and importance. Important minerals viz., Iron, Calcium, Phosphorus, Iodine, Selenium and Zinc: their biological functions.

UNIT III: Malnutrition and nutrient deficiency diseases   **(20 Lecture)**

Definition and concept of health: Common nutritional deficiency diseases- Protein Malnutrition (e.g., Kwashiorkor and Marasmus), Vitamin A deficiency, Iron deficiency and Iodine deficiency disorders- their symptoms, treatment, prevention and government initiatives, if any. Life style dependent diseases- hypertension, diabetes mellitus, and obesity-their causes and prevention. Social health problems- smoking, alcoholism, narcotics. Acquired Immuno Deficiency Syndrome (AIDS): causes, treatment and prevention. Other ailments viz., cold, cough, and fever, their causes and treatment.

UNIT IV: Diseases caused by microorganisms   **(20 Lecture)**

Food hygiene: Potable water- sources and methods of purification at domestic level. Foodand Water-borne infections: Bacterial diseases: cholera, dysentery; typhoid fever, viral diseases: Hepatitis, Poliomyelitis etc., Protozoan diseases: amoebiasis, giardiasis; Parasitic diseases: taeniasis and ascariasis their transmission, causative agent, sources of infection, symptoms and prevention. Causes of food spoilage and its prevention.

Reference Books:
1. Mudambi, S.R. and Rajagopal, M.V. (2007). Fundamentals of Foods, Nutrition and Diet Therapy; Fifth Ed;; New Age International Publishers
2. Srilakshmi, B. (2002). Nutrition Science; New Age International (P) Ltd.
3. Srilakshmi, B. (2007). Food Science; Fourth Ed; New Age International (P) Ltd.
4. Swaminathan, M. (1986). Handbook of Foods and Nutrition; Fifth Ed; BAPPCO.

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5.   Bamji, M.S.; Rao, N.P. and Reddy, V. (2009). Text Book of Human Nutrition; Oxford & IBH
Publishing Co. Pvt Ltd.

6.   Wardlaw, G.M. and Hampl, J.S. (2007). Perspectives in Nutrition; Seventh Ed; McGraw Hill.

7.   Lakra, P. and Singh M.D. (2008). Textbook of Nutrition and Health; First Ed; Academic Excellence.

8.   Manay, M.S. and Shadakshara swamy, M. (1998). Food-Facts and Principles; New Age International
(P) Ltd.

9.   Gibney, M.J. et al. (2004). Public Health Nutrition; Blackwell Publishing.

CXCVI.   MINOR COURSE- MN 1C PR:
MINOR PRACTICALS-1C PR

Marks: Pr (ESE: 3Hrs) = 25	Pass Marks: Pr (ESE) = 10

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):
There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:

1. Datecting adulteration in a) Ghee b) Sugars c) Tea leaves and d) Turmeric.
2. Estimation of Lactose in milk.
3. Study of the stored grain pests from slides/ photograph (Sitophilusoryzae, Trogoderma granarium, Callosobruchuschinensis and Triboliumcastaneum): their identification, habitat and food sources, damage caused and control. Preparation of temporary mounts of the above stored grain pests.
4. Project- Computer aided diet analysis and nutrition counselling for different age groups.

Reference Books:
Vogel's Qualitative Inorganic Analysis, A.I. Vogel, Prentice Hall, 7th Edition.

MINOR COURSE-1D   (SEM-VII)

CXCVII.   MINOR COURSE- MN 1D:
ENVIRONMENT & PUBLIC HEALTH

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-03) **45 Hours**

Course Learning Outcomes:

After successfully completing this course, the students will be able to:

1. Understand the fundamental issues of environment.
2. Analyze different sources of environmental problems and methods of measurement of pollution.
3. Examine economic growth and quality of life.
4. Examine the microbiology of waste water treatment and its various schemes.
5. Summarise and orally present current microbiological problem areas.
6. Describe the mechanisms for transmission, virulence and pathogenicity in pathogenic micro-organisms.
7. Know how resistance development and resistance transfer occur.
8. Understand how does the immune system distinguish self from non-self.

Course Content:

UNIT I: Introduction   **(10 Lecture)**
Sources of Environmental hazards, hazards identification and accounting, fate of toxic and persistent substances in the environment, dose Response Evaluation, exposure Assessment.

UNIT II: Climate Change   **(10 Lecture)**
Greenhouse gases and global warming, Acid rain, Ozone layer destruction, Effect of climate change on public health

UNIT III: Pollution   **(10 Lecture)**
Air, Water, Noise pollution sources and effects, Pollution control

UNIT IV: Waste Management Technologies   **(15 Lecture)**
Sources of waste, types and characteristics, Sewage disposal and its management, Solid waste disposal, Biomedical waste handling and disposal, Nuclear waste handling and disposal, waste from thermal power plants, Case histories on Bhopal gas tragedy, Chernobyl disaster, Seveso disaster and three-mile island accident and their aftermath.

UNIT V: Diseases   **(15 Lecture)**
Causes, Symptoms and control of tuberculosis, Asthma, Cholera, Minamata disease, typhoid

CXCVIII.   Reference Books:

1. Cutter, S.L., Environmental Risk and Hazards, Prentice- Hall of India Pvt. Ltd. New Delhi, 1999.
2. Kolluru Rao, Bartell Steven, Pitblado R and Stricoff "Risk Assessment and Management Handbook",

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McGraw Hill Inc., New York, 1996.
3.   Kofi Asante Duah "Risk Assessment in Environmental Management", Jhon Wiley and sons, Singapore, 1998.
4.   Kasperson, J.X. and Kasperson, R.E. and Kasperson, R.E., Global Environmental Risks, V.N. Univ. Press, New York, 2003.
5.   Joshep F Louvar and B Diane Louver Health and Environmental Risk Ansalysis fundamentals with applications, Prentice Hall, New Jersey 1997.

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CXCIX.   MINOR COURSE- MN 1D PR:
MINOR PRACTICALS-1D PR

Marks: Pr (ESE: 3Hrs) = 25	**Pass Marks: Pr (ESE) = 10**

(Credits: Practicals-01) **30 Hours**

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment   = 15 marks
Practical record notebook   = 05 marks
Viva-voce   = 05 marks

Practicals:

1. To determine pH, CI, SO_4, NO_3 in soil and water samples from different locations

Reference Books:

FYUGP

COMMON COURSES

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For Semester-I to semester-II

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Implemented from
Academic Session 2022-2026

Principal
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AK SINGH COLLEGE ,JAPLA, PALAMU

Members for preparing Syllabus for the Four-Year Undergraduate Programme (FYUGP)

CHAIRMAN

Members for preparing Syllabus for the Four-Year Undergraduate Programme (FYUGP)

Contents

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HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

- The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.
    - The session shall commence from **1st of July**.

ELIGIBILITY

- The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.

ADMISSION PROCEDURE

- The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

ACADEMIC CALENDAR

- Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

- Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
    - ➤ a Certificate after completing 1 year (2 semesters) of study in the chosen fields of study,
    - ➤ a Diploma after 2 years (4 semesters) of study,
    - ➤ a Bachelor after a 3-year (6 semesters) programme of study,
    - ➤ a Bachelor (with Hons. / Research) after a 4-year (8 semesters) programme of study

VALIDITY OF REGISTRATION

- Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

- Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.
- Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION AND SPAN PERIOD

i.   The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.
ii. No student will be detained in odd Semesters (I, III, V & VII).
iii. To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year (a student has to pass in minimum 9 papers out of the total 12 papers. However, it will be necessary to procure pass marks in each of the paper before completion of the course.
iv. To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 16 papers out of the total 22 papers.
v.   Eligibility to get entry in Semester VII is to secure a minimum of 7.5 CGPA up to semester VI along with other criteria imposed by the Institution.

PUBLICATION OF RESULT

- The result if the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

- If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

- There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

- Regulation related with any concern not mentioned above shall be guided by the Regulations

of the University for F FYUGP.

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3

COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 176]

Semester	Common Courses (29)									Introductory Courses (15)		Internship/ Project (4)	Major* (54) + Adv. Major (24)	Minor** (32)		Research Courses (18)				Total Credit
	Language and Communication Skills (Modern Indian Language including TRL) (6)	Language and Communication Skills (English) (6)	Environmental Studies (3)	Understanding India (2)	Health & Wellness, Yoga Education, Sports & Fitness (2)	Digital Education (3)	Mathematical & Computational Thinking and Analysis (2)	Value-Based Course/ Global Citizenship Education (2)	Community Engagement/ NCC/ NSS/ (3)	Introductory Courses [Natural Sc./ Humanities/ Social Sc./Commerce] (9)	Introductory Course [Vocational Studies] (6)			Natural Sc./ Humanities/ Social Sc./ Commerce (18)	Vocational Studies (14)	Research Methodology Courses (6)	Research Proposal, Review of literature (4)	Research Internship/ Field Work (4)	Preparation of the Research Project Report (4)	176
1	2	3	4	5	6	7	8			9	10	11	14	15	16	17	18	19	20	21
I	6			2	2					3	3		6							22
II		6					2	2		3	3		6							22
Exit Point: Undergraduate Certificate																				
III			3			3			3	3		4	6							22
IV													6+6	6	4					22
Exit Point: Undergraduate Diploma																				
V													6+6	6	4					22
VI													6+6	6	4					22
Exit Point: Bachelor's Degree																				
VII													6+6 (Adv. Topics)			6	4			22
VIII													6+6 (Adv. Topics)		2			4	4	22
Exit Point: Bachelor's Degree with Hons. /Research																				

*There will be four disciplinary areas: A-Natural Science, B-Humanities, C-Social Science, and D-Commerce; each having basket of courses. A student will have to select a 'Major' from any of the four disciplinary areas (out of A, B, C & D). The selection for admission will be primarily based on availability of seats in Major and marks imposed by the institution.

**A student has to select three subjects for 'Introductory Regular Courses' from a pool of subjects associated with the Major offered by the institution. One of the three subjects will continue as 'Minor' from semester IV onwards, based on the academic interest and performance of the student.

Session 2022-26 onwards

COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME

Table 2: Course structure for Undergraduate Certificate Programme *[May Exit after Sem.-II]*

Semester	Common Courses			Introductory Courses		Major	Total Credits
Sem.-I LCS (MIL/TRL) (6 Credits)	Understanding India (2 Credits)	Health & Wellness, Yoga Education, Sports & Fitness (2 Credits)	IRC-1 (3 Credits)	IVS-1A (3 Credits)	MJ-1 (6 Credits)	**(22)**
Sem.-II LCS (Hindi) (6 Credits)	Global Citizenship Education (2 Credits)	Mathematical & Computational Thinking (2 Credits)	IRC-2 (3 Credits)	IVS-1B (3 Credits)	MJ-2 (6 Credits)	**(22)**

Total = 44 Credits

(LCS: Language and Communication Skills; MIL: Modern Indian Languages; TRL: Tribal Regional Languages; IRC: Introductory Regular Courses; IVS: Introductory Vocational Studies, MJ: Major)

Table 3: Course structure for Undergraduate Diploma Programme *[May Exit after Sem.-IV]*

Semester	Common Courses			Introductory Courses	Major	Minor	Internship/ Project	Vocational	Total Credits
Sem.-III	Environmental Studies (3 Credits)	Community Engagement/ NCC/ NSS (3 Credits)	Digital Education (3 Credits)	IRC-3 (3 Credits)	MJ-3 (6 Credits)		Internship/ Project (4 Credits)		**(22)**
Sem.-IV					MJ-4, MJ-5 (6+6=12 Credits)	MN-1 (6 Credits)		VS-1 (4 Credits)	**(22)**

Total = 88 Credits

(MN: Minor; VS: Vocational Studies)

Table 4: Course structure for Bachelor's Degree Programme   *[May Exit after Sem.-VI]*

Semester	Major Courses	Minor Courses	Vocational	Total Credits
Sem.-V	MJ-6, MJ-7 (6+6 = 12 Credits)	MN-2 (6 Credits)	VS-2 (4 Credits)	**(22)**
Sem.-VI	MJ-8, MJ-9 (6+6= 12 Credits)	MN-3 (6 Credits)	VS-3 (4 Credits)	**(22)**

Total = 132 Credits

Table 5: Course structure for Bachelor's Degree with Hons./Research Programme

Semester	Advance Courses	Research Courses		Vocational	Total Credit
Sem.-VII	AMJ-1, AMJ-2	Research Methodology (6+6=12 Credits)	Research Proposal (6 Credits)	(4 Credits)	**(22)**
Sem.-VIII	AMJ-3, AMJ-4	Research	Research	VSR	

		Int./Field Work (4 Credits)	Report (4 Credits)		
	(6+6=12 Credits)			(2 Credits)	**(22)**

Total = 176 Credits

(AMJ: Advance Major; VSR: Vocational Studies associated with Research)

SEMESTER WISE COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME   **2022 onwards**

Table 6: Semester wise Course Code and Credit Points:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	CC-1	Language and Communication Skills (Modern Indian language including TRL)	6
	CC-2	Understanding India	2
	CC-3	Health & Wellness, Yoga Education, Sports & Fitness	2
	IRC-1	Introductory Regular Course-1	3
	IVS-1A	Introductory Vocational Studies-1	3
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	6
II	CC-4	Language and Communication Skills (Hindi)	6
	CC-5	Mathematical & Computation Thinking Analysis	2
	CC-6	Global Citizenship Education & Education for Sustainable Development	2
	IRC-2	Introductory Regular Course-2	3
	IVS-1B	Introductory Vocational Studies-2	3
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	6
III	CC-7	Environmental Studies	3
	CC-8	Digital Education (Elementary Computer Applications)	3
	CC-9	Community Engagement & Service (NSS/ NCC/ Adult Education)	3
	IRC-3	Introductory Regular Course-3	3
	IAP	Internship/Apprenticeship/ Project	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	6
IV	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	6
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	6
	MN-1	Minor Paper 1 (Disciplinary/Interdisciplinary Minor)	6

	VS-1	Vocational Studies-1 (Minor)	4
V	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	6
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	6
	MN-2	Minor Paper 2 (Disciplinary/Interdisciplinary Minor)	6
	VS-2	Vocational Studies 2 (Minor)	4
VI	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	6
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	6
	MN-3	Minor Paper 3 (Disciplinary/Interdisciplinary Minor)	6
	VS-3	Vocational Studies 3 (Minor)	4
VII	AMJ-1	Advance Major paper 1 (Disciplinary/Interdisciplinary Major)	6
	AMJ-2	Advance Major paper 2 (Disciplinary/Interdisciplinary Major)	6
	RC-1	Research Methodology	6
	RC-2	Research Proposal	4
VIII	AMJ-3	Advance Major paper 3 (Disciplinary/Interdisciplinary Major)	6
	AMJ-4	Advance Major paper 4 (Disciplinary/Interdisciplinary Major)	6
	RC-3	Research Internship/Field Work	4
	RC-4	Research Report	4
	VSR	Vocational Studies (Associated with Research)	2
		Total Credit	**176**

Abbreviations:

CC　　Common Courses
IRC　　Introductory Regular Courses
IVS　　Introductory Vocational Studies
IAP　　Internship/Apprenticeship/ Project
VS　　Vocational Studies
MJ　　Major Disciplinary/Interdisciplinary Courses
MN　　Minor Disciplinary/Interdisciplinary Courses
AMJ　　Advance Major Disciplinary/Interdisciplinary Courses
RC　　Research Courses
VSR　　Vocational Studies associated with Research

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses	Examination Structure		
	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MIL HINDI	6	---	100	---
	Non-Hindi	3	---	50	---
	Alternative English Communication/	3	---	50	---
	Bengali Communication	3	---	50	---
	Sanskrit Communication	3	---	50	---
	Urdu Communication	3	---	50	---
	Ho Communication	3	---	50	---
	Nagpuri Communication	3	---	50	---
	Mundari Communication	3	---	50	---
	Kharia Communication	3	---	50	---
	Kurmali Communication	3	---	50	---
	Kurux Communication	3	---	50	---
	Khortha Communication	3	---	50	---
	Santali Communication	3	---	50	---
	Understanding India	2	---	100	---
	Health & Wellness, Yoga Education, Sports & Fitness	2	---	75	25
II	English Communication	6	---	100	---
	Mathematical & Computational Thinking and Analysis	2	---	100	---
	Global Citizenship Education & Education for Sustainable Development	2	---	100	---

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SEMESTER I

I. **MIL-HINDI:**   (Credits: Theory-06)

Marks: 100 (ESE: 3Hrs) = 100	Pass Marks: Th (ESE) = 40

iżu i= dsfy, funi'k

Nekgh ijh{kk (ESE 100 marks):

i'uk ds nksleaygksxA [k.M *A* vfuok;g ftle rhu iżu gksxA iżu lㆍ 1 eas nl vR;a y*kㆍmÙkjh; 1 vd ds iżu gksxA iżu lㆍ 2 o 3 y*kㆍmÙkjh; 5 vㆍd ds iżu gksxA [k.M *B* lㆍ 20 vㆍdksds N: eas lㆍdUgha pkj o.kukRed i'uk ds mÙkj nㆍu gksxA

uksV : Lkㆍ)kfUrd ijh{kk eas iㆍNㆍx, iR;ㆍd iżu eas mi-foHkktu gㆍ ldrsgㆍA

हिंदी साहित्य एवं हिंदी शिक्षा   (Lkㆍ)kfUrd: 90 0;k[;ku)

पहृ यॐम के इस अंश का अिधगम पㆍरणाम िनㆍनवत होगा – :

1. कुㆍ हㆍF के अ4ययन से िव4ㆍथㆍ मानवीय मूㆍयㆍ का महㆍㆍव समझ पाएंगे यु7 न चाहते हुए भी िकस पㆍरिㆍथित मㆍ यु7 भी आवㆍयक है ㆍㆍ मㆍ को समझ पाएंगे ।

2. ㆍयाकरण अ4ययन से िव4ㆍथㆍ शु7 बोलना, शु7 िलखना सीख पाएंगे, साथ ही अपनी बातㆍ को कम श8दㆍ मㆍ समेटना और िवㆍतार करना भी सीख पाएंगे ।

Peतािㆍत संरचना

इकाई –01 कुㆍ हㆍF (1-3 सगㆍ) ।

इकाई –02 िहंदी ㆍयाकरण और रचना –

संㆍा, िवशेषण, सवㆍनाम, िㆍया, कारक, वचन, संिㆍध, समास, िलंग िनणㆍयिवलोम, पयㆍयवाची, श8द और संㆍेㆍा

इकाई 03– सㆍÿㆍषण (संचार), सㆍÿㆍषण कㆍ अवधारणा ㆍ महㆍㆍव, सㆍÿㆍषण के ㆍÿकार, सㆍÿㆍषण का माㆍयम, सㆍÿㆍषण कला, वाचन कला, समाचार वाचन, साㆍㆍÂकार कला, रचनाÂमक लेखㆍ का लㆍㆍय, रचनाÂमक लेखㆍ का आधार, भाव और

िवचारㆍ कㆍ ÿनㆍतㆍित,वाㆍ कला कㆍ उपयोिㆍता ।

आ शंिㆍसㆍ पुㆍ –:

1. कुㆍ हㆍF – रामधारी िसंह िदनकर

2. िदनकर : एक पुㆍ ㆍㆍㆍㆍ– िवजयㆍ नारायण िसंह

3. युगचारण िदनकर – डॉ. साㆍिㆍ ㆍी िसㆍहा

4. िदनकर के काㆍय – लालधर ि㆘पाठी 'ㆍवासी'

5. आधुनिक हिंदी व्याकरण और रचना – डॉ. वासुदेवनंद प्रसाद

6. सुबोध हिंदी व्याकरण और रचना – डॉ. श्याम नंदशास्त्री

7. संप्रेषणपरक हिंदी भाषा शिक्षण – डॉ. वैद्या नारंग

8. वृहत व्याकरण भास्कर – डॉ. वचनदेव कुमार

9. सरल हिंदी व्याकरण – विश्वनाथ शास्त्री

10. अभिनव हिंदी व्याकरण   – डॉ. शीलधर सिंह एवं हरिवंश तरुण

11. दिनकर का काव्य वैभव: एक मूल्यांकन – डॉ. चित्रलेखा ठाकुर

OR

Student may opt Non Hindi and Any Other Language of 50 marks each (instead of MIL-HINDI) from the List given below:

11

Non Hindi + Any Other Language List

of Other Languages

1. Alternative English Communication
2. Bengali Communication
3. Sanskrit Communication
4. Urdu Communication
5. Ho Communication
6. Kharia Communication
7. Khortha Communication
8. Kurmali Communication
9. Kurux Communication
10. Mundari Communication
11. Nagpuri Communication
12. Panch Pargania Communication
13. Santali Communication

Note: Student has to appear in both papers in a single sitting of Examination.

It is necessary to pass in both the papers individually.

A. NON-HINDI (NH):

Marks: 50 (ESE: 1.5 Hrs) = 50	Pass Marks: Th (ESE) = 20

iżu i= ds fy, funi'k

Nekgh ijh{kk (ESE 100 marks):

i'uk ds nk‌ leg gk‌x‌A [k.M *A* vfuok‌; gS ft l e‌ahu iżu gk‌x‌A iżu l‌‌{;‌k 1 eas ikp v‌R;a y*k‌ mÙkjh; 1 v‌d‌ ds iżu gk‌x‌A [k.M *B* l‌15 v‌dk‌ dk‌ ik‌p eas l‌ fdUgh‌ rhu o.kukRed i'uk dk‌ mÙkj n‌u‌ gk‌x‌A

uksV : Lk)kfUrd ijh{kk eas *iN‌ x, iR;d iż eas mi-foHkktu gk‌ ldrsg‌A*

िहंदी साि‌ह‌A‌य एवं िहंदी ‌याकरण   (Lk**‌kfUrd: 45 0;k‌[;ku)

पहृ यø‌म के इस अंश का अिधगम पिरणाम िनिनवत होगा – :

1. पंचवटी ख‌A‌ड का‌ø;य से िव4‌ø‌‌ाथi पौरािणक कथाओं से पिरचित हो‌ तथा उ‌‌म िै‌‌ब उदा‌‌‌त‌‌ चिरिFि का िविनमांण होगा ।

2. ‌याकरण से िव4‌ो‌‌िथ'यi‌ को िहंदी भाषा के आधारभूत िनयमi‌ से पिरचित हो‌ और उनक‌‌ H श8द संपदा मजबूत होगी ।

Peताि‌वत संरचना

इकाई –01 पंचवटी –मैि‌थलीशरण गुp ।

इकाई –02 सं‌ा‌ ,िवशेषण ,सव‌‌नाम ,

वचनिवलोम ,पया‌‌यवाची ,िलंग िनण‌‌य , श8द अनेक श8दi‌ के

िलए एक श8द

इकाई 03- मुहावरे एवं लोकोि‌‌यॉ

इकाई 04- आवेदन पF ।

अ‌‌ुशंिस‌त पु‌‌‌‌‌ –:

1. गुpजी क‌‌ H का‌ø;य साधना – डॉ उमाकांत .

2. मैि‌थलीशरण गुp नगेø‌p .डॉ – पु‌‌‌‌‌‌‌ :

3. गुpजी के साि‌ह‌A‌य का सांक‌‌ ितक अ‌ययन – विश‌‌ नारायण जायसवाल

4. हृ त ‌याकरण भा‌vकर वचनदेव कु मार .डॉ –

5. आधुि‌नक िहंदी ‌याकरण और रचना – व‌‌ुदेव नंब ‌‌साद

6. सुबोध िहंदी ‌याकरण और रचना – डॉ .‌‌याम नंद शा‌‌‌ी

7. मैि‌थलीशरण – डॉ न‌द िकशोर नवल .

<u>NON-HINDI (50 MARKS) & ANY OTHER LANGUAGE (50 MARKS)</u>

<u>FROM THE SUBJECTS AS FOLLOWS:</u>

B. OTHER LANGUAGE: (Credits: Theory-03)
1. ALTERNATIVE ENGLISH COMMUNICATION   Theory: 45 Lectures

Marks: 50 (ESE: 1.5 Hrs) = 50	Pass Marks: Th (ESE) = 20

Instruction to Question Setter for

End Semester Examination (ESE 50 marks):

*There will be **two** group of questions. **Question No.1 will be very short answer type compulsory question in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** five questions of fifteen marks each, out of which any three are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Objectives:

The course will seek to achieve the following objectives:

1. to make students understand basic rules of Grammar
2. to make students use the rules of Grammar for various composition exercises
3. to make students appreciate rules of Grammar as used for model in various literary compositions
4. to make students enjoy and appreciate literary pieces
5. to expose students to literary pieces to develop their creativity

Course Learning Outcomes:

At the end of the course students will be able to:

1. convey their ideas in English using simple and acceptable English in writing
2. understand Fundamentals of Grammar
3. critically evaluate a literary piece
4. expend an idea using language creativity

Course Content:

Unit I: Robert Frost – "Stopping by Woods on the Snowy Evening"
William Wordsworth – "A Slumber Did My Spirit Seal"
H. L. V. Derozio – "My Native Land"
Nissim Ezekiel – "The Night of the Scorpion"

Unit II: R. N. Tagore – "The Postmaster"
Guy D. Maupassant: "The Necklace"
O. Henry: "The Last Leaf"
M. R. Anand – "The Barbar's Trade Union"

Unit III: Expansion of a given idea.

Unit IV: Grammar: Determiners, Auxiliaries and Modals, Prepositions, Subject-verb Agreement, Active and Passive voice, Common Errors, Idioms and Phrases.

Reference Books:
1. For reading the texts available sources of texts and help of the Web source may be taken.
2. 2- Crystal, David(1985) Rediscover Grammar with David Crystal. Longman.
3. Hewings, M. (1999) Advanced English Grammar. Cambridge University Press.
4. 4- Bakshi, R. N. A course in English Grammar, orient Longman
5. Krishnaswamy, N. Modern English – A Book of Grammar, usage andcomposition. MacMillan India Ltd.

OR

2. BENGALI COMMUNICATION

Theory: 45 Lectures

Marks: 50 (ESE: 1.5 Hrs) = 50	Pass Marks: Th (ESE) = 20

Instruction to Question Setter for

End Semester Examination (ESE 50 marks):

e‡Íপত্রের দুটি বিভাগ থাকবে৷ বিভাগ 'A' অনিবার্য' যাতে তিনটি e‡Í বিভাজন থাকবে৷ e‡Í সংখ্+৷ ১ 'থেকে ১ নম্বরের

৫ টি অতি সংক্ষি৷ e‡Í থাকবে (১ × ৫ = ৫)। বিভাগ 'B' 'থেকে ৫ টি e‡Íর মধ্যে৷ ৩ টি e‡Íর উত্তর দিতে হবে৷ eতিটি e‡Íর মান হবে ১৫ নম্বর (১৫ × ৩ = ৪৫) ।

'নাট : e‡য়াগিক পরীক্ষার e‡Íর eতে৷কটির উপবিভাজন হতে পারে৷

Course Objectives & Learning Outcomes:

১৷ M.B. ছাত্র-ছাত্রীদের ভাষাজ্ঞানের জন্+ ব্+াকরণ ও রচনা স‡Íকে' পরিচিত হওয়া eকা‡G আবশ্+ক৷

২৷ রবীন্দ্রনাথের eই e‡bÖ ও নাট্+কবিতাটি ছাত্র-ছাত্রীদের সাহিত্+ পিপাসা ও মানবিক 'বাধের জাগরণের সহায়ক হবে৷

Course Contents:

1.   সাধারণ বিষয়ে e‡bÖ লিখন

2.   ভি্+ার্থক শ‡ffi, বিপরীতার্থ'ক শ‡ffi

3.   চারিত্রপূজা (বিদ্+াসাগর চরিত) – রবীন্দ্রনাথ ঠাকু র

4.   কূ‡Gী সংবাদ – রবীন্দ্রনাথ ঠাকু র

Reference Books:

1.   উচ্চতর বাংলা ব্+াকরণ – রামনদেব চ‡Íবর্তী

2.   ভাষা‡কাশ বাংলা ব্+াকরণ – সুনীক্তি মার চ‡Íাপাধ্+ায়

OR

3. SANSKRIT COMMUNICATION   **Theory: 45 Lectures**

Marks: 50 (ESE: 1.5 Hrs) = 50	**Pass Marks: Th (ESE) = 20**

iżu i= dﬂ fy, funﬂ"k

Nekgh ijh{kk (ESE 100 marks):

i"ukﬂdﬂnkﬂ leg gkﬂxA [k.M *A* vfuok; gS ftlﬂeﬂahu iżu gkﬂxA iżu lﬂﬦ;k 1 eas ikp vﬂR;ﬂay *kﬂmÙkjh; 1 vﬂdﬂ iżu gkﬂxA [k.M *B* lﬂ15 vﬂdkﬂdﬂ ikﬂp eas ls fdﬂUghﬂ rhu o.kukﬂRed i"ukﬂdﬂ mÙkj nﬂu﷐ gkﬂxA

uksV : Lkﬂ)kfÜrd ijh{kk eas iﬀN﷐ x, iﬀR;d iżﬂ eas mi-foHkktu gkﬂ ldrsgﬂÅA

िहंदी सािहÂय एवं िहंदी ॅयाकरण   (Lkﬂ)kfÜrd: 45 0;k[;ku)

पहृ य0म के इस अंश का उॅेॄय िनॉनवत होगा –

    1.   छाFि को भाषा का yॠन कराना |

    2.   पF ﬂ खं िनबॠधाﬂिद लेखकाﬂ िविध बतलाना |

पहृ य0म के इस अंश का उॅेॄय िनॉनवत होगा –

    1.   छाFि संकृ त भाषा म लेखा कर स गे |

    2.   सरल संकृ त भाषा को समझ स गे |

Pॠताॅिवत संरचना

    इकाई –01 पFलेखन

    इकाई –02 **अ॒छ्ेबोध**

    इकाई 03- अपिठत ग4ﬂा0ﬂश पर आधाॅित ÿæ

    इकाई 04– अनुवाद

    इकाई –05 िनबॠध

अ॑शंिसा पुॠ   –:

    1.   रचनानुवाद कौमुदी – डॉ० किपलदेव िॅिवदी, िॅ॒िॅ4ालय ॅकाशन

      2.   हृ द॒ुवाद चिॠका – चﬂधर नौﬂिटयाल

       3. अनुवाद चिॠका – डॉ० किपलदेव िॅिवदी

       4. िनबॠध शतकम् – डॉ० किपलदेव िॅिवदी

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3. SANSKRIT COMMUNICATION   Theory: 45 Lectures

Marks: 50 (ESE: 1.5 Hrs) = 50   **Pass Marks: Th (ESE) = 20**

18

OR

4. URDU COMMUNICATION

Theory: 45 Lectures

Marks: 50 (ESE: 1.5 Hrs) = 50	Pass Marks: Th (ESE) = 20

ižu i= dₛ fy, funₐ"k

Nekgh ijh{kk (ESE 100 marks):

*i´uk dₛ nkₛ leg gkₐxₐA [k.M *A* vfuok; gS ƒt lea̶hu ižu gkₐxₐA ižu lɓ;k 1 eas ikp vₚ;a y*kₐ mÙkjh; 1 vd dₛ ižu gkₐxₐA [k.M *B* ls15 vₐdkₛ dₛ ikp eas lₛfdUghₐ rhu o.kukₚed i´uk dₛ mÙkj nₛuₐ gkₐxₐA*

uksV : Lkₐ)kfUrd ijh{kk eas iₐNₛ x, iₚR;d iž eas mi-foHkktu gkₐ ldrsgₐA

OR

## 5. HO COMMUNICATION					**Theory: 45 Lectures**

Marks: 50 (ESE: 1.5 Hrs) = 50	**Pass Marks: Th (ESE) = 20**

iżu i= ds fy, funi'k

Nekgh ijh{kk (ESE 100 marks):

i'uk ds nks leg gk¡xA [k.M *A* vfuok;Z gS ftlea nu iżu gk¡xA iżu l¡[;k 1 eas ikp vR;a y*k¡ mÙkjh; 1 va d ds iżu gk¡xA [k.M *B* ls 15 va dk ds ikp eas ls
fdUgha rhu o.kukRed i'uk ds mÙkj nu us gk¡xA

uksV : Lk)kfUrd ijh{kk eas i¡N¡ x, iR;d iżu eas mi-foHkktu gks ldrs g¡A

# gks LaiŸkek.k					(Lk)kfUrd: 45 0;k[;ku)

पाठ यक्रम के इस अंश का उद्देश्य निम्नवत होगा –

1. छात्रों को भाषा का ज्ञान कराना |

2. पद्य एवं निबन्धादि लेखकों की विविध बतलाना |

पाठ यक्रम के इस अंश का उद्देश्य निम्नवत होगा –

1. छात्र हो भाषा में लेखन कर सकेंगे |

2. सरल हो भाषा को समझ सकेंगे |

Peतावित संरचना

¼v½ fu/kkfjr ikB; iLrd dk i4 Hkkx ikB; gk¡xA

¼vk½ 0;kdj.k v/;; gk¡xA

¼b½ fuca/k - _rqoi] jk’Vh; leL;k,] Hkk’kk] lkfgR;] lLdfr] idfr] ;k=k o.ku vkfnA

vad foHkktu :

¼v½ – ikB;-; iqrd lsLkekU; i’’u	–	i.kkd ¾ 20
vFkk Li’Vhdj.k	–	i.kkd ¾ 10
¼vk½ - 0;kdj.k	–	i.kkd ¾ 10
¼b½ – fuca/k	–	i.kkd ¾ 10

fu/kkfjr ikB;-; xzUFk

¼v½ ikB; iqrd -

1- ck cÉ ck¡xk cÉ Hkkx – 2½   Lakknd – ipk- ch- ih- fiaqk

fu/kkfjr ikB :- gku ck] g;jeV] g;jk¡:] crkmfy] tkeuek p.M¡ bfUnu] fx: uxj pÑ ikuxj] eu¡ gMke eu¡ cqfM+] mi:e vkrÜ fnLej] yd-;dfe] tkxuk xk¡UMM-] ekuchj ekUMkÑ] Ldu]Lay xek] Lgje–ngje] Lukxke] fgrkgslk] g;e: mEcy c¡bn] gMke] fcd¡e] llu fnfj

¼vk½ 0;kdj.k - 1- gks ckd.kk] y[kd - ykdk¡ cknjkA

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5. HO COMMUNICATION   **Theory: 45 Lectures**

Marks: 50 (ESE: 1.5 Hrs) = 50   **Pass Marks: Th (ESE) = 20**

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OR

6. NAGPURI COMMUNICATION   **Theory: 45 Lectures**

Marks: 50 (ESE: 1.5 Hrs) = 50	**Pass Marks: Th (ESE) = 20**

iżu i= dﬂ fy, funﬃ'k

Nekgh ijh{kk (ESE 100 marks):

i'ukﬂdﬃnkﬃ leg gkﬅﬃxA [k.M *A* vfuokﬂ; gS ftleﬅﬃhu iżu gkﬅﬃxA iżu lﬃﬅ;k1 eas ikp vﬀﬃ;aﬃy*k﬍mÙkjh; 1 vﬃd dﬂ iżu gkﬅﬃxA [k.M *B* lﬃ15 vﬂdkﬃdﬂ ikﬅp eas ls fdﬃUghﬂrhu o.kukﬀﬃed i'ukﬂdﬂmÙkjﬃnﬃﬅuﬂ gkﬅﬃxA

*uksV : Lk***)**kfﬃUrd ijh{kk eas iﬃﬄNﬃﬅ x, iﬀﬃ;ﬂd iż eas mi-foHkktu gkﬃ ldrsgﬃﬄA*

ukxijh Lﬂiﬃﬄek.k   (Lk**)**kfﬃUrd: 45 O;k[;ku)

पहृ यठम के इस अंश का उठﬃﬅﬄ ृय िनﬃﬅोनवत होगा –

1.   छाﬃFﬃi को भाषा का yﬃﬄान कराना |

2.   पﬃﬄF ﬂ िनबठﬃﬅﬄधाﬃﬅﬃﬅﬃﬅﬃﬅﬃﬅﬅﬃﬅﬅﬅﬃद लेखﬃका ﬃ ि़विध बतलाना |

पहृ यठम के इस अंश का उठﬃﬅﬄ ृय िनﬃﬅोनवत होगा –

1.   छाﬃFﬃi नागपुरी भाषा ﬃम लेखﬃका कर ﬃﬅﬅﬃﬅﬅﬃﬅﬅﬃगे |

2.   सरल नागपुरी भाषा को समझ ﬃﬅﬅﬃﬅﬅﬃﬅﬅﬃगे |

Peﬃﬅﬄताﬃﬅﬄवित संरचना

¼v½ fu/kkfﬃjr iﬃkB; iﬃLrdﬂ dk i4 Hkkx iﬃkB; gkﬅﬃxA

¼vk½ 0;kﬃdj.k v/;ﬅﬃ gkﬅﬃxA

¼b½ fuciﬃﬃﬂ/k - _rﬃqiﬃﬃﬂo] jk'Vﬃﬃﬂh; leﬃﬅ;kﬃ] Hkk'kkﬃ] lﬂfgﬀﬃﬂ;] lﬂLﬂdfr] idfr] ;k=k o.ku vkfnﬂA

vﬂd foHkktu :

¼v½ – iﬃkBﬃﬃﬅ; iﬃﬃﬅrd LslﬃkekUﬃﬅ; iﬃﬃﬅ"u	–	iﬃﬅ.kkﬃﬅd ¾ 20
vFkﬃ Li'Vhdj.k	–	iﬃﬅ.kﬃﬅd ¾ 10
¼vk½ - O;kdj.k	–	iﬃﬅ.kﬃﬅd ¾ 10
¼b½ – fuciﬃﬃﬂ/k	–	iﬃﬅ.kﬃﬅd ¾ 10

fu/kkfﬃjr iﬃkBﬃﬅ; xﬃﬂUFk

v½ iﬃkBﬃﬅ; iﬃﬃﬅrd -

1- cu dﬃﬂojk Hkkx - 1]

lﬃﬂaﬃﬂnd - "kdﬃﬂUryk feJ] MkW- meﬃﬅ"kuﬃﬅUn frokjh

¼vk½ O;kdj.k -

1- ukxijh Hkk'k'kk dk Lﬃﬂﬄkﬂlr ifjp; - iﬃﬂ- ;kﬃﬅxﬂUnﬃﬅ ukFk frokjh

2- ukxijh Lﬃﬂnﬂiﬂ O;kdj.k - MkW- meﬃﬅ"k uﬃﬂUn frokjh] "kdﬃﬂUryk feJ

Session 2022-26 onwards

6. NAGPURI COMMUNICATION   **Theory: 45 Lectures**

Marks: 50 (ESE: 1.5 Hrs) = 50   **Pass Marks: Th (ESE) = 20**

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OR

7. MUNDARI COMMUNICATION　　　　　　　**Theory: 45 Lectures**

Marks: 50 (ESE: 1.5 Hrs) = 50	**Pass Marks: Th (ESE) = 20**

iżu i= dⁱ fy, fun²"k

Nekgh ijh{kk (ESE 100 marks):

i'ukⁱdⁱnkⁱ leg gkⁱxA [k.M *A* vfuok'; gS ftlekⁱhu iżu gkⁱxA iżu lⁱ;kⁱ1 eas ikp vⁱR;a y*kⁱmÙkjh; 1 vⁱd dⁱ iżu gkⁱxA [k.M *B* lⁱ15 vⁱdkⁱdⁱ ikⁱp eas ls fⁱdⁱUghⁱrhu o.kukRed i'ukⁱdⁱmÙkj nⁱuⁱ gkⁱxA

uksV : Lk)*kfUrd ijh{kk eas iⁿNⁱ x, iⁱR;ⁱd iżu eas mi-foHkktu gkⁱ ldrsgⁱA*

e¸Mkjh Lⁱⁱⁱⁱⁱ৳ⁱ৳ek.k　　　　　　　　　　　(Lk)kfUrd: 45 O;k[;ku)

पछ यⁱⁱⁱम के इस अंश का उⁱⁱⁱⁱय ⁱⁱनोⁱनवत होगा –

　　　　　　　　　1.　छाⁱFi को भाषा का yⁱⁱⁱⁱⁿन कराना ।

　　　　　　　　　2.　पF ⁱⁱⁱⁿ ⁱⁱⁱⁱⁱⁱⁱⁱदि लेखकⁱ ⁱⁱⁱ विध बतलाना ।

पछ यⁱⁱⁱⁱⁿम के इस अंश का उⁱⁱⁱⁱय ⁱⁱनोⁱⁱनवत होगा –

　　　　　　　　　1.　छाⁱⁱi मुⁱ¸डारी भाषा ⁱⁱ लेखⁱ कर ⁱⁱ गे ।

　　　　　　　　　2.　सरल मुⁱ¸डारी भाषा को समझ ⁱⁱगे ।

Peⁱताⁱवित संरचना

¼v½ fu/kkfjr ikⁱB; iⁱLrⁱdkⁱ dk i4 Hkkx iⁱkⁱB; gkⁱxkA

¼vk½ 0;kⁱdj.k v/;ⁱⁱ gkⁱxkA

¼b½ fucⁱ/k - _rⁱqⁱio] jk'Vⁱh; LⁱⁱeL;kⁱⁱⁱⁱ] Hkk'kk] LⁱⁱfⁱgⁱR;ⁱⁱ] LⁱⁱLdfr] iⁱdfr] ;kⁱⁱk o.kⁱu vkfnA

vⁱⁱd foHkktu :

¼v½ – ikⁱBⁱ;ⁱⁱ; iⁱLⁱrⁱⁱd LslⁱⁱkekⁱⁱU; iⁱⁱ:"u	–	iⁱ.kkⁱⁱⁱⁱⁱdⁱⁱ¾ 20
vⁱⁱFkⁱⁱ Li'Vhdj.k	–	iⁱ.kⁱⁱⁱⁱⁱⁱⁱdⁱⁱ ¾ 10
¼vk½ - 0;kⁱdj.k	–	iⁱ.kⁱⁱⁱⁱⁱⁱdⁱⁱ ¾ 10
¼b½ – fucⁱ/k	–	iⁱ.kⁱⁱⁱⁱⁱⁱdⁱ ¾ 10

fu/kkfjr ikⁱBⁱⁱ; xⁱUFk

¼v½ ikⁱB; iⁱⁱrⁱd -

　　　　　　　　1· Lkjⁱⁱtⁱⁱⁱ-ck　　　　　　　　idk"kⁱⁱd - jkⁱpⁱh fo"ⁱⁱofo4ky;

¼vk½ 0;kⁱdj.k　　　 –

　　　　　　　　1· e¸Mkjⁱⁱⁱ 0;kⁱdj.k　　　　- yⁱⁱ[kⁱⁱd - MkW- jken;kⁱky eⁱⁱⁱMk

　　　　　　　　2· c;ⁱfdj　　　　　　　- yⁱⁱ[kⁱⁱd – fudkfⁱⁱne dⁱⁱjⁱkⁱdⁱV·Vk

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7. MUNDARI COMMUNICATION   **Theory: 45 Lectures**

Marks: 50 (ESE: 1.5 Hrs) = 50   **Pass Marks: Th (ESE) = 20**

OR

8. KHARIA COMMUNICATION   **Theory: 45 Lectures**

Marks: 50 (ESE: 1.5 Hrs) = 50	**Pass Marks: Th (ESE) = 20**

iž̥u i= dₛ fy, funₑˀk

Nekgh ijh{kk (ESE 100 marks):

iˀukₐd̥ nkₑ leg gkₑxA [k.M *A* vfuok; gS ftlesₐhu iž̥u gkₑxA iž̥u lₑ;ₖ1 eas ikp vⁱˀ;a y*kₑ mÙkjh; 1 val d̥ iž̥u gkₑxA [k.M *B* lₑ15 vₑdk̥ d̥ ikₚ eas ls fd̥Ughₑrhu o.kukˀRed iˀukₐd̥ mÙkj nₑuₑ gkₑxA

uksV : Lk)kfUrd ijh{kk eas i̇ⁿN̥ x, i̇R;d iž̥ eas mi-foHkktu gk̥ ldrsg̥A

[kfM;k Ldₐiˑˀ̥ek.k   (Lk)kfUrd: 45 O;k[;ku)

पाठ्यक्रम के इस अंश का उद्देश्य निम्नवत होगा –

1.   छात्रों को भाषा का ज्ञान कराना |

2.   पत्र एवं निबन्धादि लेखन में निपुण बतलाना |

पाठ्यक्रम के इस अंश का उद्देश्य निम्नवत होगा –

1.   छात्र खड़िया भाषा में लेखनकर सकेंगे |

2.   सरल खड़िया भाषा को समझ सकेंगे |

Peतावित संरचना

¼v½ fu/kkfjr ikB; iₐLrₑdk̥ dk i4 Hkkx ikB; gkₑxkA

¼vk½ 0;kdj.k v/;ₑ; gkₑxkA

¼b½ fuc̥/k - _rₐqio] jk'Vh; LeₑL;k;] Hkk'kkk] Lₑfgˀ;] LLdfr] idfr] ;k=k o.ku vkfnA

vₑd foHkktu :

¼v½ – ikB̥·; iₐₖrd LslₑkekU; iˑ:"u   –   i̥.kkₖd̥ ¾ 20
       vFkₖ Li'Vhdj.k   –   i̥.kkₖd̥ ¾ 10
¼vk½ - 0;kdj.k   –   i̥.kkₖd̥ ¾ 10
¼b½ – fuc̥/k   –   i̥.kkₖd̥ ¾ 10

fu/kkfjr ikB̥; xₑUFk

¼v½ ikB; iₐₖrd -

1· dₑ§lₑk̥§ nₑj³   - y̥[kd - tkokfde M̥xM̥x

¼vk½ 0;kdj.k -

1· [kfM̥‡k O;kdj.k   - y̥[kd - i̥· uol djdₑVˀVk

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8. KHARIA COMMUNICATION   **Theory: 45 Lectures**

Marks: 50 (ESE: 1.5 Hrs) = 50   **Pass Marks: Th (ESE) = 20**

OR

9. KURMALI COMMUNICATION

Theory: 45 Lectures

Marks: 50 (ESE: 1.5 Hrs) = 50	Pass Marks: Th (ESE) = 20

iżu i= d․s fy, funℓ'k

Nekgh ijh{kk (ESE 100 marks):

i'uk․d․nk․leg gk⚬xA [k.M *A* vfuok; gS ftlea⚬hu iżu gk⚬xA iżu lℓ․k1 eas ikp vℝ;a⚬y*kℓmÙkjh; 1 va⚬l d․iżu gk⚬xA [k.M *B* lℓ15 v⚬d⚬k․d․ikpeas ls fdℓUg℠rhu o.kukℝed i'uk․d mÙkj n⚬u⚬ gk⚬xA

uksV : Lk)kfℓUrd ijh{kk eas iℓN⚬i x, iℝ;d iż eas mi-foHkktu gk⚬ldrsgℓA

djeky℠ Lℓⓘⓣek.k   (Lk)kfℓUrd: 45 O;k[;ku)

पछ यØम के इस अंश का उℹ⚬ृ्य िनⓘनवत होगा –

   3. छाℱi को भाषा का yⓞन कराना ।

   4. पℱ खं ⚬िनबℿधाⓘद लेखⓠकℍ ⚬िविध बतलाना ।

पछ यØम के इस अंश का उℹ⚬ृ्य िनⓘनवत होगा –

   3. छाℱ कु⚬ रमाली भाषा मℍलेखⓠकर ⓹गे ।

   4. सरल कु⚬ रमाली भाषा को समझ ⓹गे ।

Peताⓘⓥत संरचना

¼v½ fu/kkfjr ikB; iℓLrd⚬k dk i4 Hkkx ikB; gk⚬xA

¼vk½ 0;kdj.k v/;⚬ş gk⚬xA

¼b½ fucℓ/k - _rⓠio] jk'Vh; leL;k,] Hkk'kk] lℓfgℝ;] lℓLdfr] idfr] ;k=k o.kⓠu vkfnA

v⚬d foHkktu :

¼v½ – ikB⚬;⚬ iℓⓠrd lsLkekU⚬; i⚬⚬"u	–	i⚬.kk⚬d ¾ 20	
vℱk⚬ Li'Vhdj.k	–	i⚬.kk⚬d ¾ 10	
¼vk½ - 0;kdj.k	–	i⚬.kk⚬d ¾ 10	
¼b½ - fuc⚬/k	–	i⚬.kk⚬d ¾ 10	

fu/kkfjr ikB;⨟ x⚬ⓤUFk

¼v½ ikB; iℓⓠrd -

   1․ d⚬Meky℠ dgⓤuh tⓤMrℍ - lⓐ⚬knd – pUn⚬ ekⓠgu egrk⚬

   2․ iℱk⚬ pykd yⓠgk ueLdkj ¼i⚬i4½ lⓐ⚬nd - MkW- uⓤn dⓠekj flⓐg

  ¼fu/kkfjr ikB - uj tue fof/k dkgⓠ n⚬y] Lojkt] egjⓤx dkfrd fcgkuⓠ] dkfeu ek; dfo gⓠdⓠk⚬] vk[kj umru dfo] xkⓠpkj.k d'.kⓠyk℠kⓠy℠] vt⚬ⓝ Hkⓠxvk; [kk; /kfjvk; ½

¼vk½ 0;kdj.k -

   1․ djeky℠ ozbvkdj.k   - ";ke lⓐUnj egrk⚬

   2․ d⚬Mⓝeky℠ Hkk'kk rRo   - [kⓠnhjke egrk⚬

   3․ d⚬Mⓝeky℠ Hkk³kⓥvj   – y[kh dkUr egrk⚬

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9. KURMALI COMMUNICATION

Theory: 45 Lectures

Marks: 50 (ESE: 1.5 Hrs) = 50   **Pass Marks: Th (ESE) = 20**

OR

10.KURUX COMMUNICATION   Theory: 45 Lectures

Marks: 50 (ESE: 1.5 Hrs) = 50	Pass Marks: Th (ESE) = 20

iżu i= ds fy, fun१"k

Nekgh ijh{kk (ESE 100 marks):

i'uk ds nks leg gksxsA [k.M *A* vfuok;] gS ftlesa hu iżu gksxsA iżu l§;k 1 eas ikp vR;ay*kا mÙkjh; 1 vad ds iżu gksxsA [k.M *B* ls 15 vादk ds ikp eas ls fdUgha rhu o.kuRed i'uk ds mÙkj n१u§ gksxsA

uksV : Lk)kfUrd ijh{kk eas i॰N॰ x, iR;d iż eas mi-foHkktu gk sldrsgॎA

dksfk L॰iक॰ek.k   (Lk)kfUrd: 45 O;k[;ku)

पहृ यØम के इस अंश का उ॰e॰y िनोनवत होगा –

     1. छाFi को भाषा का y॰ान कराना |

     2. पF खं िनबठधा॰िद लेखका॰ िविध बतलाना |

पहृ यØम के इस अंश का उ॰e॰y िनोनवत होगा –

     1. छाF कु इख भाषा मॐलेखॐकर ॰ॐगे |

     2. सरल कु इख भाषा को समझ ॰ॐगे |

Peता॰िवत संरचना

¼v½ fu/kkfjr ikB; iⰥrd dk i4 Hkkx ikB; gksxkA

¼vk½ 0;kdj.k v/;ॐ gksxkA

¼b½ fucⰥ/k - _rqि॰o] jk'Vh; leL;kⰥ,] Hkk'kk] lॐfgR;] LLdfr] idfr] ;k=k o.ku vkfnA

vⰥd foHkktu :

¼v½ – ikB॰; iⰥrd lsLkekU; i॰"u	–	i॰.kkⰥd ¾ 20
vFkⰥ Li'Vhdj.k	–	i॰.kkⰥd ¾ 10
¼vk½ - 0;kdj.k	–	i॰.kkⰥd ¾ 10
¼b½ – fucⰥ/k	–	i॰.kkⰥd ¾ 10

fu/kkfjr ikB॰; xUFk

¼v½ ikB; iⰥrd -

     dⰥM॰[k dRFk] [khjh vjk M.Mh ¼doy i4 Hkkx½

     LⰥknd - ,MeⰥM VkⰥiik - idkⰥ"kd] jkⰥph fo"ofo4ky; A

¼vk½ 0;kdj.k -

     1. [kkjjyMⰥx   – xkⰥiky mjkⰥo

     2. dⰥMfk uⰥSl   – ,l॰ Lh॰ c[kyk

     3. dⰥMfk LॐbgⰥ   - vkⰥgykn frⰥdh॰

     4. dRFk vbu   - egkchj mjkⰥo

10.KURUX COMMUNICATION   **Theory: 45 Lectures**

Marks: 50 (ESE: 1.5 Hrs) = 50   **Pass Marks: Th (ESE) = 20**

OR

11.KHORTHA COMMUNICATION   **Theory: 45 Lectures**

Marks: 50 (ESE: 1.5 Hrs) = 50	**Pass Marks: Th (ESE) = 20**

iżu i= d‹ fy, fun‹"k

Nekgh ijh{kk (ESE 100 marks):

i'uk‹d‹ nk‹ leg gk‹x‹A [k.M *A* vfuok;‹ gS ftlea‹hu iżu gk‹x‹A iżu l¡‹;‹1 eas ikp v‹R;‹a y*k‹ mÙkjh; 1 vd‹ d‹ iżu gk‹x‹A [k.M *B* l‹s15 v‹dk‹ d‹ ik‹p eas ls fdUgh‹ rhu o.kuRed i'uk‹d‹ mÙkkj n‹u‹ gk‹x‹A

uksV : Lk‹)kfUrd ijh{kk eas i‹N‹ x, i‹R;‹d iżu eas mi-foHkktu gk‹ ldrsg‹A

[kkjBk L‹i‹i‹ek.k   (Lk‹)kfUrd: 45 O;k[;ku)

पठ यॐम के इस अंश का उॐॆॗय ि॓नोनवत होगा –

     1. छाॎFi को भाषा का yॴान कराना |

     2. गॎ॑ एवं ि॓नबज्॒धाॎ॓दि लेखॎॎॗ ि॓विध बतलाना ।

पठ यॐम के इस अंश का उॐॆॗय ि॓नोनवत होगा –

     1. छाॎFi खोरठा भाषा ॑ॎ लेखॎ॑ कर ॑ॐॎगे |

     2. सरल खोरठा भाषा को समझ ॑ॐॎगे ।

Pॆताॎॎ॓वत संरचना

¼v½ fu/kkfjr ikB; iLrdk‹ dk i4 Hkkx ikB; gk‹xkA

¼vk½ 0;kdj.k v/;‹s gk‹xkA

¼b½ fuca‹/k - _rqio] jk'Vh; leL;‹k‹,] Hkk’kk‹] l‹fgR;‹] lLdfr] idfr] ;k=k o.ku vkfnA

v‹d foHkktu :

¼v½ – ikB‹‹; ilqrd LsLkekU‹; i‹”u   –   i‹.kk‹d ¼ 20

     vFk‹ Li’Vhdj.k   –   i‹.kk‹d ¼ 10

¼vk½ - 0;kdj.k   –   i‹.kk‹d ¼ 10

¼b½ – fuca‹/k   –   i‹.kk‹d ¼ 10

fu/kkfjr ikB;‹ xÌUFk

¼v½ ikB; ilqrd -

     ,[k‹d xk‹Nk xbn – ibn   – d‹oy xbn

     Jpukdkj   – ,- d‹- >k-

¼vk½ 0;kdj.k -

     1-[kkjBk‹d c;‹kdj.k   – y[k‹d – ,- d‹- >k-

     2- [kkjBk dh fd‹t;‹k L‹i‹puk   – ch- ,u- vk‹gnkj

11.KHORTHA COMMUNICATION   **Theory: 45 Lectures**

Marks: 50 (ESE: 1.5 Hrs) = 50   **Pass Marks: Th (ESE) = 20**

33

OR

12. SANTALI COMMUNICATION
Theory: 45 Lectures

Marks: 50 (ESE: 1.5 Hrs) = 50	Pass Marks: Th (ESE) = 20

iżu i= d﬐ fy, funﬔ"k

Nekgh ijh{kk (ESE 100 marks):

i'uk﬐d﬐nk﬐ leg gkﬖxA [k.M *A* vfuok;﬐ gS ftl﬐ea﬐hu iżu gkﬖxkA iżu lﬔ﬐;k 1 eas ik﬐p v﬒;a y*k﬐﬐mÙkjh; 1 v﬐eﬔ﬐ d﬐iżu gkﬖxA [k.M *B* l﬐15 v﬐d﬐﬐d﬐ik﬐p eas ls fdﬖUgh﬐rhu o.kukﬖRed i'uk﬐d﬐mÙkj nﬔ﬐u﬐s gkﬖxA

uksV : Lk﬐)kfUrd ijh{kk eas iﬖN﬐ﬔ x, iﬖR;﬐d iż﬐ eas mi-foHkktu gk﬐ ldrsg﬐A

Lrkyh L﬐ﬔﬖek.k
(Lk﬐)kfUrd: 45 O;k[;ku)

पछ यøम के इस अंश का उﬗﬖय ﬔनﬔॊॎवत होगा –

     1. छॏﬖﬔॏ को भाषा का yﬖान कराना |

     2. पﬔ ﬔं ﬔनब﬐ﬗﬔﬗ﬐दि लेखﬖक﬐ ﬔॎविध बतलाना |

पछ यøम के इस अंश का उﬗﬖय ﬔनﬔ॔ॎवत होगा –

     1. छॏﬖﬔ संताली भाषा मﬖलेखﬖकर कﬔगﬖे |

     2. सरल संताली भाषा को समझ कﬔगﬖे |

Peﬔﬔॎवत संरचना

¼v½ fu/kﬖkfjr i﬐kB; i﬐Lrd﬐ dk i4 Hkkx i﬐kB; gkﬖxkA

¼vk½ 0;k﬐dj.k v/;﬐; gkﬖxkA

¼b½ fuc﬐/k - _rﬔq﬐io] jk'Vh; LeL;k﬐,] Hkk'kk] L﬐fg﬒;] LLdfr] idfr] ;k=k o.kﬔ﬐u vkfnA

v﬐d foHkktu :

¼v½ – i﬐kB﬒﬐; i﬐qrd LsL﬐kekU; i﬐:"u	–	i﬐.k﬐k﬐d ¾ 20
vFk﬐ Li'Vhdj.k	–	i﬐.kkd ¾ 10
¼vk½ – 0;k﬐dj.k	–	i﬐.kkd ¾ 10
¼b½ – fuc﬐/k	–	i﬐.kkd ¾ 10

fu/kﬖkfjr i﬐kB﬒﬒; xﬔ﬐UFk

¼v½ i﬐kB; i﬐qrd -

   1- Lrkyh xﬔ4 – i4 Lﬔ﬐xg   ¼d﬒oy i4 Hkkxﬔ½

     L﬐ﬔﬖknd   - i﬒k﬒- fnxEcj gk﬐L﬐nk﬐] i﬒k﬒- d﬒- Lﬔ﬐- Vq﬐Mw

¼vk½ 0;k﬐dj.k -

       1- Lﬖk﬐kyh i﬐:o﬐f"k﬐dk   - yﬖ[kd – Mk﬐eu Lﬖkg L﬐ehj

       2- L﬐ck/k L﬐kkyh f"k﬐{kdk   - yﬖ[kd – Hkkx﬐or eq﬐ewZ

       3- jk﬐uk﬐M   - y﬐[kd – i﬒k﬒- j*k﬐uk﬒Fk eqewZ

       4- ikjLﬔ﬐h mu﬒:e   - y﬒[kd – i﬒k﬒- d﬒- Lﬔ﬒- Vq﬐Mw

OR

13. PANCH PARGANIA COMMUNICATION

Marks: 50 (ESE: 1.5 Hrs) = 50   **Pass Marks: Th (ESE) = 20**

iżu i= ds fy, funŕ'k

Nekgh ijh{kk (ESE 100 marks):

i·'uk dsnks leg gksxsA [k.M *A* vfuok;] gS ftlesahu iżu gksxsA iżu ls;k 1 eas ikp vŕ;a y*kŕmÙkjh; 1 vsd ds iżu gksxsA [k.M *B* ls15 vsdk ds ikp eas ls fdUgha rhu o.kukRed i·'uk ds mÙkkj ns; gksxsA

uksV : Lk)kfUrd ijh{kk eas iŵNs x, iŔ;sd iżu eas mi-foHkktu gks ldrsgSA

ipijxfu;k Lŝ¡Ŕek.k   (Lk)kfUrd: 45 O;k[;ku)

पहृ यत्रेम के इस अंश का उहॅ्ृय ि्नोनवत होगा –

1. छात्रांFि को भाषा का y॰ान कराना ।

2. पF सं ि्नबन्धाॅि लेखकांH ि्विध बतलाना ।

पहृ यत्रेम के इस अंश का उहॅ्ृय ि्नोनवत होगा –

1. छात्रांFि पांचपरगिनया भाषा म लेख कर स्ग गे ।

2. सरल पांचपरगिनया भाषा को समझ स्ग गे ।

Peतांि्वत संरचना

¼v½ fu/kkfjr ikB; iLrd dk i4 Hkkx ikB; gksxkA

¼vk½ 0;kdj.k v/;s gksxkA

¼b½ fuca/k - _rqio] jk'Vh; leL;k,] Hkk'kk] lkfgŔ;] LLdfr] idfr] ;k=k o.ku vkfnA

vsd foHkktu :

¼v½ – ikB··; itŗd LsLkekU; i·"u –   i·.kkkd ¾ 20

         vFkk Li'Vhdj.k –   i·.kkd ¾ 10

¼vk½ - 0;kdj.k   –   i·.kkd ¾ 10

¼b½ – fuca/k   –   i·.kkd ¾ 10

fu/kkfjr ikB; xtUFk

¼v½ ikB; itŗd -

     ipijxfu;k x4 - i4 tgÑu - y[ŕkd - pUnz ekŗgu egrks

¼vk½ 0;kdj.k -

1· vkn"kŕ ipijxfu;k O;kdj.k - y[ŕkd - djepUn vghj

2· ckŕcjk - iŕk· nhucU/kŗ egrks@ ijekUn egrksŗ

II.   UNDERSTANDING INDIA: (Credits: Theory-02)

Marks: 100 (ESE: 3Hrs) = 100	Pass Marks: Th (ESE) = 40

Instruction to Question Setter for

End Semester Examination (ESE 100 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of twenty marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

UNDERSTANDING INDIA   Theory: 30 Lectures

Course Objectives & Learning Outcomes:

This course is designed:

1. to enable the students to acquire and demonstrate the knowledge and understanding of contemporary India with its historical perspective
2. to demonstrate the basic framework of the goals and policies of national development
3. to demonstrate the constitutional obligations with special emphasis on constitutional values and fundamental rights and duties.
4. to develop the understanding of Indian knowledge systems, Indian education system and the roles and obligations of teachers to the nation in general and to the society.
5. to deepen knowledge about and understanding of India's freedom struggle and of the values and ideals that it represented.
6. to prepare the learners for their roles and responsibilities as effective citizens of a democratic society.
7. A unit in the context of Jharkhand

Course Content:

UNIT I: Introducing India

1. **The Land of India**: Geographical Setting; Physical and Natural Environment
2. **The People of India**: The migration of people into India, such as Indo-Aryans speaking people, the Persians, the Greeks, the Kushans, the Shakas, the Arabs, the Turks, the Mongols, etc., and their contribution to the making of Indian History and Culture
3. **The Name of our Country**: Jambudvipa, Sindhu (Indus), Inde, Hind, Hindustan, India, Bharat.
4. **Historical Background of India**: Historical Background of India through the ages. India's Freedom Struggle: Brief History, Values and Ideals

UNIT II: The Knowledge System of India
1. Traditional Knowledge System: Gurukuls, Pathsalas, Tols, Maktabs, Madrasas
2. Beginnings of Modern Education: The British Government's Educational Policies
3. Expansion of Higher and Technical Education in India
4. Role and obligations of Teachers in National Development.
5. Education Policy of government. 1986 and 2020.

UNIT III: The Indian Economy

1. **Goals and Policies:** Post Independent Goals and Policies of National Development.

2. Features of National Dev.

    a. Social Justice and Economic Equality.

b. Goals and Policies and National Development during 21st century.
3. Indian Economy through the Ages (Agriculture, Industry and Trade)
4. Directive Principles and Fundamental Rights and Duties.

UNIT IV: The Making of Contemporary India
1. The Struggle for Independence (1885-1947)
2. The Making of the Indian Constitution; Concept of Fundamental Rights and Duties
3. India's Foreign Policy: Main Elements (Non Alignement, Panchsheel)
4. Secular- Constitutional sole of a citizen in Democratic India.
5. Formation of Jharkhand: Challenges
6. Panchayati Raj in India with special reference to PESA in Jharkhand

Reference Books:
1. L. Basham, *A Cultural History of India*, Oxford University Press, 1997
2. L. Basham, *A Wonder that was India*, Rupa, New Delhi, 1994
3. N. R. Ray, *An Approach to Indian Art,* Publication Bureau, Chandigarh, 1974
4. Kanjiv Lochan: *Medicines of Early India*, Delhi
5. Hitendra Patel: *Adhunik Bharat ka Aitihasik Yatharth*
6. Nayanjot Lahiri*, Marshaling the Past: Ancient India and its Modern Histories*, Permanent Black, 2012
7. R.C. Majumdar (ed.), *History and Culture of Indian People* (Relevant Volumes and Chapters),
8. Bhartiya Vidya Bhawan, Bombay.
9. S. C. Ghosh, *History of Education in Modern India, 1758-1986*, Orient Longman, Hyderabad, 1995
10. Tirthankar Ray, *The Economic History of India 1857-1947*, OUP, 2006
11. Vijay Joshi and I.M.D. Little, *India's Economic Reforms, 1991-2001*, OUP, 1996

III. COMMON COURSE – HEALTH & WELLNESS, YOGA EDUCATION, SPORTS & FITNESS: (Credits: Theory-01 + Practical 01 = 02 credits)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations

HEALTH & WELLNESS, YOGA EDUCATION, SPORTS & FITNESS

Theory: 15 Lectures

Course Objectives:

This course is designed:

1. To promote an optimal state of physical, emotional, intellectual, social spiritual and environmental wellbeing of a person.
    a. To organise sports and fitness activities outside the regular institutional working hours.
    b. Yoga education focusing on preparing the students physically and mentally for the integration of their physical, mental, and spiritual faculties, to maintain self-discipline, self-control,
    2. To learn to handle oneself well in all life situations.
    a. The focus of sports and fitness components of the courses will be on the improvement of physical fitness including the improvement of various components of physical and skills related fitness like strength, speed, coordination, endurance and flexibility;
    b. Acquisition of sports skills relevant to a particular sport; improvement of tactical abilities; and improvement of mental abilities.

Course Learning Outcomes:

On successful completion of this course the student should be able to:

1. Think like a healthy citizen thoughtfully, spiritually. Physically fit citizen.
2. A person of sound health and calm mind ready to bear challenges of career and life.

Course Content:

A. YOGA   Theory: 07 Lectures

CC.   ;ksx ifjp;

bdkbl 1 :- ;ksx dh ifjHkkkekk] ;ksx dh 0;k[;k] ;ksx dk egRo] ;ksxh dk O;fDrRo ,oa os'kHkwekk

bdkbl 2 :- ;ksx ds çdkj] Kku;ksx] deZ;ksx] HkfDr;ksx] ekVdel ifjp; A

bdkbl 3 :- vLu dh ifjHkkkekk] çdkj] vLu ds 'kkjhfjd ,oa ekufld ykHk A

bdkbl 4 :- çk.kk;ke dh ifjHkkekk] çdkj] çk.kk;ke d 'kkjhfjd ,o eufld ykHk] /;ku dk ifjp; A

B. SPORTS   **Theory: 07 Lectures**

Unit -1: Introduction to Health and Wellness
1. Meaning and definition of Health and Health education.
2. Objectives and Importance of Health education.
3. Stretching exercises
4. Warming up and Limbering down
   a) General warm up exercises
   b) Specific warm up exercises

Unit-2: Health and Wellness through Physical Exercise
1. Components of Physical Fitness and Wellness
2. Means of fitness development
3. advantages of wellness
4. Rules & Regulations of the games:
   a) Football,
   b) Volleyball,
   c) Basketball,
   d) Badminton,
   e) Table Tennis (T.T.),
   f) Hockey,
   g) Archery

HEALTH & WELLNESS, YOGA EDUCATION, SPORTS & FITNESS PRACTICALS:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Practical	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

A. YOGA PRACTICAL   Practical: (08 Periods each of 02 Hrs)

CCI.   ;kx çk;kfxd vH;kl vkbu

1. ioueDrklu
   d½ xfB;k fujkd/kd vH;kl :- ijkjk dh vxxfy;ka vkkj V[kus ds vH;kl *k(Vus ,oi e#n.M ds vH;kl] v/kk o ii.kk frryh] dkvk pky] gkFkkka dh vxfy;kk] dykbi dghfu;ka] xnu o da/kka ds v;kl A

   [k½ ok;;¼ckr½ fujkd/kd vH;kl :- iŞ*kqemuk] lbfdy pkyu] ukdklu A

   Xk½ 'kfDrcU/k dj vlu :-ukdk-lpkyu] pDdh pkyu] jLl [kh¡pu] ydMh dkVuk] mnjkdekZklu A

   *k½ f'kfFkyhdj.k dj vlu :- ''kokklu] edjklu] eRL;-ØhMklu A

2. otzklu lemgds vH;kl :- otzklu] flgklu] Hknklu] meV'klu] lqi otzklu] 'k'kkadklu A

3. [kMs+ gkdj fd;k tkus okys vlu :- gLr mÙkkuklu] ipngLrklu] dfV pØklu] rkMklu] f=;d rkMklu] f=dk.kklu A

4. Lkkr¡yu ds vlu :- o{kklu] cdklu] x#Mklu] uVjkt vlu A

5. vkxs dh vkj >qduk ds vlu :- if'pekÙkuklu] tku f'kjklu A

6. ihNs dh vkj >qduk ds vlu :- Hkqtxklu] ''kyHkklu] /kujklu] xkemj[kklu] pØklu A
   6 v – Lk;;ueLdkj A

7. çk.kk;ke :-* dikyHkkfr HkfL=dk Hkkejh vuqyke-foyke] ukM+h'kks/ku çk.kk;ke A

8. eqnzk :- Kku eqnzk] fpUg eqnzk A

9. ekVdel :- dqtu] ty ufr A

10. /;ku :- vtik-ti A

B. SPORTS PRACTICAL   **Practical: (08 Periods each of 02 Hrs)**

1. Exercises for Health and Wellness
    a) Warming up
    b) Stretching Exercises
    c) Strengthening Exercises
    d) Cardiovascular Exercises
    e) Flexibility and Agility Exercises
    f) Relaxation Techniques

2. Rules & Regulations of the games (choose any one)
    (Football, Volleyball, Basketball, Badminton, T.T, Hockey, Archery)
3. Basic Techniques and Tactics of the game. (In any one game mentioned above).

SEMESTER II

I.   ENGLISH COMMUNICATION: (Credits: Theory-06)

Marks: 100 (ESE: 3Hrs) = 100	Pass Marks: Th (ESE) = 40

Instruction to Question Setter for

End Semester Examination (ESE 100 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of twenty marks each, out of which any four are to answer.*

 ***Note:** There may be subdivisions in each question asked in Theory Examinations.*

ENGLISH COMMUNICATION

Theory: 60 Lectures

Course Objectives:

The course will seek to achieve the following objectives:
1.   to make students use simple and acceptable English to convey their ideas in English in writing
2.   to make students recognize and draft different types of writing – e.g. classroom notes, summaries, reports, exploratory and descriptive paragraphs, substantiating etc
3.   to make students understand and explain a diagram or a graph, chart, table etc
4.   to make students write a review of a book or a movie
5.   to make students write a report on academic or cultural events held in a college or university for a journal or a newspaper
6.   to make students communicate information clearly and effectively in all kinds of environment and contexts
7.   to prepare students for effective media writing, reviews, reports, programmes and discussions
8.   to make students familiar with the new media, its techniques, practices of social media and hypermedia
9.   to make students aware of career opportunities in print and electronic media

Course Learning Outcomes:

At the end of the course students will be able to:

1.   convey their ideas in English using simple and acceptable English in writing
2.   understand to recognize and draft different types of writing – e.g. classroom notes, summaries, reports, exploratory and descriptive paragraphs, substantiating etc
3.   describe a diagram or elaborate information contained in a graph, chart, table etc
4.   write a review of a book or a movie
5.   write a report on an academic or cultural event that takes place in a college or university for a journal or a newspaper
6.   develop the professional ability to communicate information clearly and effectively in all kinds of environment and contexts.
7.   demonstrate practical skills of various types of media writing, reviews, reports, programmes and discussions.

8. demonstrate their familiarity with the new media, its techniques, practices of social media and hypermedia.
9. critically analyze the ways in which the media reflects, represents and influences the contemporary world.
10. identify avenues for a career in print and electronic media.

Course Content:

Unit I:
Introduction: What is Language? What is Communication? Types of Communications: Verbal and Non – verbal Communication; Barriers to Communication

Unit II:
Comprehension, Note-making & Summarization

Unit III:
Short compositions: Notices, Advertisements, Designing or Drafting Posters, Messaging

Unit IV:
Letter Writing: Business letters; Job applications; Orders and Replies; Complaints, Claims and Adjustments; Invitations; Emails

Unit V:
Article, Speech, Dialogues, Debate and Presentation Skills

Unit VI:
Reports (Newspapers and Events); Review (Books and Films); Minutes of a meeting; Resume

Reference Books:
1. Technical Communication, M.H. Rizvi, Tata Mc Grawhill
2. Effective Business Communication, Asha Kaul
3. Developing Communication Skills, Krishnamohan
4. Functional Grammar and Spoken and Written Communication in English, Bikram K. Das, Orient Blackswan
5. Precis, Paraphrase and Summary, P.N. Gopalkrishnan, Authors Press
6. Communication Skills, Sanjay Kumar and Pushplata, Oxford Publication Note: Latest edition of text books may be used.
7. Liz Hamp-Lyons and Ben Heasley, Study writing: A Course in Writing Skills for Academic Purposes (Cambridge: CUP, 2006).
8. Renu Gupta, A Course in Academic Writing (New Delhi: Orient Black Swan, 2010).
9. Ilona Leki, Academic Writing: Exploring Processes and Strategies (New York: CUP, 2nd edn, 1998).
10. Gerald Graff and Cathy Birkenstein, They Say/I Say: The Moves That Matter in Academic Writing (New York: Norton, 2009).
11. Eastwood, John. (2005) Oxford Practice Grammar. Oxford, OUP Wallace, Michael. (2004).
12. Study Skills. Cambridge, CUP

II. MATHEMATICAL & COMPUTATIONAL THINKING
AND ANALYSIS: (Credits: Theory-02)

Marks: 100 (ESE: 3Hrs) = 100	Pass Marks: Th (ESE) = 40

Instruction to Question Setter for

End Semester Examination (ESE 100 marks):

There will be **two** group of questions. **Group A is compulsory** *which will contain three questions.* **Question No.1 will be very short answer type** *consisting of ten questions of 1 mark each.* **Question No.2 & 3 will be short answer type** *of 5 marks.* **Group B will contain descriptive type** *six questions of twenty marks each, out of which any four are to answer.*

Note: *There may be subdivisions in each question asked in Theory Examinations.*

MATHEMATICAL & COMPUTATIONAL THINKING AND ANALYSIS

Theory: 30 Lectures

Course Objective & Learning Outcomes:

This course will enable the students to:

1. To focus primarily on the mathematical arid statistical tools used to support the study of natural and social sciences.
2. To focus on the methodology used to analyse quantitative information to make decisions, judgments, and predictions
3. To focus on the methodology of quantitative analysis.
4. To ensure that students achieve a level of proficiency in using and analysing quantitative information.
5. To enable students for defining a problem by means of numerical or geometrical
6. representations of real-world phenomena, determining how to solve it, deducing inferences, formulating alternatives, and predicting cause and effect relationships.
7. To Explain the application of computational thinking across multiple domains

Course Content:

Unit I - Statistics & Probability

Measure of Dispersion: Range, Mean Deviation, Variance, Standard Deviation

Random experiment, sample space, Events: occurrence of events, 'not', 'and' & 'or' events, exhaustive event, mutually exclusive events, probability of an event, conditional probability

LPP: objective functions, constraints, mathematical formulation of LPP, Graphical method of solution, feasible and infeasible regions/solutions, optimal feasible solution

Unit II – Computational Thinking and Analysis
What is computational thinking? Problem definition, Problem Solving, Problem decomposition, Abstraction, Greedy Method, Divide and Conquer, pseudocode, understanding algorithms, Concept and designing of flowchart

Unit III – Computational Thinking and Analysis
Data organizing and Data filtering by quantitative dataset using Excel files. Data analysis using bar chart, column chart, line chart, pie chart, scatter chart, surface chart, statistical chart and radar chart. Computing sum, average, mid-point, relative frequency, variance and standard deviation.

Reference Books:
1. Lorenzo Peccati, Mauro DÁmico & Margherita Cigola, Maths for Social Sciences, Springer Nature

Switzerland, 2018
2. N.M.Kapoor, Fundamentals of Mathematical Statistics, Pitambar Publication, 2005.
3. David Riley and Kenny Hunt, Computational thinking for modern solver, Chapman & Hall/CRC, 2014
4. R.G. Dromey , "How to solve it by Computer", PHI, 2008
5. Nabendu Paul and Sahadeb Sarkar, Satistics, Concepts and Applications, PHI, 2013.

III. GLOBAL CITIZENSHIP EDUCATION & EDUCATION FOR SUSTAINABLE DEVELOPMENT:

(Credits: Theory-02)

Marks: 100 (ESE: 3Hrs) = 100	Pass Marks: Th (ESE) = 40

Instruction to Question Setter for

End Semester Examination (ESE 100 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of twenty marks each, out of which any four are to answer.

Note: *There may be subdivisions in each question asked in Theory Examinations.*

GLOBAL CITIZENSHIP EDUCATION & EDUCATION FOR SUSTAINABLE

DEVELOPMENT   Theory: 30 Lectures

Course Objectives:

The course will seek to achieve the following objectives:

1. To understand the concept and structure of global governance
2. To empower learners to become aware of and understand global and sustainable development issues •
3. To become active promoters of more peaceful, tolerant, inclusive, secure, and sustainable societies.
4. Enabling students to embrace and practice constitutional, humanistic, ethical, and moral values in conducting one's life, including universal human values and citizenship values.
5. To practice responsible global citizenship required for responding to contemporary global challenges
6. To enable the students in recognizing environmental and sustainability issues, climate change impacts and to participate in actions to promote sustainable development.
7. To instill integrity in students and enable them to identify gender issues, human rights issues, ethical issues, related to work and follow just and ethical practices both at home and workplace.

Course Learning Outcomes:

At the end of the course students will be able to:

1. Enhance the capacity of the learners to acquire and demonstrate problem-solving skills involving the capacity to solve different kinds of problems in familiar and non-familiar contexts and apply one's learning to real-life situations.
2. Promote critical thinking involving capability to apply analytical thought to a body of knowledge, including the analysis and evaluation of policies, and practices, as well as analyse and synthesize data related to global issues from a variety of sources and draw valid conclusions and support them with evidence and examples.
3. Creativity characterized by the ability to create or think in different and diverse ways, deal with problems and situations that do not have simple solutions; view a problem or a situation from multiple perspectives; think 'out of the box' and generate solutions to complex problems in unfamiliar contexts.
4. Communication Skills characterized by skills that enable a person to present complex information in a clear and concise manner to different groups/audiences; express thoughts and ideas effectively in writing and orally and communicate with others using appropriate media, convey ideas, thoughts and arguments using language that is respectful and sensitive to gender and social groups.

5. Coordinating/collaborating with others involving the ability to: work effectively and respectfully with diverse teams, facilitate cooperative or coordinated effort on the part of a group, act together as a group or a team in the interests of a common cause and work efficiently as a member of a team.

6. Leadership readiness/qualities involving capability for: mapping out the tasks of a team or an organization and setting direction; formulating an inspiring vision and building an efficient team and using skills to guide people to the right destination.

7. 'Learning how to learn' skills involving the ability to: acquire new knowledge and skills, including 'learning how to learn' skills, through self-paced and self-directed learning aimed at personal development, meeting economic, social, and cultural objectives, and adapting to changing national and global issues and demands; demonstrating a healthy attitude to be a lifelong learner.

8. Multicultural competence involving: the acquisition of knowledge of the values and beliefs of multiple cultures and a global perspective to honour diversity; capability to effectively engage in a multicultural group/society and interact respectfully with diverse groups; capability to lead a diverse team to accomplish common group tasks and goals.

9. Value inculcation involving acquisition of knowledge and attitude that are required to: embrace and practice constitutional, humanistic, ethical, and moral values in conducting one's life, including universal human values and citizenship values; practice responsible global citizenship required for responding to contemporary global challenges,

10. Environmental awareness and action involving the acquisition and application of the knowledge, skills, attitudes, and values required to take appropriate actions for: mitigating the effects of environmental degradation, climate change and pollution, effective waste management, conservation of biological diversity, management of biological resources and biodiversity, forest and wildlife conservation, and sustainable development and living.

Course Content:

1. Global governance – concept and structure
2. Global Citizenship, Multi cultursim & diversity and tolerance
3. Inequality/ Social Justice
4. Gender equality
5. Human Right Education
6. Peace and non-violence
7. Combating climate change and its impact
8. Environmental sustainability
9. Global Economy

Reference Books:

1. Peter N. Stearn- Education Global Citizens in College and University; Routledge Publication
2. Adeel Jalil, A.K. Kari, Kathrine Meleg- Glocal Citizenship Education, A Critical and International Perspectives Springer
3. Eva, Aboagye & S. Nomburo Dlamini, global Citizenship Education: Challenges and Successes.
4. William gaudelli, global Citizenship Education.
5. Global governance – concept and structure
6. Global Citizenship, Multi cultursim & diversity and tolerance
7. Inequality/ Social Justice
8. Gender equality
9. Human Right Education
10. Peace and non-violence
11. Combating climate change and its impact
12. Environmental sustainability
13. Global Economy

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION

Question format for **50 Marks**:

Subject/ Code

F.M. =50 　　　　　　　　　　　　　　　　　　　　　　　　　　Exam Year

Time=3Hrs

General Instructions:

　　i.　**Group A** carries very short answer type **compulsory** questions.
　ii.　**Answer 3 out of 5** subjective/ descriptive questions given in **Group B**.
　　　iii.　Answer in your own words as far as practicable.
　　　iv.　Answer all sub parts of a question at one place.
　　　v.　Numbers in right indicate full marks of the question.

Group A

[5x1=5]

　i.　　　...............
　　　ii.　　　...............
　　　iii.　　　...............
　iv.　　...............
　v.　　...............

Group B

　2.　...............　　　　　　　　　　　　　　　　　　　　　[15]
　3.　...............　　　　　　　　　　　　　　　　　　　　　[15]
　4.　...............　　　　　　　　　　　　　　　　　　　　　[15]
　5.　...............　　　　　　　　　　　　　　　　　　　　　[15]
　6.　...............　　　　　　　　　　　　　　　　　　　　　[15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **75 Marks**:

Subject/ Code

F.M. = 75 　　　　　　　　　　　　　　　　　　　　　　　　Exam Year

Time=3Hrs

General Instructions:

　　i.　**Group A** carries very short answer type **compulsory** questions.
　ii.　**Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
　　　iii.　Answer in your own words as far as practicable.
　　　iv.　Answer all sub parts of a question at one place.
　　　v.　Numbers in right indicate full marks of the question.

Group A

　1.　　　　　　　　　　　　　　　　　　　　　　　　　　　　[5x1=5]

　i.　　　...............
　ii.　　　...............
　iii.　　　...............
　iv.　　　...............
　v.　　　...............
　2.　...............　　　　　　　　　　　　　　　　　　　　　[5]
　3.　...............　　　　　　　　　　　　　　　　　　　　　[5]

Group B

　4.　...............　　　　　　　　　　　　　　　　　　　　　[15]
　5.　...............　　　　　　　　　　　　　　　　　　　　　[15]
　6.　...............　　　　　　　　　　　　　　　　　　　　　[15]
　7.　...............　　　　　　　　　　　　　　　　　　　　　[15]
　8.　...............　　　　　　　　　　　　　　　　　　　　　[15]
　9.　...............　　　　　　　　　　　　　　　　　　　　　[15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

Subject/ Code		
F.M. = 100 ~~Time=3Hr.~~		Exam Year

General Instructions:

  i. **Group A** carries very short answer type **compulsory** questions.
 ii. **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
   iii. Answer in your own words as far as practicable.
   iv. Answer all sub parts of a question at one place.
   v. Numbers in right indicate full marks of the question.

~~Group A~~

1.
   i.   ....   vi.   ....

   ii.   ....   vii.   ....

   iii.   viii.

   iv.   ....   ix.   ....
          ....

[10x1=10]

2.   ....   [5]
3.   ....   [5]

Group B

4.   ....   [20]
5.   ....   [20]
6.   ....   [20]
7.   ....   [20]
8.   ....   [20]
9.   ....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

FYUGP

COMMERCE HONOURS/ RESEARCH

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented from 3rd Semester of Academic Session 2022-26

& From 1st Semester of Session 2023-27 Onwards

UNIVERSITY DEPARTMENT OF COMMERCE & BUSINESS MANAGEMENT
RANCHI UNIVERSITY, RANCHI - 834008 (JHARKHAND) (INDIA)

Ref. No.........................   Date : 13/06/23

The meeting of the Board of studies held today i.e 13th June 2023 (Tuesday) at 11:30 am in the chamber of Head of the Department to finalize the Syllabus of Four Year Undergraduate Programme (FYUGP), which is effective from the session 2023-27 as per the NEP 2020 and as per the direction of Ranchi University , Ranchi.

The Following members are present in the meeting:-

1. **Chairman :**
   Dr. Ajay Kumar Chattoraj
   Head & Dean,
   University Department of
   Commerce & Business Management,
   Ranchi University, Ranchi.

2. **Internal Members:**

(i)   Dr. M.N.Zubairi
        Associate Professor, University Department of
        Commerce and Business Management,
        Ranchi University, Ranchi.

(ii)   Dr. G.K.Srivastava (Retd.)
        Ex- Head and Dean, University Department of
        Commerce and Business Management,
        Ranchi University, Ranchi.

(iii)   Dr. G.P.Trivedi (Retd.)
        Ex- Head and Dean, University Department of
        Commerce and Business Management,
        Ranchi University, Ranchi.

(iv)   Prof. (Dr.) Sudesh Kumar Sahu
        D.S.W, Ranchi University, Ranchi.

(v)   Dr. Sanjay Kumar Ghosh
        Associate Professor
        Department of Commerce, St.Xavier's College,
        Ranchi.

DIRECTOR
IQAC, RANCHI UNIVERSITY
RANCHI-834 001

UNIVERSITY DEPARTMENT OF COMMERCE & BUSINESS MANAGEMENT
RANCHI UNIVERSITY, RANCHI - 834008 (JHARKHAND) (INDIA)

Ref. No........................   Date 13/06/23

(vi)   Dr. Rajeev Ranjan Sharma
       Associate Professor
       Department of Commerce, Marwari College, Ranchi.

(vii)   Dr. Tarun Chakraborty
       Assistant Profesor
       Department of Commerce, Marwari College, Ranchi.

(viii)   Dr Rakesh Kumar
       Assistant Professor
       Department of Commerce, K.C.B College, Bero.

(ix)   Dr. Sanjiv Chaturvedi
       Assistant Professor
       Department of Commerce, Marwari College, Ranchi.

(x)   Dr. Vikas Kumar
       Assistant Professor
       Department of Commerce, Marwari College, Ranchi.

(xi)   Mr. Shyamlesh Kumar
       Head, Assistant Professor
       Department of Commerce, Gossner College, Ranchi.

3. External Members:

(i)   Dr. Purushottam Kumar
       Technical Director
       (Scientist 'E') National Informatics centre,
       Govt. of India (Ministry of EL. & IT).

(ii)   Dr. Siddharth Mazumdar
       M.Com, LL.B, Practicing Lawyer at Jharkhand High Court,

Minutes of the Meeting:-

All the members discussed in details thoroughly all the important points of the syllabus and unanimously this syllabus is approved with some changes for the Four Year Undergraduate Programme (FYUGP) as per NEP 2020 and recommended it for the further process.

Chairman

DIRECTOR
IQAC, RANCHI UNIVERSITY
RANCHI-834 001

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Table of Content

Students are Instructed to

Refer Syllabus of Allied/ Opted Subjects from R.U. Website

HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.

The session shall commence from **1st of July**.

ELIGIBILITY

The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.

UG Degree Programmes with Double Major shall be provided only to those students who secure a minimum of overall 75% marks (7.5 CGPA) or higher.

Other eligibility criteria including those for multiple entry will be in light of the UGC Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions.

ADMISSION PROCEDURE

The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

VALIDITY OF REGISTRATION

Validity of a registration for FYUGP will be for maximum for Seven years from the date of registration.

ACADEMIC CALENDAR

An Academic Calendar will be prepared by the university to maintain uniformity in the CBCS of the UG Honours Programmes, UG Programmes, semesters and courses in the college run under the university (Constituent/Affiliated).

Academic Year: Two consecutive (one odd + one even) semesters constitute one academic year.

Semester: The Odd Semester is scheduled from **July to December** and the Even Semester is from **January to June**. Each week has a minimum of 40 working hours spread over 6 days.

Each semester will include – Admission, course work, conduct of examination and declaration of results including semester break.

In order to undergo 8 weeks' summer internship/ apprenticeship during the summer camp, the Academic Calendar may be scheduled for academic activities as below:

Odd Semester: **From first Monday of August to third Saturday of December**

Even Semester: **From first Monday of January to third Saturday of May**

An academic year comprising 180 working days in the least is divided into two semesters, each semester having at least 90 working days. With six working days in a week, this would mean that each semester will have 90/ 6 = 15 teaching/ working weeks. Each working week will have 40 hours of instructional time.

Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its

Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:

UG Certificate after completing 1 year (2 semesters) of study in the chosen fields of study provided they complete one vocational course of 4 credits during the summer vacation of the first year or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.,

UG Diploma after 2 years (4 semesters) of study diploma provided they complete one vocational course of 4 credits or internship/ Apprenticeship/ skill based vocational courses offered during first year or second year summer term in addition to 9 credits from skill-based courses earned during first, second, and third semester,

Bachelor's Degree after a 3-year (6 semesters) programme of study,

Bachelor's Degree (Honours) after a 4-year (8 semesters) programme of study.

Bachelor Degree (Honours with Research) after a 4-year (8 semesters) programme of study to the students undertaking 12 credit Research component in fourth year of FYUGP.

CREDIT OF COURSES

The term 'credit' refers to the weightage given to a course, usually in terms of the number of instructional hours per week assigned to it. The workload relating to a course is measured in terms of credit hours. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks).

One hour of teaching/ lecture or two hours of laboratory /practical work will be assigned per class/interaction.

One credit for Theory   = 15 Hours of Teaching i.e., 15 Credit Hours
One credit for Practicum   = 30 Hours of Practical work i.e., 30 Credit Hours

For credit determination, instruction is divided into three major components:
Hours (L) – Classroom Hours of one-hour duration.
Tutorials (T) – Special, elaborate instructions on specific topics of one-hour duration
Practical (P) – Laboratory or field exercises in which the student has to do experiments or other practical work of two-hour duration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.

Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION CRITERIA

First degree programme with single major:

The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

No student will be detained in odd Semesters (I, III, V & VII).

To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year, a student has to pass in minimum 9 papers out of the total 12 papers.

To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 18 papers out of the total 24 papers.

To get promotion from Semester-VI to Semester-VII (taken all together of Semester I, II, III, IV, V & VI) a student has to pass in minimum 26 papers out of the total 34 papers.

However, it will be necessary to procure pass marks in each of the paper before completion of the course.

First degree programme with dual major:

Above criterions are applicable as well on the students pursuing dual degree programmes however first degree programme will remain independent of the performance of the student in dual major courses.

To get eligible for taking ESE, a student will be required to pass in at least 75% of Courses in an academic year.

A student has to pass in minimum 3 papers out of the total 4 papers.

It will be a necessity to clear all papers of second major programme in second attempt in succeeding session, failing which the provision of dual major will be withdrawn and the student will be entitled for single first degree programme.

PUBLICATION OF RESULT

The result of the examination shall be notified by the Controller of Examinations of the University in different newspapers and also on University website.

If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his one year will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulations of the University for FYUGP.

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COURSE STUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]

Level of Courses	Semester	MJ; Discipline Specific Courses – Core or Major (80)	MN; Minor from discipline (16)	MN; Minor from vocational (16)	MDC; Multidisciplinary Courses [Life sciences, Physical Sciences, Mathematical and Computer Sciences, Data Analysis, Social Sciences, Humanities, etc.] (9)	AEC; Ability Enhancement Courses (Modern Indian Language and English) (8)	SEC; Skill Enhancement Courses (9)	VAC; Value Added Courses (6)	IAP; Internship/ Dissertation (4)	RC; Research Courses (12)	AMJ; Advanced Courses in lieu of Research (12)	Credits	Double Major (DMJ)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
100-199: Foundation or Introductory courses	I	4	4		3	2	3	4				**20**	4+4
	II	4+4		4	3	2	3					**20**	4+4
Exit Point: Undergraduate Certificate provided with Summer Internship/ Project (4 credits)													
200-299: Intermediate-level courses	III	4+4	4		3	2	3					**20**	4+4
	IV	4+4+4		4		2		2				**20**	4+4
Exit Point: Undergraduate Diploma provided with Summer Internship in 1st or 2nd year/ Project (4 credits)													
300-399: Higher-level courses	V	4+4+4	4						4			**20**	4+4
	VI	4+4+4+4		4								**20**	4+4
Exit Point: Bachelor's Degree													
400-499: Advanced courses	VII	4+4+4+4	4									**20**	4+4
	VIII	4		4						12	4+4+4	**20**	4+4
Exit Point: Bachelor's Degree with Hons. /Hons. with Research												**160**	**224**

Note: Honours students not undertaking research will do 3 courses for 12 credits in lieu of a Research project / Dissertation.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME   2022 onwards

Table 2: Semester wise Course Code and Credit Points for Single Major:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		
	Code	Papers	Credits
I	AEC-1	Language and Communication Skills (MIL 1 - Hindi/ English)	2
	VAC-1	Value Added Course-1	4
	SEC-1	Skill Enhancement Course-1	3
	MDC-1	Multi-disciplinary Course-1	3
	MN-1A	Minor from Discipline-1	4
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	4
II	AEC-2	Language and Communication Skills (MIL 2 - English/ Hindi)	2
	SEC-2	Skill Enhancement Course-2	3
	MDC-2	Multi-disciplinary Course-2	3
	MN-2A	Minor from Vocational Studies/Discipline-2	4
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	4
III	AEC-3	Language and Communication Skills (Language Elective 1 - Modern Indian language including TRL)	2
	SEC-3	Skill Enhancement Course-3	3
	MDC-3	Multi-disciplinary Course-3	3
	MN-1B	Minor from Discipline-1	4
	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	4
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	4
IV	AEC-3	Language and Communication Skills (Language Elective - Modern Indian language including TRL)	2
	VAC-2	Value Added Course-2	2

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

	MN-2B	Minor from Vocational Studies/Discipline-2	4
	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	4
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	4
	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	4
V	MN-1C	Minor from Discipline-1	4
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	4
	MJ-10	Major paper 10 (Disciplinary/Interdisciplinary Major)	4
	MJ-11	Major paper 11 (Disciplinary/Interdisciplinary Major)	4
	IAP	Internship/Apprenticeship/Field Work/Dissertation/Project	4
VI	MN-2C	Minor from Vocational Studies/Discipline-2	4
	MJ-12	Major paper 12 (Disciplinary/Interdisciplinary Major)	4
	MJ-13	Major paper 13 (Disciplinary/Interdisciplinary Major)	4
	MJ-14	Major paper 14 (Disciplinary/Interdisciplinary Major)	4
	MJ-15	Major paper 15 (Disciplinary/Interdisciplinary Major)	4
VII	MN-1D	Minor from Discipline-1	4
	MJ-16	Major paper 16 (Disciplinary/Interdisciplinary Major)	4
	MJ-17	Major paper 17 (Disciplinary/Interdisciplinary Major)	4
	MJ-18	Major paper 18 (Disciplinary/Interdisciplinary Major)	4
	MJ-19	Major paper 19 (Disciplinary/Interdisciplinary Major)	4
VIII	MN-2D	Minor from Vocational Studies/Discipline-2	4
	MJ-20	Major paper 20 (Disciplinary/Interdisciplinary Major)	4
	RC/	Research Internship/Field Work/Dissertation OR	12/
	AMJ-1 AMJ-2 AMJ-3	Advanced Major paper-1 (Disciplinary/Interdisciplinary Major) Advanced Major paper-2 (Disciplinary/Interdisciplinary Major) Advanced Major paper-3 (Disciplinary/Interdisciplinary Major)	4 4 4
		Total Credit	**160**

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

NUMBER OF CREDITS BY TYPE OF COURSE

The hallmark of the new curriculum framework is the flexibility for the students to learn courses of their choice across various branches of undergraduate programmes. This requires that all departments prescribe a certain specified number of credits for each course and common instruction hours (slot time).

Table 3: Overall Course Credit Points for Single Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major	Core courses	60	80
Minor	Discipline/ Interdisciplinary courses and Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**120**	**160**

Table 4: Overall Course Code and Additional Credit Points for Double Major

Courses	Nature of Courses	3 yr UG Credits	4 yr UG Credits
Major 1	Core courses	60	80
Major 2	Core courses	48	64
Minor	Discipline/ Interdisciplinary courses and Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	**Courses to be developed by the University**	9	9
Value Added Courses	Understanding India, Environmental Studies, Digital Education, Health & wellness, Summer Internship/ Apprenticeship/ Community outreach activities, etc.	6	6
Internship (In any summer vacation for Exit points or in Semester-V)		4	4
Research/ Dissertation/ Advanced Major Courses	Research Institutions/ 3 Courses		12
	Total Credits =	**168**	**224**

Table 5: Semester wise Course Code and Additional Credit Points for Double Major:

Semester	Double Major Courses		Credits
	Code	Papers	Credits
I	DMJ-1	Double Major paper-1 (Disciplinary/Interdisciplinary Major)	4
	DMJ-2	Double Major paper-2 (Disciplinary/Interdisciplinary Major)	4
II	DMJ-3	Double Major paper-3 (Disciplinary/Interdisciplinary Major)	4
	DMJ-4	Double Major paper-4 (Disciplinary/Interdisciplinary Major)	4
III	DMJ-5	Double Major paper-5 (Disciplinary/Interdisciplinary Major)	4
	DMJ-6	Double Major paper-6 (Disciplinary/Interdisciplinary Major)	4
IV	DMJ-7	Double Major paper-7 (Disciplinary/Interdisciplinary Major)	4
	DMJ-8	Double Major paper-8 (Disciplinary/Interdisciplinary Major)	4
V	DMJ-9	Double Major paper-9 (Disciplinary/Interdisciplinary Major)	4
	DMJ-10	Double Major paper-10 (Disciplinary/Interdisciplinary Major)	4
VI	DMJ-11	Double Major paper-11 (Disciplinary/Interdisciplinary Major)	4
	DMJ-12	Double Major paper-12 (Disciplinary/Interdisciplinary Major)	4
VII	DMJ-13	Double Major paper-13 (Disciplinary/Interdisciplinary Major)	4
	DMJ-14	Double Major paper-14 (Disciplinary/Interdisciplinary Major)	4
VIII	DMJ-15	Double Major paper-15 (Disciplinary/Interdisciplinary Major)	4
	DMJ-16	Double Major paper-16 (Disciplinary/Interdisciplinary Major)	4
		Total Credit	**64**

Abbreviations:
AEC   Ability Enhancement Courses
SEC   Skill Enhancement Courses
IAP   Internship/Apprenticeship/ Project
MDC   Multidisciplinary Courses
MJ   Major Disciplinary/Interdisciplinary Courses
DMJ   Double Major Disciplinary/Interdisciplinary Courses
MN   Minor Disciplinary/Interdisciplinary Courses
AMJ   Advanced Major Disciplinary/Interdisciplinary Courses
RC   Research Courses

AIMS OF BACHELOR'S DEGREE PROGRAMME IN COMMERCE

The broad aims of the Curriculum of the Commerce are:

The B. Com. Programme provides an extensive and rigorous base for learning, application, research, entrepreneurship, and holistic development. The key areas of study in Commerce and Business are:

> Marketing Management
> Human Resource Management
> Accountancy
> Finance
> Economics
> Tax
> Investment
> Banking & Insurance
> Business & Corporate Laws

Apart from these key areas present curriculum framework includes courses on Yoga and Happiness, Mind Management, Computer awareness etc., with an aim to imbibe in students a sense of self awareness, ethical conduct, human values, socially and environmentally conscious behaviour.

The overall aim of B. Com. as a programme is to:

Provide a conducive environment that holistically engages students through an all- encompassing knowledge impartation;

Widen the scope and depth of the course enabling them to undertake further studies in commerce and its allied areas on multiple disciplines concerned with commerce;

Construct a sound theoretical footing;

Acquainting students with recent market practices;

Encourage the students to advance a range of generic skills helpful in employment, internships, and social activities;

Formulating business problems and provide innovative solutions to enable the students.

PROGRAM LEARNING OUTCOMES

The broad programme learning outcomes in Commerce are:

The outcomes and attributes described in qualification descriptors are attained by students through learning acquired on completion of a programme of study. The term 'programme' refers to the entire scheme of study followed by students leading to a qualification.

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. Programme for the award of bachelor degree. The programme learning outcomes of B. Com. also enable 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:

- 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.
- 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.
- 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.
- 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.
- The course provides an extreme and rigorous base for teaching, research, and allied business administrations.

SEMESTER WISE COURSES IN COMMERCE MAJOR-1 FOR FYUGP   **2022 onwards**

Table 7: Semester wise Examination Structure in Discipline Courses:

Semester	Courses			Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MJ-1	Financial Accounting	4	25	75	---
II	MJ-2	Business Organisation And Management	4	25	75	---
	MJ-3	Business Statistics	4	25	75	---
III	MJ-4	Business Mathematics	4	25	75	---
	MJ-5	Income Tax Law And Practice	4	25	75	---
IV	MJ-6	Business And Corporate Law	4	25	75	---
	MJ-7	Corporate Accounting	4	25	75	---
	MJ-8	Entrepreneurship Development	4	25	75	---
V	MJ-9	Cost Accounting	4	25	75	---
	MJ-10	Human Resource Management	4	25	75	---
	MJ-11	Goods And Services Tax -Law And Practices	4	25	75	---
VI	MJ-12	Principle Of Marketing	4	25	75	---
	MJ-13	Quantitative Techniques For Business Decision	4	25	75	---
	MJ-14	Financial Management And Principles	4	25	75	---
	MJ-15	Managerial Economics	4	25	75	---
VII	MJ-16	Financial Institutions And Markets	4	25	75	---
	MJ-17	Advance Statistical Analysis	4	25	75	---
	MJ-18	Managerial Accounting	4	25	75	---
	MJ-19	International Business And Trade	4	25	75	---
VIII	MJ-20	Business Environment	4	25	75	---
	AMJ-1	Financial Technology And Analytics	4	25	75	---
	AMJ-2	Artificial Intelligence For Business	4	25	75	---
	AMJ-3	Business Data Analytics	4	25	75	---
	or RC-1	Research Methodology	4	25	75	---
	RC-2	Project Dissertation/ Research Internship/ Field Work	8	---	---	200
		Total Credit	**92**			

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses:

Semester	Skill Enhancement Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	SEC-1	Office Management	3	---	75	---
II	SEC-2	Inventory & Working Capital Management	3	---	75	---
III	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		Total Credit	**9**			

Table 9: Semester wise Course Code and Credit Points for Minor Courses:

Semester	Minor Courses		Examination Structure			
	Code	Papers	Credits	Mid Semester Theory (F.M.)	End Semester Theory (F.M.)	End Semester Practical/ Viva (F.M.)
I	MN-1A	Introductory Commerce	4	25	75	---
III	MN-1B	Financial Literacy	4	25	75	---
V	MN-1C	Stock Market Operations	4	25	75	---
VII	MN-1D	Digital Marketing	4	25	75	---
		Total Credit	**16**			

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INSTRUCTION TO QUESTION SETTER

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SEMESTER INTERNAL EXAMINATION (SIE):

There will be <u>Only One Semester Internal Examination</u> in Major, Minor and Research Courses, which will be organized at college/institution level. However, Only One End semester evaluation in other courses will be done either at College/ Institution or University level depending upon the nature of course in the curriculum.

(SIE 10+5=15 marks):

There will be two group of questions. **Question No.1 will be very short answer type in Group A** consisting of five questions of 1 mark each. **Group B will contain descriptive type** two questions of five marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 10 Marks, (b) Class Attendance Score (CAS) of 5 marks.

(SIE 20+5=25 marks):

There will be two group of questions. **Group A is compulsory** which will contain two questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 will be short answer type** of 5 marks. **Group B will contain descriptive type** two questions of ten marks each, out of which any one to answer.

The Semester Internal Examination shall have two components. (a) One Semester Internal Assessment Test (SIA) of 20 Marks, (b) Class Attendance Score (CAS) of 5 marks.

Conversion of Attendance into score may be as follows:

Attendance Upto 45%, 1mark; 45<Attd.<55, 2 marks; 55<Attd.<65, 3 marks; 65<Attd.<75, 4 marks; 75<Attd, 5 marks.

END SEMESTER UNIVERSITY EXAMINATION (ESE):

(ESE 60 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type five questions of fifteen marks each, out of which any three are to answer.

(ESE 75 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of fifteen marks each, out of which any four are to answer.

(ESE 100 marks):

There will be two group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of ten questions of 1 mark each. **Question No. 2 & 3 will be short answer type** of 5 marks. Group B will contain descriptive type six questions of twenty marks each, out of which any four are to answer.

FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION

Question format for **10 Marks**:

Subject/ Code

F.M. =10   **Time**=1Hr.   Exam Year

General Instructions:
Group A carries very short answer type compulsory questions.
Answer 1 out of 2 subjective/ descriptive questions given in **Group B**.
Answer in your own words as far as practicable.
Answer all sub parts of a question at one place.
Numbers in right indicate full marks of the question.

Group A

[5x1=5]

....
....
....
....
....

Group B

....   [5]
....   [5]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **20 Marks**:

Subject/ Code

F.M. =20   **Time**=1Hr.   Exam Year

General Instructions:
Group A carries very short answer type compulsory questions.
Answer 1 out of 2 subjective/ descriptive questions given in **Group B**.
Answer in your own words as far as practicable.
Answer all sub parts of a question at one place.
Numbers in right indicate full marks of the question.

Group A

[5x1=5]

....
....
....
....
....

....   [5]

Group B

....   [10]
....   [10]

Note: There may be subdivisions in each question asked in Theory Examination.

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FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION

Question format for **50 Marks**:

Subject/ Code

F.M. =50   **Time**=3Hrs.   Exam Year

General Instructions:
Group A carries very short answer type **compulsory** questions.
Answer 3 out of 5 subjective/ descriptive questions given in **Group B**.
Answer in your own words as far as practicable.
Answer all sub parts of a question at one place.
Numbers in right indicate full marks of the question.

Group A

[5x1=5]

....
....
....
....
....

Group B

....   [15]
....   [15]
....   [15]
....   [15]
....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **60 Marks**:

Subject/ Code

F.M. =60   **Time**=3Hrs.   Exam Year

General Instructions:
Group A carries very short answer type **compulsory** questions.
Answer 3 out of 5 subjective/ descriptive questions given in **Group B**.
Answer in your own words as far as practicable.
Answer all sub parts of a question at one place.
Numbers in right indicate full marks of the question.

Group A

[5x1=5]

....
....
....
....
....

....   [5]
....   [5]

Group B

....   [15]
....   [15]
....   [15]
....   [15]
....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Question format for **75 Marks**:

Subject/ Code

F.M. = 75   **Time**=3Hrs.   Exam Year

General Instructions:
Group A carries very short answer type **compulsory** questions.
Answer 4 out of 6 subjective/ descriptive questions given in **Group B**.
Answer in your own words as far as practicable.
Answer all sub parts of a question at one place.
Numbers in right indicate full marks of the question.

Group A

[5x1=5]

....
....
....
....
....

....   [5]
....   [5]

Group B

....   [15]
....   [15]
....   [15]
....   [15]
....   [15]
....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **100 Marks**:

Subject/ Code

F.M. = 100   **Time**=3Hrs.   Exam Year

General Instructions:
Group A carries very short answer type **compulsory** questions.
Answer 4 out of 6 subjective/ descriptive questions given in **Group B**.
Answer in your own words as far as practicable.
Answer all sub parts of a question at one place.
Numbers in right indicate full marks of the question.

Group A

[10x1=10]

....   vi.   ....
....   vii.   ....
....   viii.   ....
....   ix.   ....
....   x   ....   [5]
....   [5]

Group B

....   [20]
....   [20]
....   [20]
....   [20]
....   [20]
....   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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SEMESTER I

MAJOR COURSE –MJ 1:

FINANCIAL ACCOUNTING

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) Theory: 60 Lectures

Course Objectives:
1.Objective: The course aims to help learners to acquire conceptual knowledge on financial accounting, to impart skills for recording various kinds of business transactions and to prepare financial statements

Course Learning Outcomes:
After completion of the course, learners will be able to:
1. Apply the generally accepted accounting principles while recording transactions and preparing financial statements;
2. Demonstrate accounting process under computerized accounting system;
3. Measure business income applying relevant Accounting Standards;
4. Evaluate the importance of depreciation and inventories in financial statements;
5. Prepare and manage cash book and other accounts necessary while running a business;
6.Prepare and maintain financial statements of sole proprietors and partnership firms;
7. Prepare accounts for Inland Branches and Not-for-Profit Organisations.

Course Content:

UNIT- I: (a) Theoretical Framework
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.

Financial accounting principles: Concepts and Conventions.

Accounting standards: Concept, benefits, and Process of formulation of Accounting Standards including Ind AS (IFRS converged standards) and IFRSs; convergence Vs. adoption; Application of accounting standards (AS and Ind AS) on various entities in India. International Financial Accounting Standards (IFRS) – meaning, need and scope; Process of issuing IFRS.

UNIT- I: (b) Accounting Process
From recording of a business transaction to preparation of trial balance including adjustments. Application of Generally Accepted Accounting Principles in recording financial transactions and preparing financial statements.

UNIT 2: Computerized Accounting Systems
Computerized Accounting Systems: Computerized Accounts by using any popular accounting software Creating a Company; Configure and Features settings;

Creating Accounting Ledgers and Groups; Creating Stock Items and Groups; Vouchers Entry;

Generating Reports - Cash Book, Ledger Accounts, Trial Balance, Profit and Loss Account, Balance Sheet;

Cash Flow Statement

Selecting and shutting a Company; Backup, and Restore data of a Company.

UNIT 3: Business Income, Accounting for Depreciation, and Inventory Valuation System.
Business income: Concept of Revenue and Business Income, Measurement of business income; relevance of accounting period, continuity doctrine and matching concept in the measurement of business income; Objectives of measurement of Business income.

Revenue recognition: Recognition of expenses and income. Recognition of expenses and income with a reference to AS 9 and Ind AS 18.

The nature of Depreciation. 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 in method of Depreciation and its impact of on measurement of business income.

Inventories: Meaning. Significance of inventory valuation. Inventory Record Systems: periodic and perpetual. Methods of computing depreciation: FIFO, LIFO, and Weighted Average. Application of Accounting Standard in valuation of Inventory. Impact of inventory valuation on measurement of business income.

UNIT 4: Financial statements of Sole Proprietorship, Partnership Firms and Not-for-Profit Making Concern

Capital and revenue expenditures and receipts: general introduction only.

Preparation of financial statements of non-corporate business entities - Sole Proprietorship and Partnership firms (both manual and using appropriate software).

Preparation of financial statements of Not-for-Profit Organisations.

UNIT 5: Accounting for Branch

Concept of Dependent branches; Branch Accounting - debtors system, stock and debtors' system, branch final account system and wholesale basis system.

Independent branches: concept, accounting treatment with necessary adjustment entries; Incorporation of Branch Trial Balance in Head Office Books for home branches.

UNIT 6: Accounting for Hire Purchase, Instalment Payment system, and Royalty.

Overview of hire purchases and installment payment system. Difference between Hire-purchase system and Instalment payment system, journal entry and accounting treatment in case of hire purchases and installment payment system (In the Books of Both Parties).

Royalty Accounting.

Note:

The relevant Accounting Standards (both AS and Ind AS) for all of the above topics should be covered.

2.　Any revision of relevant Indian Accounting Standard/Accounting Standard would become applicable.

Practical Exercises: The learners are required to:

Download 'Framework for the Preparation and Presentation of Financial Statements' from the websites of the Institute of Chartered Accountants of India (ICAI) analyse the qualitative characteristics of accounting information provided therein.

Collect and examine the balance sheets of business Organisations to study how these are prepared.

Examine the accounting policies and revenue recognition policies by collecting necessary data from small business firms.

Prepare Trading and Profit & Loss Account and Balance Sheet collecting necessary data from small business firms.

Prepare financial statements manually and using appropriate software.

Prepare accounts of Inland Branches.

Collect data from your college and prepare Receipt and Payment Account, Income and Expenditure Account and Balance Sheet.

Reference Books:

Anthony, R. N., Hawkins, D., & Merchant, K. A. (2010). Accounting: Text and Cases. New York: McGraw-Hill Education India.

Dam, B. B., & Gautam, H. C. (2019). Financial Accounting. Guwahati: Gayatri Publications.

Horngren, C. T., & Philbrick, D. (2017). Introduction to Financial Accounting. London: Pearson Education.

Lal, J., & Srivastava, S. (2012). Financial Accounting Text & Problems. Mumbai: Himalaya Publishing House.

S.K.Singh , A K.Chattoraj, Financial Accounting, Agra (U.P.), Sahitya Bhawnan Publisher and Distributors.

Monga, J. R. (2017). Financial Accounting: Concepts and Applications. New Delhi: Mayur Paperback Publishing.

Shukla, M. C., Grewal, T. S., & Gupta, S. C. (2016). Advanced Accounts. Vol.-I. New Delhi: Sultan Chand Publishing

Maheshwari, S. N., Maheshwari, S. K., & Maheshwari, S. K. (2018). Financial Accounting. New Delhi: Vikas Publishing House Pvt. Ltd.

Sehgal, D. (2014). Financial Accounting. New Delhi: Vikas Publishing House Pvt. Ltd.

Goyal, B. K., & Tiwari, H. N. (2019). Financial Accounting. New Delhi: Taxman Publication.

B.K .Mehta, Vikas Kumar, Pankaj Kumar Sharma, Roshan Baa,SJ; Financial Accounting, Agra (U.P.)Shiksha Sagar Publisher and Distributors

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SKILL ENHANCEMENT COURSE- SEC 1:
OFFICE MANAGEMENT

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03)   **Theory: 45 Lectures**

Course Objectives:
Nature and Scope of Logic. 2. Laws of Thought.

Course Contents:
Unit 1: Office and Office Management: Meaning of office. Functions of office – primary and administrative management functions, importance of office, duties of the office manager, his qualities and essential qualifications.   **(4 Lectures)**

Unit 2: Filing and Indexing: Filing and Indexing – Its meaning and importance, essentials of good filing, centralized vs. decentralized filing, system of classification, methods of filing and filing equipment, Weeding of old records, meaning and need for indexing, various types of indexing.   **(4 Lectures)**

Unit 3: Mail and Mailing Procedures: Mailing Procedures – meaning and importance of mail, centralization of mail handling work, its advantages, room equipment and accessories, sorting tables and rack, letter opener, time and date stamps, postal franking machine, addressing machine, mailing scales, mailing through post, courier, email, appending files with email. Inward and outward mail – receiving, sorting, opening, recording, making, distributing, folding of letters sent, maintenance of peon book, dispatching, courier services, central receipt and dispatch.   **(5 Lectures)**

Unit 4: Forms and Stationery: Office Forms – introduction, meaning, importance of forms, advantages of using forms, disadvantages of using forms, type of forms, factors affecting forms design, principles of form design, form control. Stationery – introduction, types of stationery used in offices, importance of managing stationery, selection of stationery, essential requirements for a good system of dealing with stationery, purchasing principles, purchase procedure, standardization of stationery.   **(2 Lectures)**

Unit 5: Modern Office Equipments: Modern Office Equipment – Introduction, meaning and Importance of office automation, objectives of office mechanization, advantages, disadvantages, factors determining office mechanization. Kind of office machines: personal computers, photocopier, fax, telephone, telephone answering machine, dictating machines, Audio Visual Aids.   **(2 Lectures)**

Unit 6: Budget: Budget - Annual, revised and estimated. Recurring and non-recurring heads of expenditure   **(2 Lectures)**

Unit 7: Audit: Audit process- Vouching, verification and valuation (in brief). Consumables/ Stock register and
Asset register. Procedure for disposal of records and assets.   **(2 Lectures)**

Unit 8: Banking facilities: Types of accounts. Passbook and cheque book. Other forms used in banks. ATM and money transfer.   **(2 Lectures)**

Unit 9: Abbreviations/Terms used in Offices: Explanation of abbreviations/terms used in offices in day-to-day work,

Unit 10: Modes of Payment: Types of payments handled such as postal orders, Cheque (crossed/uncrossed), post-dated and pre-dated Cheques, stale Cheque, dishonored Cheque.   **(2 Lectures)**

Unit 11: Role of Secretary: Definition; Appointment; Duties and Responsibilities of a Personal Secretary; Qualifications for appointment as Personal Secretary. Modern technology and office communication, email, voice mail, internet, multimedia, scanner, video-conferencing, web-casting. Agenda and Minutes of Meeting. Drafting, fax-messages, email. Maintenance of appointment diary.   **(5 Lectures)**

Essential Readings

Bhatia, R.C. *Principles of Office Management*, Lotus Press, New Delhi.
Leffingwell and Robbinson: *Text book of Office Management*, Tata McGraw-Hill.
Terry, George R: *Office Management and Control*.
Ghosh, Evam Aggarwal: *Karyalaya Prabandh*, Sultan Chand & Sons.

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Duggal, B: *Office Management and Commercial Correspondence*, Kitab Mahal.

SEMESTER II

CCII. MAJOR COURSE- MJ 2:
BUSINESS ORGANISATION AND MANAGEMENT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
To acquaint the learners with the basic concepts of business, different forms of business organisation, basics of management concepts and the different management functions.

Course Learning Outcomes:
After completion of the course, the learners will be able to:
Distinguish and explain each form of business;
Draft a Partnership Deed for a partnership firm;
Prepare the draft of Articles of Association, Memorandum of Association and Prospectus for a company;
Explain the functions of Management of any business Organisation;
Identify and explain Managerial skills used in business;
Analyse the concept of Delegation of Authority, coordination, and control;
Assess the importance of effective communication in management
Validate the role of Motivation and Leadership in modern day management

Course Content:
UNIT- I: Concept and Forms of Business Organisations
Concepts of Business, Trade, Industry and Commerce- Objectives and functions of Business
Social Responsibility of a business, Responsible Business, Ethical Conduct & Human Values, code of business ethics
Forms of Business Organisation-Meaning, Characteristics, and types.
Sole Proprietorship-Advantages and Disadvantages of Sole Proprietorship
Partnership -Meaning, Characteristics, Advantages and Disadvantages of Partnership - Kinds of Partners - Partnership Deed
Registration of partnership, Rights and duties of Partners, Reconstitution of Firm, and dissolution.
Limited Liability partnership- Concept, Meaning, Characteristics, Formation and incorporation of LLP, Partners and their relations, financial disclosures, conversion into LLP, Foreign LLP, Winding up and dissolution.
Hindu Undivided Family Business-Advantages and Disadvantages
Co-operative Organisation-Meaning, Advantages and Disadvantages.

UNIT- II: Joint Stock Company
Joint Stock Company- Meaning, Definition, Characteristics - Advantages and Disadvantages
Kinds of Companies
Promotion - Stages of Promotion - Promoter - Characteristics - Kinds - Preparation of Important Documents - Memorandum of Association - Clauses - Articles of Association - Contents –Prospectus - Contents – Red herring Prospectus Statement In lieu of Prospectus (as per Companies Act, 2013).
Oppression, Mismanagement, Rights to apply, Powers of Tribunal, Provisions related to Compromises, Arrangement and Amalgamations, winding up of Company: Concept and Modes of Winding Up; Provisions of winding up under Insolvency and Bankruptcy Code, 2016.
Definitions; Constitution of National Company Law Tribunal; Constitution of Appellate Tribunal; Appeal from orders of Tribunal; Power to punish for contempt.

UNIT- III: Principles and Functions of Management
Management - Meaning and Characteristics
Fayol's 14 Principles of Management.
Functions of Management

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Levels of Management – Skills of Management
Scientific Management - meaning, objectives, relevance and criticism.

UNIT- IV: Functions of Management: Planning and Organizing

Planning- Meaning, Characteristics, Types of Plans, Advantages and Disadvantages – Approaches to Planning - Management by Objectives (MBO) - Steps in MBO - Benefits –Weaknesses.
Organizing - Process of Organizing; Principles of Organisation - Formal and Informal Organisations – Line, Staff Organisations, Line and Staff Conflicts. Functional Organisation
Span of Management - Meaning - Determining Span - Factors influencing the Span of Supervision.

UNIT- V: Functions of Management: Authority, Coordination, and Control

Meaning of Authority, Power, responsibility, and accountability - Delegation of Authority - Decentralization of Authority
Definition, importance, process, and principles of Coordination techniques of Effective Coordination.
Control-Meaning, Relationship between planning and control, Steps in Control – Types (post, current, and pre-control). Requirements for effective control.

UNIT- VI: Functions of Management: Communication, Motivation and Leadership

Communication-purpose, process, formal and informal communication, barriers to effective communication and overcoming these barriers.
Motivation-Meaning, importance, major motivation theories- Maslow's need hierarchy theory, Herzberg's two-factors theory, Vroom's Expectation Theory, extrinsic and intrinsic motivation.
Leadership- meaning, theories, essential qualities, global leadership attributes, practicing leadership

Practical Exercises:

The learners are required to:
Complete the exercise wherein they are given different situations and scenarios to start their own business (in terms of capital, liability, scale of operations, etc.) and are asked to select the most suitable form of business and justify the same highlighting the advantages and disadvantages of their choice.
Prepare the Article of Association & Memorandum of Association/rules and regulations/bye laws for the form of business organisation chosen in Unit 1.
Participate in role play activity for describing the various levels of Management and the ways the 14 Principles of Management are used in defining the policies of the chosen organisation.
Participate in simulation activity wherein each learner is asked to prepare plans with respect to increasing the effectiveness in their respective organisation.
Participate in simulation activity wherein learners are asked to draft roles and responsibilities of members in the chosen organisation.
Download 'The Indian Partnership Act 1932' and 'The Companies Act, 2013' regulations from the website of the Ministry of Corporate Affair and analyse the qualitative information given therein

Reference Books:

Basu, C. R. (1998). Business Organization and Management. New Delhi: McGraw Hill Publishing India. Chhabra, T. N. (2011). Business Organization and Management. New Delhi: Sun India Publications.
Gupta, C. B. (2011). Modern Business Organization. New Delhi: Mayur Paperbacks.
Kaul, V. K. (2012). Business Organization and Management, Text and Cases. New Delhi: Pearson Education.
Koontz, H., & Weihrich, H. (2008). Essentials of Management. New York: McGraw Hill Education.
Anuradha Verma & Sunita Chitlangiya, Business Organisation and Management, Agra (UP), Agra (U.P.) Shiskha Sagar Publisher and Distributors.
Singh, B. P., & Singh, A. K. (2002). Essentials of Management. New Delhi: Excel Books.
S.K. Sahu, Business Organisation and Management, Agra (U.P.) Sahitya Bhawan Publisher and Distributors

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CCIII. MAJOR COURSE- MJ 3:
BUSINESS STATISTICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course aims to develop amongst the learners the ability to summarise, analyse
and interpret quantitative information for business decision making.

Learning Outcomes:
After completion of the course, learners will be able to:
examine and understand the various descriptive properties of statistical data.
compare probability rules and concepts relating to discrete and continuous random
variables to answer questions within a business context.
Analyse the underlying relationships between the variables to use simple regression
models.
Analyse the trends and tendencies over a period through time series analysis.
examine and apply index numbers to real life situations.

Course Content:

UNIT-I: Univariate Analysis
1. Measures of Central Tendency- Arithmetic mean, Geometric mean, Harmonic mean, Properties, and applications.
Median and other Partition values (quartiles, deciles, percentiles), Mode.

2. Measures of Dispersion: absolute and relative- Range, Quartile deviation, Mean deviation, Standard deviation, and
their coefficients; Properties of Standard deviation/Variance.

UNIT-II: Bi-variate Analysis
1. Simple and Linear Correlation analysis: Meaning, Measurement (Karl Pearson's coefficient and Spearman's Rank
correlation) and Properties.

2. Simple and Linear Regression Analysis: Regression equations and estimation; properties of Regression coefficients;
Relationship between correlation and regression.

UNIT-III: Index Numbers
1. Meaning and uses; Construction of index numbers: Aggregative and average of relatives –simple and weighted; Tests
of adequacy of index numbers; Computation and uses of Consumer Price Index (CPI), BSE SENSEX, and NSE, NIFTY.

UNIT-IV: Time Series
Components; additive and multiplicative models; Trend analysis - moving averages and method of least
squares (linear trend).

UNIT V: Probability:
1. Theory of probability, Approaches to the calculation of probability.
2. Calculation of event probabilities, Addition, and multiplication laws of probability (proof not required).
3. Conditional probability and Bayes theorem (proof not required)

Reference Books:
1. R. R. Sharma, Mrityunjay Kumar, Business Statistics, Agra (U.P.), Shiksha Sagar Publisher and
Distributors**.**
2. Bhardwaj, R. S. (2019). Business Mathematics and Statistics. New Delhi: Scholar Tech Press.
3. Richard, I. L., Masood, H. S., David, S. R., & Rastogi, S. (2017). Statistics for Management. New Jersey: Pearson
Education.
Thukral, J. K. (2017). Business Mathematics and Statistics. New Delhi: Maximax Publications.
5. Vohra, N. D. (2014). Business Mathematics and Statistics. New Delhi: Tata McGraw Hill Education India.

CCIV. SKILL ENHANCEMENT COURSE- SEC 2:
INVENTORY & WORKING CAPITAL MANAGEMENT

Marks: 75 (ESE: 3Hrs) = 75	Pass Marks: Th (ESE) = 30

(Credits: Theory-03)   **Theory: 45 Lectures**

Course Objectives:

To provide basic knowledge and equip students with various aspects of inventory, inventory management and inventory control.

This course will teach fundamentals of Working Capital Management and it is targeted against Entrepreneurs (to correct their Working Capital Management Systems) -CA / CMA / CFA / CPA Aspirants to pursue their examinations

Course Content:
Unit I: Meaning and Definition of Inventory, Types of Inventory, Need for holding Inventory, Risks and Cost Associated with excessive inventory.   **(10 Lectures)**

Unit II: Meaning and Definition of Inventory Management, Objectives of Inventory Management, advantages of Inventory Management, Limitations of Inventory Management   **(10 Lectures)**

Unit III: Techniques of Inventory Management: EOQ Model, ABC Analysis, Stock Levels, VED Analysis, FSN Analysis, Traditional Techniques.   **(10 Lectures)**

Unit IV: Management of Working Capital
Meaning and Definition of Working Capital, Types of Working Capital, Importance of Working Capital, Factors affecting Working Capital, Advantages of Working Capital, Need and Determination of Working Capital, Sources of Working Capital   **(15 Lectures)**

Unit V: Management of Cash
Meaning and Objectives of Cash Management, Motives for holding cash, Determination of Optimum level of Cash, Methods of Cash Management, Models of Cash Management   **(8 Lectures)**

Unit VI: Management of Receivables
Meaning and Nature of Receivables, Benefits of Receivables, Meaning of Receivables Management, Factors affecting Investment in Receivables, Scope of Receivable Management, Credit Policy, Control of Receivables.
(7 Lectures)

Essential Readings
Khan and Jain. Financial Management Text Problems. 2nd Edition, Tata Mc Graw Hill New Dellhi.
Pandey, I M, Financial Management. Vikas Publications.
Chandra, P Financial Management-Theory and Practice (Tata Mc Graw Hill).
Rustagi, R.P. Fundamentals of Financial Management. Taxmann Publication Pvt.Ltd.
Singh J.K, Financial Management-Text and Problems.2nd Edition Dhanpat Rai and Company, Dellhi.
Singh, Surender and Kaur, Rajeev, Fundamentals of Financial Managements, Book Bank International.

SEMESTER III

MAJOR COURSE- MJ 4:
BUSINESS MATHEMATICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course aims to familiarize students with the applications of Mathematical techniques in business decision making.

Course Learning Outcomes:
After completing the course, the student shall be able to:
Acquire proficiency in using different mathematical tools (matrices, calculus and mathematics of finance) in solving real life business and economic problems;
Develop an understanding of the various averages and measures of dispersion to describe statistical data;
Explain the relationship between two variables through correlation and regression;
Explain the construction and application of index numbers to real life situations;
Analyse the trends and tendencies over a period through time series analysis.

Course Content:
UNIT- I: Matrices and Determinants
Overview of Matrices; Definition and types; Algebra of matrices; Applications of matrix operations to simple business and economic problems; Calculation of values of determinants up to third order; Finding inverse of a matrix through determinant method; Solution of system of linear equations up to three variables. Leontief Input Output Model (Open Model Only).

UNIT- II: Permutation and Combination:
Basic concept of permutation and combination and simple problems based on permutation and combination.

UNIT- III: Basic Mathematics of Finance
Basic Mathematics of Finance: Simple and Compound interest (including continuous compounding); Rates of interest-nominal and effective and their inter-relationships; Compounding and discounting of a sum using different types of rates, annuities, discount- Banker's discount, Trade discount.

UNIT- IV: Mathematical Reasoning and Aptitude
Types of reasoning, Number series, Letter series, Codes and Relationships, Mathematical Aptitude (Fraction, Time & Distance, Ratio, Proportion and Percentage, Profit and Loss, Averages).

UNIT- V: Differentiation and Integration:
Concept and rules of differentiation; applications of differentiation - elasticity of demand and supply, Maxima and Minima of functions relating to cost, revenue and profit. Concept and basic rules of integration of a function. Application in Business and commerce.

UNIT- VI: Linear Programming Problem:
LPP: Objective Functions, Constraints, Mathematical Formulation Of LPP, Graphical Solution to LPP, Feasible and Infeasible Regions/ Solution, Optimal Feasible Solution.

Reference Books:
R. R. Das, Mrityunjay Kumar, Business mathematics, Agra (U.P.), Shiksha Sagar Publisher and Distributors.
B.N. Gupta, Shyamlesh Kumar, Business Mathematics, Agra (U.P.), Sahitya Bhawan Pub. and Distributors.
Bhardwaj, R. S. (2019). Business Mathematics and Statistics. New Delhi: Scholar Tech Press.
Richard, I. L., Masood, H. S., David, S. R., & Rastogi, S. (2017). Statistics for Management. New Jersey: Pearson Education.
Thukral, J. K. (2017). Business Mathematics and Statistics. New Delhi: Maximax Publications.
Vohra, N. D. (2014). Business Mathematics and Statistics. New Delhi: Tata McGraw Hill Education India

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CCV. MAJOR COURSE- MJ 5:

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

INCOME TAX LAW AND PRACTICE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course aims to provide knowledge of the various provisions of income-tax law in India and enable the learners to apply such provisions to compute total income and tax liability of individuals and HUFs. It also aims to enable learners to understand the provisions relating to filing of return of income.

Course Learning Outcomes:
After the completion of the course, the learners will be able to:
Comprehend the concepts of taxation, including assessment year, previous year, assesses, person, income, total income, agricultural income and determine the residential status of persons;
Compute income under different heads, applying the charging provisions, deeming provisions, exemptions, and deductions;
Apply the clubbing provisions and provisions relating to set-off and carry forward of losses to determine the gross total income;
Calculate the tax liability of an individual and HUF as well as deductions from gross total income and determine the total income of an individual and HUF;
Comprehend the provisions relating to filing of return of income.

Course Content:

UNIT- I: Basic Concepts
1. Tax: concept, types – direct and indirect; canons of taxation; Direct Tax: Need, features and basis of charges.
2. Income Tax (as per Income Tax Act 1961 and amendments): Basic Concepts
3. Residential status.
4. Scope of Total Income, Heads of Income; Income which do not form a part of Total Income
5. Agriculture Income and its taxability.

UNIT-II: Income from Salary and House Property
1. Meaning of salary, Basis of charge, conditions of chargeability, Allowances, Perquisites, Deductions and exemptions, Computation of taxable Income from Salary.
2. Income from house property Basis of charge, Determinants of Annual Value, Deductions and exemptions, computation of taxable income House Property.

UNIT-III: Profits and Gains from Business or Profession, Capital Gains, and Income from Other Sources
1.Meaning of business income, methods of accounting, Deductions and Disallowances under the Act, Computation of presumptive income under Income-tax Act, Computation of taxable income from Business and profession.
2. Meaning of Capital Asset, Basis of Charge, Exemptions related to capital gains; Meaning of Transfer, Computation of taxable capital Gain.
3. Income from Other Sources Basis of charge - Dividend, Interest on securities, winning from lotteries, Crossword puzzles, Horse races, Card games etc., Permissible deductions, impermissible deductions.

UNIT-IV: Computation of Total Income and Tax Liability of individual and HUF
1.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
2. Computation of total income and tax liability of individuals and HUF.

UNIT-V: Preparation of Return of Income
1.Filing of returns: Manually and on-line filing of Returns of Income & TDS; Provision & Procedures of Compulsory on-line filing of returns for specified assesses

Practical Exercises: The learners are required to:
Identify five individuals above the age of 18 years without PAN Card. Educate them about the relevance of getting a PAN card issued from IT Department of India and help them fill the online application

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form for generating their PAN Card. Also, educate them about the significance of filing return and help them fill the same online. Prepare and present a report of the key learnings from the exercise;
File Income-tax return of individuals and HUF;
Compute income under different heads, total income, and tax liability of an individual and HUF;
Apply for TAN for a firm and file its TDS return;
Visit the website of Income Tax Department, Government of India and fill the various online ITR forms with hypothetical data.

Reference Books:

Ahuja, G., & Gupta, R. (2020). Simplified Approach to Income Tax. New Delhi: Flair Publications Pvt. Ltd.
Singhania, V. K., & Singhania, M. (2020). Student's Guide to Income Tax including GST Problems & Solutions. New Delhi: Taxman Publications Pvt. Ltd.
Study Material of ICAI Intermediate Paper 4A: Income-tax Law

CCVI. SKILL ENHANCEMENT COURSE- SEC 3:
ELEMENTARY COMPUTER APPLICATION SOFTWARES

Marks: 75 (ESE: 3Hrs) = 75	**Pass Marks: Th (ESE) = 30**

A Common Syllabus for FYUGP (Credits: Theory-03) **45 Hours**

Instruction to Question Setter for
End Semester Examination (ESE):
*There will be **objective type test** consisting of **Seventy-five questions of 1 mark each**. Students are required to mark their answer on **OMR Sheet** provided by the University.*

<u>Course Objectives:</u>
The objective of the course is to generate qualified manpower in the area of Information Technology (IT) and Graphic designing which will enable such person to work seamlessly at any Offices, whether Govt. or Private or for future entrepreneurs in the field of IT.

INTRODUCTION TO COMPUTER SYSTEM

1. Basic Concept of Computer: What is Computer, Applications of Computer, Types of computer, Components of Computer System, Central Processing Unit (CPU) **(3 Lecture)**

2. Concepts of Hardware: Input Devices, Output Devices, Computer Memory, Types of Memory, processing Concept of Computer **(4 Lecture)**

3. Operating system: What is an Operating System, Operating System Examples, Functions of Operating System(Basic), Introduction to Windows 11, Working on Windows 11 environment, Installation of Application Software, My Computer, Control Panel, searching techniques in windows environment, Basic of setting
(6 Hours)

4. Concept of Software: What is Software, Types of Software, Computer Software- Relationship between Hardware and Software, System Software, Application Software, some high level languages **(4 Hours)**

5. Internet & its uses: Basic of Computer networks; LAN, WAN, MAN, Concept of Internet, Applications of Internet; connecting to internet, what is ISP, World Wide Web, Web Browsing software's, Search Engines, URL, Domain name, IP Address, using e-governance website, Basics of electronic mail, getting an email account, Sending and receiving emails. **(6 Hours)**

MICROSOFT OFFICE 2016 AND LATEST VERSIONS

6. Microsoft Word: Word processing concepts, Creation of Documents, Formatting of Documents, Formatting of Text, Different tabs of word 2016 environment, Formatting Page, Navigation of Page, Table handling, Header and footer, Page Numbering, Page Setup, Find and Replace, Printing the documents
(7 Hours)

7. Microsoft Excel (Spreadsheet): Spreadsheet Concepts, Creating, Saving and Editing a Workbook, Inserting, Deleting Work Sheets, Formatting worksheet, Excel Formula, Concept of charts and Applications, Pivot table, goal seek, Data filter, data sorting and scenario manager, printing the spreadsheet **(6 Hours)**

8. Microsoft Power Point (Presentation Package): Concept and Uses of presentation package, Creating, Opening and Saving Presentations, working in different views in Power point, Animation, slide show, Master Slides, Creating photo album, Rehearse timing and record narration **(5 Hours)**

9. Digital Education: What is digital education, Advantages of digital Education, Concept of e-learning, Technologies used in e learning **(4 Hours)**

Reference Books
Nishit Mathur, Fundamentals of Computer, APH publishing corporation (2010)
Neeraj Singh, Computer Fundamentals (Basic Computer), T Balaji, (2021)
Joan Preppernau, Microsoft Power Point 2016 step by step, Microsoft press (2015)
Douglas E Corner, The Internet Book 4th Edition, prentice –Hall (2009)
Steven Welkler, Office 2016 for beginners, Create Space Independent Publishing Platform (2016)
Wallace Wang, Microsoft Office 2019, Wiley (January 2018)

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Noble Powell, Windows 11 User Guide For Beginners and Seniors, ASIN, (October 2021)

SEMESTER IV

MAJOR COURSE- MJ 6:

BUSINESS AND CORPORATE LAW

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:

The course aims to give the learners a broad understanding about important aspects of legal environment of business; to make them study how various special contracts are brought into force; and to impart knowledge about legal agreement so that they get acquainted with the process of establishing legal relationships, to have knowledge of various measures protecting the interest of the consumers and to impart the learner's working knowledge of the provisions of the Companies Act, 2013.

Course Learning Outcomes:

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

Examine various aspects of entering into a contract and implications of different types of contract;

Interpret the regulation governing the Contract of Sale of Goods;

Describe the significant provisions of the Competition Act to prevent practices having adverse effect on competition and provisions of the Consumer Protection Act to protect the interest of the consumers;

Explain the law governing regulation and management of foreign exchange under FEMA;

Explain relevant definitions and provisions relating to issue of prospectus and allotment of shares;

Synthesize company processes, meetings, and decisions;

Describe the framework of dividend distribution, Accounts of the company and Audit and Auditors of company;

Determine the role of Board of directors and their legal position;

State regulatory aspects involved in Oppression, Mismanagement, corporate restructuring and to study the composition of Adjudicating Authority i.e., NCLT and NCLAT and its powers.

Course Content:

BUSINESS LAW

UNIT- I: Indian Contract Act, 1872:

1. Nature of contract and its essentials, Void, valid and voidable contracts, Consent, consideration and its' impact on contract, Agreements in restraint of trade, Performance, breach, revocation and termination of contract, Agency and bailment contracts, Contract of Indemnity, Contract of Guarantee and Pledge.

UNIT- II: Sale of Goods Act,1930:

Nature of sale, conditions and warranties, Performance of contract of sale and rights of unpaid seller.

UNIT-III: Competition Act, 2002 and Consumer Protection Act, 2019

Competition Act, 2002: Objectives and basic concepts, Consumer, goods, service, Prohibition of anti-competitive agreements, Prohibition of Abuse of Dominant Position;

Consumer Protection Act, 2019: Important definitions, Consumer Disputes Redressal Commission, Measures to Prevent Unfair Trade Practices, Offences and Penalties

CORPORATE LAW

UNIT-IV: Management and Administration:

Board Meetings, Annual General Meeting, Extra Ordinary General Meeting, Requisites of a valid meeting, Convening of Meetings, Minutes and Resolutions; Postal ballot; voting through electronic matters.

UNIT-V Dividends, Accounts and Audit:

Declaration and Payment of Dividend, Accounts of Companies, Maintenance and authentication of Financial Statement

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Corporate social Responsibility

Appointment of Auditor, qualification, disqualifications, rotation, removal, duties and responsibilities, Auditors report, Constitution, and functions of Audit committee.

UNIT-VI: Directors and their Powers

Board of directors, appointment, and qualifications of directors; Director Identification Number (DIN).

Disqualifications, Removal of directors; Legal positions, Powers, Duties and responsibilities; Additional Director, Alternate Director, Nominee Director, Director appointed by casual Vacancy, Key Managerial Personnel, Managing Director, Manager and Whole Time Director.

Practical Exercises:

The learners are required to:

Enlist steps involved in execution of contract.

Enlist steps involved in agreement to sale.

Enlist steps involved in discharge of contract.

Prepare agreement to sale and contract related to sale of movable property, pledging of property, indemnity & guarantee bond etc.

Enlist the various KYC documents for opening of bank account, e-wallet account, mutual fund account, bank locker, etc.

Enlist the content of the prospectus.

Prepare a hypothetical notice, resolutions, and minutes of a meeting.

Reference Books:

Bose, D. C. (2008). Business Law. New Delhi: PHI Limited.

Chopra, R. K. (2015). Business Laws. New Delhi: Himalaya Publishing House. Kuchhal, M. C., & Kuchhal, V. (2018). Business Laws. New Delhi: Vikas Publishing. Singh, A. (2009). Business Law. Delhi: Eastern Book Company

A.K. Chattoraj & Nashir Ahmed, Business Laws, Agra (U.P.), Shiksha Sagar Publisher and Distributors.

Chadha R., & Chadha, S. (2018). Company Laws. Delhi: Scholar Tech Press.

Gowar, L. C. B. (1969). Principles of Modern Company Law. London: Stevens & Sons.

Hicks, A., & Goo, S. H. (2017). Cases and Material on Company Law. Oxford: Oxford University Press. Kuchhal, M. C., & Kuchhal, A. (2020). Corporate Laws. New Delhi: Shree Mahavir Book Depot.

Kumar, A. (2019). Corporate Laws. New Delhi: Taxmann Publication. Ramaiya. (2015). A Guide to Companies Act. Nagpur: Wadhwa Book Company. Hanningan, B. (2018). Company Law. Oxford: Oxford University Press.

Sharma, J. P. (2018). An Easy Approach to Corporate Laws. New Delhi: Ane Books Pvt. Ltd.

CCVII.   MAJOR COURSE- MJ 7:
CORPORATE ACCOUNTING

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
> The course aims to help learners to acquire conceptual knowledge of corporate accounting system and to learn the techniques of preparing the financial statements of companies.

Course Learning Outcomes:
> After completion of the course, learners will be able to:
>
> Describe the rationale, merits, and demerits of issuing bonus shares for a company;
> Prepare financial statements (Profit & Loss Account, Balance Sheet, etc.) using online software;
> Prepare balance sheet after Internal Reconstruction of company;
> Analyse the case study of major amalgamations of companies in India;
> Describe the process of e-filing of annual reports of companies.

Course Content:

UNIT- I: Accounting for Share Capital & Debentures
Types of shares; Issue and Pro-rata allotment of shares; concept & process of book building; forfeiture and reissue of forfeited shares; Issue of rights and bonus shares; ESOPs and Buy Back of shares; Issue and Redemption of preference shares and Debentures.
Preparation of financial statements of corporate entities including one Person Company (excluding calculation of managerial remuneration) as per Division I and II of Schedule III of the Companies Act 2013.
Preparation of Statement of Profit and Loss, Balance Sheet, and Cash flow Statementofcorporateentitiesmanuallyandusingappropriatesoftware.

Unit II: Valuation of Intangible Assets and Shares:

Valuation of goodwill and Shares. Value Added Statement, Economic Value Added, Market Value Added, Shareholder Value Added (Simple Problem Only)

UNIT-III: Amalgamation of Companies and Internal Reconstruction:
Accounting for Amalgamation of Companies (excluding inter-company holdings) applying AS 14/Ind AS 103.
Accounting for Different forms of Internal Reconstruction (excluding drafting of Internal Reconstruction Scheme).

UNIT IV: Accounting of Holding Companies/ Parent Companies
> Preparation of consolidated balance sheet with one subsidiary company, Relevant of Accounting standatd.21(ICAI)

UNIT-V: Liquidation of Company
Meaning- Modes, Contributory Preferential Payments, Statement of Affairs, Liquidator's Remuneration, Preparation of Liquidator's Final Statements of Account (Introductory & Simple Problems)

UNIT-VI: Corporate Financial Reporting
Meaning, need and objectives; Constituents of Annual Report and how it is different from financial statements; Contents of annual report; mandatory and voluntary disclosures through annual report. Contents of the Report of the Board of Directors; E-filing of annual reports of companies and XBRL Filing with specific practical exercises.
Note: The syllabus is to be covered in reference to Relevant Accounting Standards, AS and Ind AS, as applicable. Any revision of relevant Accounting Standards/Indian Accounting Standards, which are covered above would become applicable

Practical Exercises: The learners are required to:
> Collect prospectus issued by reputed companies, examine the matters related to issues of shares.
> Examine the annual reports of business Organisations to find out whether applicable accounting standards (AS and Ind AS) are complied with or not.

Collect information from business newspapers and periodicals on amalgamation of companies and prepare a report.

Prepare financial statements using appropriate software.

Download company annual reports of reputed companies from the websites and shall analyse the voluntary and mandatory information contained in these statements.

Reference Books:

Bergeron, B. (2003). Essentials of XBRL: Financial Reporting in the 21st Century. New Jersey.

John Wiley & Sons. Dam, B. B. & Gautam, H. C. (2019). Corporate Accounting. Gayatri Publications, Guwahati. Goyal, B. K. (2019). Corporate Accounting. New Delhi: Taxmann Publication.

Goyal, V. K., & Goyal, R. (2012). Corporate Accounting. New Delhi: PHI Learning.

Jain, S. P., & Narang, K. L. (2015). Corporate Accounting. New Delhi: Kalyani Publishers.

Monga, J. R. (2019). Fundamentals of Corporate Accounting. New Delhi: Mayur Paperbacks. Maheshwari, S. N., Maheshwari, S. K., & Maheshwari,

S. K. (2018). Corporate Accounting. New Delhi: Vikas Publishing House.

Mukherjee, A., & Hanif, M. (2005). Corporate Accounting. New Delhi: Tata McGraw Hill Education.

Shukla, M. C., Grewal, T. S., & Gupta, S. C. (2016). Advanced Accounts. Vol.-II. New Delhi: S. Chand Publishing.

Sharma, Corporate Accounting, Agra (U.P.), Shiksha Sagar Publisher and Distributors.

Sehgal, A. (2011). Fundamentals of Corporate Accounting. New Delhi: Taxmann Publication. Tulsian, P. C., & Tulsian, B. (2016). Corporate Accounting. S. New Delhi: Chand Publishing.

CCVIII.   MAJOR COURSE- MJ 8:
ENTREPRENEURSHIP DEVELOPMENT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

<u>Course Objectives:</u>
The course aims to equip the learners to entrepreneurship so that they are inspired to look at entrepreneurship as a viable, lucrative, and preferred option of professional life.

<u>Course Learning Outcomes</u>:
After completion of the course, learners will be able to:
Discern distinct entrepreneurial traits;
Identify the parameters to assess opportunities and constraints for new business ideas;
Develop a business idea by adopting systematic process;
Design strategies for successful implementation of ideas;
Create a Business Plan

<u>Course Content:</u>
UNIT- I: Introduction
1. Meaning, elements, determinants and importance of entrepreneurship and creative Behaviour; Entrepreneurship and creative response to the society' problems and at work.
2. Dimensions of entrepreneurship: intrapreneurship, technopreneurship, cultural entrepreneurship, international entrepreneurship, netpreneurship, ecopreneurship, and social Entrepreneurship.

UNIT-II: Entrepreneurship in India
1. Concept of business houses and role of business houses and family business in India; The contemporary role models in Indian business: their values, business philosophy and behavioural orientations.
2. Conflict in family business and its resolution.
3. Initiatives of Government of India to promote entrepreneurship - Start Up India, Stand Up India, Make in India, etc.

UNIT-III: Entrepreneurship Ecosystem
1. Requirement, availability and access to finance, marketing assistance, technology, and industrial accommodation. 2. Role of government, Institutions, industries/entrepreneur's associations & selfhelp groups.
3. Concept, role and functions of business incubators, angel investors, venture capital, start-up finance and private equity fund.

UNIT-IV: Sources of business ideas and tests of feasibility
1. Significance of writing the business plan/ project proposal including feasibility analysis; Contents of business plan/ project proposal.
2. Designing business processes, location, layout, operation, planning & control.
3. Preparation of project report (various aspects of the project report such as size of investment, nature of product, sourcing of material, market potential may be covered); Project submission/ presentation and appraisal thereof by external agencies, such as financial/nonfinancial institutions.

UNIT-V Mobilizing Resources
Mobilizing resources for start-up. Accommodation and utilities; Preliminary contracts with the vendors, suppliers, bankers, principal customers; Contract management: Basic start-up problems.

Practical Exercises: The learners are required to:
Discuss various cases of entrepreneurship and distinguish between different entrepreneurial traits.
Analyse and interpret case study on business philosophy at Tata Group, Aditya Birla Group, Reliance Industries Limited, and similar organisations.
Analyse and present the key initiatives of Government of India for promoting entrepreneurship in the country for any one business area.
Develop a business idea and conduct a feasibility analysis of the same.
Participate in Business Plan Competition-designing a business plan proposal and identifying alternative sources of raising finance for startup.

Reference Books:

Desai, V. (2009). Dynamics of Entrepreneurial Development and Management. Mumbai: Himalaya Publishing House.

Dollinger, M. J. (2008). Entrepreneurship: Strategies and Resources. New Jersey: Prentice Hall.

Hisrich, R., Peters, M., & Shepherd, D. (2017). Entrepreneurship. New York: McGraw Hill Education.

Rao, T. V., &Kuratko, D. F. (2012). Entrepreneurship: A South Asian Perspective. Boston: Cengage Learning.

Yadav, V, & Goyal, P. (2015). User innovation and entrepreneurship: case studies from rural India. Journal of Entrepreneurship & Innovation

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SEMESTER V

MAJOR COURSE- MJ 9:
COST ACCOUNTING

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
The course aims to develop understanding among learners about contemporary cost concept and rational approach towards cost systems and cost ascertainment. The course also aims to provide knowledge about various methods of cost determination under specific situations and to acquire the ability to use information determined through cost accounting for decision making purpose.

Course Learning Outcomes:
After completion of the course, learners will be able to:
Determine various types of cost of production;
Compute unit cost and total cost of production and prepare cost statement;
Compute employee cost, employee productivity, and employee turnover;
Determine cost under job costing, batch costing, process costing,
contract costing and service costing;
Apply activity-based costing for cost determination.

Course Content:

UNIT- I: Concept and Nature of Cost Accounting
Concept of cost and costing, Importance and features of costing, Cost classification, Concept of cost unit, cost center, meaning of 'unit' from the view point of producer, Establishment of an ideal cost accounting system, Cost Reduction, Cost Control.
Installation of Costing System, Application of IT in Cost Accounting.
Preparation of Cost Sheet for manufacturing and service sector.
Material Cost - Direct and indirect material, Valuation of materials, Principles of valuation of material as per AS2/ Ind AS- 2; CAS- VI, Material control, purchases, Objectives and functions of purchase department, Inventory control: Meaning and techniques including latest techniques like Just in Time (JIT) Inventory Management, Kanban, Kaizen, Determination of Economic Order Quantity (EOQ).
Treatment of waste, scrap, spoilage, defective and obsolesce.

UNIT-II: Employee Cost and Overheads
Meaning and classification of employee cost, Requisite of a good wage and incentive system, Time and piece rate plans, Profit sharing, Employee productivity and cost. Labor cost control – techniques, Employee turnover, Remuneration and Incentive schemes (Rowan & Halsey Plan only).
Definition and classification, Production overheads – allocation and apportionment of cost, Meaning and Methods of cost absorption, Treatment of over- absorption& under absorption of overheads, Administration and selling & distribution overheads – methods of ascertainment, Treatment of Research & Development cost in Cost Accounting.

UNIT-III: Methods of Costing: Job Costing, Batch Costing and Process Costing
Meaning of Job Cost, its application and accounting, Preparation of Job cost sheet.
Meaning of Batch Cost and its application in today's industry.
Meaning and application of process costing, Methods of determination of cost in process costing, Normal and abnormal loss and gain, inter process costing and profit ascertainment.
Choice between process and job costing.

UNIT-IV: Methods of Costing: Contract Costing and Service Costing
Meaning, features and types of contracts, Methods of cost determination in contract costing, Escalation clause and cost-plus contract.

Meaning and scope of service costing, Factors in ascertaining service cost, Ascertainment of service cost of following services:

i. Transport ii. Hospital iii. Canteen iv. Toll v. Education institution vi. IT industry vii. Hotel

Any other contemporary service industry.

UNIT-V: Activity Based Costing (ABC)

Concept, significance, and salient features; Stages and flow of costs in ABC; Basic components of ABC - resource drivers and cost drivers; Application of ABC in a manufacturing organisation and service industry.

Practical Exercises: The learners are required to:

Prepare a cost statement for manufacturing and/ or service organisation.

Identify the items to be included and excluded in the cost system.

Apply different price determination methods to assess sales price.

Prepare a cost statement for different processes.

Suggest ideal cost system.

Calculate impact of material consumption, usage and wastages on total material cost.

Prepare of different format of acquisition of material and storage.

Determine total labour cost.

Suggest suitable cost system for different types of services organisation.

Analyse Research& Development cost in pharmaceutical &similar industry.

Visit industries to understand process costing, ABC concept.

Reference Books:

Banarjee, B. (2014). Cost Accounting – Theory and Practice. New Delhi: PHI Learning Pvt. Ltd.

Kishor, R. M. (2019). Taxman's Cost Accounting. New Delhi: Taxmann Publication Pvt. Ltd.

Lal, J., & Srivastava, S. (2013). Cost Accounting. New Delhi: McGraw Hill Publishing Co.

Mowen, M. M., & Hansen, D. R. (2005). Cost Management. Stanford: Thomson.

J Sonar, K A N Shah-deo & M. Kumar, Agra (U.P.), Shiksha Sagar Publisher and Distributors.

CCIX. MAJOR COURSE- MJ 10:
HUMAN RESOURCE MANAGEMENT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objective:
The course aims to acquaint the learners with the techniques and principles to manage human resources of an organisation for better performance and workplace environment

Course Learning Outcomes:
After the completion of the course, the learners will be able to:
demonstrate necessary skills to design an HR policy that improves the work environment.
analyse job requirements and prepare a Human Resource Plan;
match the skills with the job requirement and preparation of report on job analysis;
organize an onboarding programme in an organisation;
describe and apply the use of different kinds of training and development strategies in real life situations;
organize counselling sessions for employees for better psychological health;
create incentive schemes for diverse job roles to enhance satisfaction and improve retention of employees;
design HR policies for employee engagement and experience; grievance redressal,
employee health, safety, welfare, and social security, for employees to attain stress-free work life balance.

Course Content:

Unit 1: Introduction to Human Resource Management
Concept and functions; Role, status, and competencies of HR manager; HR policies; Evolution of HRM; Emerging challenges of HRM- Workplace diversity, empowerment, downsizing, VRS, work life balance.

Unit 2: Procurement of Human Resource
Human resource planning- Quantitative and qualitative dimensions; Job analysis – Job description and job specification; Recruitment – concept and sources; Selection – concept and process; Test and interview; Placement, induction and socialization; Retention of employees.

Unit 3: Upgrading Employees: Training and Development
A. Concept and significance; Role specific and competency-based training; Training and development methods – Apprenticeship, understudy, job rotation, vestibule training, case study, role playing, hands on, shadowing, e-learning, sensitivity training, In-basket, management games, conferences and seminars, coaching and mentoring, management development programs; Training process outsourcing.
B. Scope of training; On board, soft skills, technical skills, product & service, quality, antiharassment, legal.

Unit 4: Performance Appraisal and Compensation Management
Performance appraisal- Nature, objectives and process; Performance management; Methods of performance appraisal; Potential appraisal; Employee counselling; Job Transfer and promotion. Compensation - Concept and policies, Base and supplementary compensation; Individual, group and organisation incentive plans; Fringe benefits; Performance linked compensation; Employee stock option; Pay band compensation system; Job evaluation.

Unit 5: Employee Maintenance, Engagement and Emerging Horizons
Employee health and safety; Employee welfare; Social security (excluding legal provisions); Employer-employee relations; Grievance handling and redressal; Industrial disputes: Causes and settlement machinery, Stress-free environment, Rejuvenation breaks and leisure activities. Emerging Horizons; Redundant manpower, e-HRM; Human Resource Information System (HRIS); HR Audit, Emerging job opportunities, Talent management, Employee burnout, Work life balance, Work from Home.

Reference Books:
Amar kumar Chaudhary & Rakhi Gupta, Human Resource Management, Agra (U.P.), Shiksha Sagar Publisher and Distributors.
Aswathappa, K. & Dash, S. (2021). Human Resource Management-Text and cases, B Ninth Edition, Tata McGraw-Hill.
Chhabra, T. N. & Chhabra, M. (2020). Human Resource Management. Delhi: Sun India Publications.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Decenzo, D.A., & Robbins, S. P. (2009). Fundamental of Human Resource Management. New Jersey; Wiley.

Dessler G. & Varrkey B. (2020). Human Resource Management, Sixteenth Edition Pearson Paperback.

French, W. L. (2006). Human Resource Management. Boston: Houghton Mifflin.

Gupta, C. B. (2018). Human Resource Management. Delhi: Sultan Chand & Sons.

Pattanayak, B. Human Resource Management, 6th ed. PHI learning

Prasad, L.M. (2018). Human Resource Management, Delhi: Sultan Chand & Sons

Rao, V. S. P. (2020). Human Resource Management. Delhi: Second edition, Taxmann's.

Sengupta, A. (2018), Human Resource Management, Sage Textbook

Note: Learners are advised to use the latest edition of readings.

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CCX. MAJOR COURSE- MJ 11:
GOODS AND SERVICES TAX -LAW AND PRACTICES

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Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

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(Credits: Theory-04) **Theory: 60 Lectures**

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Course Objectives:

The course aims to provide understanding about salient features of GST law and implications of its various provisions for different classes of suppliers. It also aims to provide an understanding of compliances and procedures laid down in GST law.

Course Learning Outcomes:

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

Explain concept, need, and utility of indirect taxes;

Understand and analyse the taxable event, i.e., supply under GST;

Describe the provisions relating to levy of GST;

Identify exemptions for different types of goods and services;

Examine implications of input tax credit;

Explain the various procedures under GST;

Analyse provisions regarding penalties and interest; 8. Prepare and file GST return online.

Course Content:

UNIT- I: Introduction

Concept and features of Indirect Taxes, Difference between Direct and Indirect Taxes, Concept of GST, Relevant Definitions under GST law, Constitutional aspects of GST

GST Council: Constitution, Structure, and functioning.

UNIT-II: Concept of Supply under GST law and Levy on GST

Concept of supply including composite and mixed supply, Place, Time, and Value of taxable supply, Significance of consideration.

Basis of Charge of GST, Inter-State Supply, Intra-State supply, GST rates notified for supply of various goods and services, Reverse charge mechanism, Composition levy

Exemptions from GST, Power to grant exemptions, Exempted goods under exemption notifications, Exempted services under exemption notifications.

UNIT-III: Input Tax Credit under GST law

Meaning, Eligibility and Conditions for taking Input Tax Credit, Apportionment of credit and blocked credits, Availability of credit in special circumstances, Taking Input Tax credit in respect of inputs and capital goods sent for job work.

Manner of distribution of credit by Input Service Distributor, Manner of recovery of credit distributed in excess.

UNIT-IV: Registration under GST law

Threshold Limits for Registration, Persons liable for Registration, Persons not liable for Registration, Compulsory Registration in Certain Cases, Procedure for Registration, Deemed Registration, Special Provisions relating to Casual Taxable Persons and Non-resident Taxable persons, Amendment of registration, Cancellation of Registration, Revocation of Cancellation of Registration.

UNIT-V: Other Procedures under GST

Tax invoice credit and debit notes, Different GST returns, electronic liability Ledger, Electronic credit Ledger, Electronic cash ledger, Different assessments under GST, Interest applicable under GST (Period), Penalty under GST.

Various provisions regarding e-way bill in GST, Mechanism of tax deducted at source (TDS) and tax collected at source (TCS)

Audit under GST

Practical Exercise: Learners are required to:

Fill up online application for registration under GST for hypothetical firm.

Fill up online various forms of GST Returns for hypothetical firm.

Prepare e-Way bill for hypothetical firm.

Practical problems on computation of input tax under reverse charge for hypothetical firm.

Practical problems on computation of input tax credit for hypothetical firm.

Practical problems on payment of tax and interest, if any, for hypothetical firm.

Reference Books:

Ahuja, G., & Gupta, R. (2020). Direct Taxes Ready Reckoner. New Delhi: Wolters Kluwer India Private Limited. Mehrotra, H.C., & Agarwal, V. P. (2019). Goods and Services Tax GST. Uttar Pradesh: Sahitya Bawan Publications.

Singhania, V. K., & Singhania, M. (2020). Students' Guide to Income Tax Including GST. New Delhi: Taxmann Publication. Singhania, V. K., & Singhania, K. (2020). Direct Taxes: Law & Practice. New Delhi: Taxmann Publication.

The ICAI Study Material for Final Course Group-II, Paper-8: Indirect Tax Laws [Module 1, 2, and 3]

SEMESTER VI

MAJOR COURSE- MJ 12:
PRINCIPLE OF MARKETING

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objective:
The objective of this course is to provide basic knowledge of concepts, principles, tools and techniques of marketing and to provide knowledge about various developments in the marketing.

Course Learning Outcomes:
After completing the course, learners will be able to:
Develop understanding of basic concepts of marketing, marketing philosophies and environmental conditions affecting marketing decisions of a firm.
Explore the dynamics of consumer Behaviour and process of market selection through STP.
Analyse the process of value creation through marketing decisions involving product development.
Analyse the process of value creation through marketing decisions involving product pricing and its distribution.
Analyse the process of value creation through marketing decisions involving product promotion and also to equip them with the knowledge of various developments in marketing area that may govern marketing decisions of a firm.

Course Contents:

Unit 1: Introduction to Marketing and Marketing Environment
Introduction to Marketing: Scope and Importance; Core concepts of marketing; Marketing Philosophies; Services Marketing, Marketing Mix. Marketing Environment: Need for studying marketing environment; Micro environmental factors- company, suppliers, marketing intermediaries, customers, competitors, publics; Macro environmental factors demographic, economic, natural, technological, politico-legal and socio- cultural.

Unit 2: Consumer Behavior and Market Selection
Consumer Behavior: Need for studying consumer Behavior; Stages in Consumer buying decision process; Factors influencing consumer buying decisions. Market Selection: Choosing market value through STP. Market Segmentation- bases of segmenting consumer markets. Market Targeting, Product Positioning – concept and bases

Unit 3: Product Decisions and New Product Development
Product Decisions: Concept and classification; Levels of Product. Designing value: Product mix, Branding- types, significance, and qualities of good brand name; Packaging and Labeling types and functions; Product support services. New Product Development: New product development process; Product life cycle –concept and marketing strategies.

Unit 4: Pricing Decisions and Distribution Decisions
Pricing Decisions: Objectives; Factors affecting price of a product; Pricing methods; Pricing strategies. Distribution Decisions: Delivering Value: Channels of distribution- types and functions; Wholesaling and retailing; Factors affecting choice of distribution channel; Logistics decisions.

Unit 5: Promotion Decisions and Developments in Marketing
Promotion Decisions: Communicating Value: Communication process; Importance of Promotion. Promotion- mix tools advertising, personal selling, sales promotion, public relations, publicity and direct marketing; Integrated Marketing Communication. Developments in Marketing: Sustainable Marketing- concept and issues. Rural marketing- characteristics and rural marketing mix. Social marketing- concept and issues. Digital marketing- concepts and tools

Reference Books:

Baines Et AL (2021). Fundamentals of Marketing. Oxford University Press.

Etzel, M. J., Walker, B. J., Stanton, W. J., Pandit, A. (2010). Marketing. Mc Graw Hill.

Jain, P & Singhal, N. Principles of Marketing. Scholar Tech Press, Delhi.

Kapoor, N. (2021). Principles of Marketing. Prentice Hall of India.

Kotler, P., Armstrong, G., Agnihotri, P. (2018). Principles of Marketing. Pearson Education. Indian edition.

Kotler, P., Chernev, A., Keller, K. L. (2022). Marketing Management. United Kingdom: Pearson Education.

Levy, M., Grewal, D. (2022). Marketing. United States: McGraw-Hill Education.

Mamoria C.B., Bhatacahrya A., Marketing Management. Kitab Mahal, Delhi

Sharma, K., Aggarwal S. (2021). Principles of Marketing. Taxmann Publications.

CCXI. MAJOR COURSE- MJ 13:
QUANTITATIVE TECHNIQUES FOR BUSINESS DECISION

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course aims to familiarise the learners with basic mathematical tools, emphasising applications to business and economic situations.   .

Course Learning Outcomes:
After completion of the course, learners will be able to:
Analyse quantitative techniques that play an important role in managerial decision making.
Compare programming for business problems involving constrained optimization.
Examine, schedule, and coordinate the activities of a large-scale project using PERT and CPM.
Describe programming to assign sources and jobs to destinations and machines.
Examine how competitive choices in a business are made.
Examine how the business strategies are developed to reduce the customers 'wait time.
Analyse the decision-making process to replace used equipment.

Course Content:

Unit 1: Introduction of Quantitative Techniques
Overview of Quantitative Techniques and Operations Research for Decision Making, Classification of Quantitative Techniques, Scope & Importance of Operations Research, Model/Phases in Operations Research, Limitation of Operations Research or Quantitative Techniques.

Unit 2: Linear Programming
Formulation of Linear programming problems (LPPs) with more than two variables. Solution of LPPs by simplex method - maximization and minimization cases. The dual problem: Formulation, the relationship between Primal and Dual LPP, Primal and Dual solutions (excluding mixed constraints LPPs). The economic interpretation of the dual.

Unit 3: Assignment and Transportation
Assignment Problem, Hungarian Method of Assignment, Unbalanced Assignment Problems, Transportation Problem, Method to find the initial solution: North-west corner method, least cost Method, Vogel's approximation method, Finding optimal solution: Stepping-stone method and Modified Distribution Method.

Unit 4: Game Theory and Replacement theory
Introduction of Game Theory, Two-Person Zero-Sum Game, Pure Strategies (Minimax and Maximin Principles): Game with a saddle point. Mixed Strategies, Rule of Dominance. Introduction of Replacement, Replacement of items whose efficiency deteriorates with time.

Unit 5: Project Management: PERT and CPM
Introduction, Basic Difference PERT and CPM, Phases of Project Management, PERT/CPM Network Components and Precedence Relationships, Critical Path Analysis, Critical Path, Project Scheduling with uncertain activity times, Estimation of project completion time.

Unit 6: Inventory Management and Queuing Theory:
Concepts of inventory management; Inventory models – classical EOQ, EOQ with price breaks, EOQ model for production runs, planned shortage model- deciding optimum safety stock and reorder level, Probabilistic Model; Techniques of selective control.
Introduction of Queuing Model, Objects of the Queuing Theory, Elements of a Queuing System, Some Queuing Models: Fixed Arrival and Fixed Service Time, Random Arrivals, Erlang's Method in context of Queuing Models, Queuing models in case of Multiple Service station, Limitations of Queuing Theory.

Reference Books:

Anthony, M., & Biggs, N. (1996). Mathematics for Economics and Finance. Cambridge: Cambridge University Press.

Budnick, P. (1986). Applied Mathematics for Business, Economics, & Social Sciences. New York: McGraw Hill Publishing.

Dowling, E. (2011). Introduction to Mathematical Economics. New York: McGraw Hill Publishing.

Hamdy A. Taha, (2017) Operational Research, Pearson.

Kapoor, VK Operations Research: Quantitative Techniques for Management, Sultan Chand and Sons.

Levin R. I., Rubin D.S., Stinson J.P., Gardner E.S. Jr., Quantitative Approaches to Management, McGraw Hill International Editions.

Vohra, ND, & Arora, Hitesh, Quantitative Techniques in Management, McGraw Hill.

Tulsian, P.C. & Pandey, V. ―Quantitative Techniques‖ Pearson Education, India.

CCXII.   MAJOR COURSE- MJ 14:
FINANCIAL MANAGEMENT AND PRINCIPLES

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objective:
The course aims to enable students to acquire knowledge of principles and practice of financial management.

Course Learning Outcomes:
After completion of the course, learners will be able to:
- Analyse the conceptual framework of financial management and will have an insight into the concept of time value of money and risk and return.
- Analyse the capital budgeting process and demonstrate decision making abilities using different techniques of capital budgeting.
- Compute the cost of capital; critically analyse and understand different capital structure theories and factors affecting capital structure decision of a firm.
- Analyse and understand different theories of dividend and factors affecting dividend policy.
- Examine the concept of working capital and estimate working capital requirements of a firm; critically examine and decide optimum credit policy for a firm.

Course Contents:
Unit 1: Financial Management: An Overview
Nature, scope, and objectives of financial management. Financial decision making and types of financial Decisions. Role of finance manager. Stakeholders' wealth maximization. An overview of time value of money and risk and return. Risk-return framework for financial decision making.

Unit 2: Capital Budgeting Decision
Nature, significance, and kinds of capital budgeting decisions. The Capital Budgeting Process, Cash Flow Estimation, Different techniques of Capital budgeting: Payback Period Method, Discounted Payback Period Method, Accounting Rate of Return, Net Present Value (NPV), Internal Rate of Return (IRR) and Profitability Index. Capital budgeting decision under inflation.

Unit 2: Cost of Capital and Financial Decision
Cost of Capital: Estimation of components of cost of capital: Method for calculating cost of equity, Cost of retained Earnings, Cost of Debt, Cost of Preference Capital, Weighted Average Cost of Capital (WACC) and Incremental (Marginal) Cost of Capital.
Capital Structure: Theories of Capital Structure (Net Income, Net Operating Income, MM Hypothesis, Traditional Approach). Determinants of Capital Structure, Operating, Financial and Combined Leverage. EBIT-EPS Analysis.

Unit 4: Dividend Decision
Theories for relevance and irrelevance of dividend decision for corporate valuation- MM Approach, Walter 's Model, Gordon 's Model. Determinants of Dividend policy.

Unit 5: Working Capital Decision
Concepts of Working Capital, Operating & Cash Cycles, Risk-return Trade off, working capital estimation, Brief Introduction of Cash management, Receivables Management, Inventory Management, and payables management.

Unit 6: Corporate Restructuring and Contemporary Issues in Financial Management
Corporate restructuring. Mergers and Acquisitions- types, sources of takeover gains, Contemporary issues in financial management.

Reference Books:
- Brealey, Richard A, Myers Stewart C, Allen Franklin, Mohanty, Pitabas. Principles of Corporate Finance. McGraw Hills Education.
- Khan, M.Y. and Jain, P.K. Financial Management: Text and Problems. Tata McGraw Hills, New Delhi.
- Kothari, R. Financial Management: A Contemporary Approach. Sage Publications Pvt. Ltd. New Delhi.
- Maheshwari, S. N. Elements of Financial Management. Sultan Chand & Sons.

Maheshwari, S. N. Financial Management – Principles & Practice. Sultan Chand & Sons.

Pandey, I. M. (2022). Essentials of Financial Management, (5th ed.). Pearson.

Rustagi, R.P. Fundamentals of Financial Management Taxmann. New Delhi.

Sharma, S.K. and Sareen, Rachna. Fundamentals of Financial Management Sultan Chand & Sons(P) Ltd. New Delhi.

Singh, J.K. Financial Management: Theory and Practice. Galgotia Publishing House New Delhi.

Singh, Surender and Kaur, Rajeev. Fundamentals of Financial Management. SCHOLAR Tech Press. New Delhi.

Tulsian, P.C. and Tulsian, B. Financial Management, S. Chand. New Delhi.

CCXIII.   MAJOR COURSE- MJ 15:
MANAGERIAL ECONOMICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The objective of this paper is to provide basic understanding of economic concepts, principles and tools of micro economics that can be applied to business decision making. The aim is to help the students promote the development of analytical and critical thinking skills about the market conditions and ability to forecast the future economic conditions. The students are acquainted how the differences in market structure affect the prices and output.

Course Learning Outcomes:
After completion of the course, learners will be able to
Develop an understanding of the applications of managerial economics.
Interpret regression analysis and discuss why it's employed in decision-making.
Discuss optimization and utility including consumer behavior.
Assess the relationships between short-run and long-run costs.
Analyze perfectly competitive markets including substitution.
Explain uniform pricing and how it relates to price discrimination and total revenue.
Analyze a chosen company to include the above, but to further make recommendations for the company based upon the weekly topics.

Course Content:

Unit-1 Introduction
Definition, Nature and scope of Managerial Economics, Basic Economic Principles. Relationships of Managerial Economics with Other disciplines

Unit-2 Demand and Supply
Demand Function, Law of Demand, Determinants of Demand, Types & Significance of Elasticity of Demand, Measurement Techniques of Price Elasticity. Demand Forecasting and Its Techniques. Theories of Demand– Indifference and Revealed, Preference approach, Income and distribution effect. Law of supply, determinants and factors influencing supply, elasticity of supply**.**

Unit-3 Production and Cost Analysis
(a)Production Analysis: Law of Variable proportions– production function in the short run
And long run, returns to scale and Return to Factors, iso-quants, and iso-costs. CobbDoublas Production Function. Economies of Scale and Diseconomies of scale.
(b) Cost Analysis: Cost functions determination of costs, cost forecasting, short run
And long run costs. Types of costs–analysis of risk and uncertainty

Unit-4 Market Analysis
Market structure–Perfect competition, Imperfect competition, Monopoly, Price Discrimination, Monopolistic competition, Duopoly and Oligopoly. Pricing and employment Of inputs under different market conditions**.**

Unit-5 National Income, Employment, and Investment
Nature, Concept, and measurement of National Income. Classical and Keynesian approaches to income, Employment, and Investment.

Unit-6 Economic Development
Business Cycles, Phases–Management of Cyclical fluctuations.
Inflation: Types, Causes and Measurement of Inflation, Philips curve, Stagflation
Overview of NITI Aayog and GST.

Reference Books:

Atmanand, "Managerial Economics", 2009, Excel Publishing

N. Dwivedi, "Managerial Economics", 7th Ed Vikas Publishing.

D.M. Mithani, "Managerial Economics" 2008, Himalayan Publishing House.

Dominik Salvatore, "Managerial Economics", 2008, 6th Ed. Oxford University Press.

Geethika, Piyoli Ghosh, and P.R. Chaudhary "Managerial Economics", 2008, Tata McGraw Hills, New Delhi.

Mark Hirschey, Log "Managerial Economics-An Integrative Approach", Cengage Learning.

Robert Wasahik "Managerial Economics: A Strategic Approach", 2010, 2nd Ed. Routledge Publications.

Samuelson & Nordhaus, "Economics" 2010, 19th Ed., Tata McGraw Hills.

Trunett & Trunett, "Managerial Economics", 2009, 8th Ed Weiley India.

SEMESTER VII

MAJOR COURSE- MJ 16:
FINANCIAL INSTITUTIONS AND MARKETS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**
Course Objective:
The course aims to impart the core body of knowledge in international business to the students. The course would introduce students to the international trading and investment environment and create awareness about emerging issues such as outsourcing and sustainable development in the context of international business.

Course Learning Outcomes:
After completion of the course, learners will be able to:
Analyse the process of globalization and its impact on growth of international business.
Evaluate the changing dynamics of the diverse international business environment.
Analyse the theoretical dimensions of international trade as well as intervention measures adopted.
Analyse the significance of different forms of regional economic integration and the role played by various international economic organisations. Summarize the concept of the Balance of Payments statement.
Evaluate the forms of foreign direct investment and analyse benefits and costs of FDI.
Create awareness about emerging issues in international business such as outsourcing and sustainable development.

Course Contents:
Unit 1: Introduction
An introduction to financial system - components, inter-linkages between financial system and economic development, financial intermediation, indicators of financial development (World Bank); capital allocation-financial institutions vis-a-vis financial markets; evolution of Indian financial system since 1951; recent reforms and developments in Indian financial system.

Unit 2: Financial Markets - I: Money Markets
Financial markets - integration of Indian financial markets with global financial markets; money market – functions, organisations and participants; money market instruments; role of central bank in money market; role of Reserve Bank of India in Indian money market; Fixed Income Money Market and Derivative Association of India (FIMMDA).

Unit 3: Financial Markets - II: Capital Markets
Capital Markets - introduction, components, role and functions; equity market-methods of issue; debt market-concept, significance and classification; capital market instruments; raising funds from global financial markets; primary and secondary markets- concept, similarities, differences; stock exchanges in India - NSE, BSE; Stock Indices: concept and construction, Major stock indices - global (including Dow Jones and NASDAQ) and Indian (NIFTY and BSE-SENSEX); concept of DEMAT account and depositories (NSDL, CDSL); SEBI and investor protection.

Unit 4: Financial Institutions
Commercial Banking - Introduction, Classification, Role, asset liability management, non-performing assets; role of technology in banking sector; financial inclusion, recent developments in banking including restructuring, privatisation, MUDRA financing; Insurance -life and non-life insurance companies in India: public and private; Mutual Funds – introduction and their role in capital market development, types of mutual fund schemes (open ended vs close ended, equity, debt, hybrid schemes and Exchange Traded Funds (ETFs); Non-banking Financial Companies (NBFCs) – role and types; private equity, venture capital and hedge funds.

Unit 5: Financial Stability
Financial stability-importance and indicators (World Bank, IMF, RBI); understanding financial crisis - causes and policy response; global financial crisis (2008); emerging challenges to financial stability**.**

Reference Books:

Bhole L.M. and Mahakud J., Financial Institutions and Markets: Structure, Growth and Innovations (6th Edition). McGraw Hill Education, Chennai, India.

Bhole, L.M., Financial Markets and Institutions. Tata McGraw Hill Publishing Company.

Frederic S. Mishkin and Stanley G. Eakins, Financial Markets and Institutions, Prentice Hall

Goel,S. Financial Markets, Institutions and Services PHI learning

Khan, M.Y., Indian Financial System –Theory and Practice, Vikas Publishing House.

Kohn (2013). Financial Institutions and Markets. Oxford University Press.

Madura, J., Financial Markets, and Institutions. Cengage

Pathak, Bharati V., Indian Financial System: Markets, Institutions and Services, Pearson education, New Delhi, Second edition, 2008.

Saunders, Anthony & Cornett, Marcia Million (2007). Financial Markets and Institutions (3rd ed.). Tata McGraw Hill.

Sharma, G.L., & Singh, Y.P., Contemporary Issues in Finance and Taxation, Academic Foundation, Delhi.

CCXIV.   MAJOR COURSE- MJ 17:
ADVANCE STATISTICAL ANALYSIS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The objective of this paper is to equip students with some of the important statistical techniques for managerial decision making and to provide ground for learning advanced analytical tools used in research.

Course Learning Outcomes:
Upon successful completion, students will have the knowledge and skills to:
Describe the rationale behind the formulation and components of a statistical model.
Compare and contrast statistical models in the context of a particular scientific question.
Communicate statistical ideas to a diverse audience.
Formulate a statistical solution to real-data research problems.
Demonstrate an understanding of the theoretical and computational underpinnings of various statistical procedures, including common classes of statistical models.
Utilise computational skills to implement various statistical procedures.

Course Contents:

Unit I: Univariate Analysis –
An overview of Measures of Central Tendency, Dispersion and Skewness.

Unit II: Correlation and Regression Analysis:
Simple, multiple, and partial correlation analysis. Rank correlation. Simple and Multiple linear regression analysis (involving up to three variables).

Unit III: Theory of Probability and Probability Distributions:
Approaches to calculation of probability. Addition, multiplication and Conditional probabilities, Bayes' theorem. Mathematical expectation. Binomial, Poisson, Hypergeometric, and Normal Distribution.

Unit IV: Sampling Theory and Test of Significance
Sampling concepts. methods of sampling. Concept of sampling distribution, Its expected value and standard error, Utility of the Concept of Standard Error, Sampling distribution of means and Central Limit Theorem. Test of Significance for Attributes, Tests of Significance for Large Sample, Test of Significance for Small Samples, Student's Distribution

Unit V: Analysis of Variance
Introduction, Assumption, Uses and Technique of Analysis of Variance. F-test of equality of variances. Overview of Chi-square. Chi-square of Goodness of fit, Chi-Square test for Independence, Chi-Square as a test of homogeneity, Limitation in the use of Chi- Square test

Reference Books:
Levin, R.I. and D.S. Rubin, Statistics for Management, Prentice-Hall of India.
Aczel, Amir D., and Sounderpandian, J., Complete Business Statistics, Tata McGraw Hill Publishing.
3. Anderson, Sweeny and Williams, Statistics for Business and Economics, CENGAGE Learning, New Delhi
Kazmeir Leonard J., Business Statistics, Tata McGraw Hill Publishing Company, New Delhi
Vohra, N. D., Business Statistics, Tata McGraw Hill Publishing Company, New Delhi
Mrityunjay Kumar, Advance Statistical Analysis, Agra (U.P.), Shiksha Sagar Publisher and Distributors.
Freund, J. E. And F. J. Williams, Elementary Business Statistics – The Modern Approach, Prentice Hall of India Private Ltd., New Delhi.

CCXV.   MAJOR COURSE- MJ 18:
MANAGERIAL ACCOUNTING

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
The course aims to impart the learners, knowledge about the use of financial, cost and other data/information for the purpose of managerial planning, control and decision making.

Course Learning Outcomes:
After completing the course learners will be able to
Describe the concept of management accounting;
Prepare various budgets and to measure the performance of the business firm applying
budgetary control measures;
Compute standard costs and analyse production cost preparing variance report;
Analyse cost, volume and profit and to solve short run decision making problems applying marginal costing and Break-Even technique;
Use spreadsheets and Expert System for managerial decision making;
Analyse the role of ERP in Business Decision Making.

Course Content:

UNIT- I: Introduction
Meaning, Objectives, and Scope of management accounting; Difference between financial accounting, cost accounting and management accounting.
Cost control and Cost reduction; Cost management; Cost concepts used in managerial decision making.

UNIT-II: Budget and Budgetary Control
Concept of budget; different types of budgets; budgeting and budgetary control; meaning, objectives, merits, and limitations of budgetary control.
Budget administration; Functional budgets including cash budget; Fixed and flexible budgets: meaning and preparation; Zero-based budgeting; Performance budgeting, difference between performance & traditional budgeting.

UNIT III: Standard Costing
Meaning of standard cost and standard costing; Difference between budgeted cost and standard cost; advantages, limitations and applications of standard costing.
Meaning of Variance and Variance Analysis – material, labour, overheads and sales variances. Disposition of Variances, Control Ratios.

UNIT IV: Marginal Costing
Meaning of Variable Costing, Absorption Costing and Marginal Costing; uses of Marginal costing; Cost-Volume-Profit Analysis, Profit/Volume ratio.
Break-even analysis - algebraic and graphic methods. Angle of incidence and margin of safety.
Meaning and importance of Limiting/Key factor in budgeting; Decision making based on Marginal Cost Analysis - 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 V: Software Based Managerial Decision Making
Managerial Decision-making using spreadsheets and Expert System for Management Accountants; Concept of Enterprise Resource Planning (ERP) and its role in Business Decision Making.

Practical Exercise: The learners are required to:
Prepare monthly cash budget, expense budget, activity budget, for a small retail shop, club, student association, college and also purchase/production/sales budget for a small factory. They shall also prepare time budget for specific job or function.
Compute Break Even Sales for small shops like Grocery (kirana) store, pharmacy, etc. by finding out monthly sales volume, variable expenses and fixed expenses.

Based on the Break-Even Sales, a report shall be prepared and submitted to the proprietor suggesting possible improvement in the performance.

Apply standard costing in factories/industries available in the locality.

Analyse and interpret case studies on unit 4.

Reference Books:

Horngren, C. T., Sundem, G. L., Stratton, W. O., Burgstahler, D., &Schatzberg, J. (2005). Introduction to Management Accounting. New Jersey: Pearson Prentice Hall.

Atkinson, A. A., Kaplan, R. S., Matsumura, E. M., & Young, S. M. (2013). Management Accounting Information for Decision-Making and Strategy Execution. London: Pearson Education.

Hilton, R. W., & Platt, D. E. (2011). Managerial Accounting: Creating Value in a Global Business Environment. New York: McGraw Hill Education.

Goel, R. (2013). Management Accounting. Delhi: International Book House Pvt. Ltd.

Arora, M. N. (2014). Management Accounting. New Delhi: Himalaya Publishing House Pvt. Ltd.

Maheshwari, S. N., & Mittal, S. N. (2017). Management Accounting-Principles & Practice. New Delhi: Mahavir Publications.

Singh, S. K., & Gupta, L. (2010). Management Accounting–Theory and Practice. New Delhi: Pinnacle Publishing House.

Khan, M. Y., & Jain, P. K. (2017). Management Accounting: Text, Problems and Cases. New Delhi: Tata McGraw Hill Education.

Balakrishnan, N., Render, B., & Stair, J. R. M. (2012). Managerial Decision Modelling with Spreadsheet. London: Pearson Education.

J. Sonar & M. Kumar, Managerial Accounting, Agra (U.P.), Shiksha Sagar Publisher and Distributors.

George E. M. (2000). Management Decision Making: Spreadsheet Modelling, Analysis, and Application, Cambridge: Cambridge University Press.

Study Material of CA Course (New) Intermediate Level Paper 3: Cost and Management Accounting.

CCXVI.   MAJOR COURSE- MJ 19:
INTERNATIONAL BUSINESS AND TRADE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objective:
The course aims to impart the core body of knowledge in international business to the students. The course would introduce students to the international trading and investment environment and also create awareness about emerging issues such as outsourcing and sustainable development in the context of international business.

Course Learning Outcomes:
After completion of the course, learners will be able to:
Analyse the process of globalization and its impact on growth of international business.
Evaluate the changing dynamics of the diverse international business environment.
Analyse the theoretical dimensions of international trade as well as intervention measures adopted.
Analyse the significance of different forms of regional economic integration and the role played by various international economic organizations. Evaluate the forms of foreign direct investment and analyse benefits and costs of FDI.
Create awareness about emerging issues in international business such as outsourcing and sustainable development.

Course Contents:
Unit 1: Introduction to International Business
Globalization - concept, significance and impact on international business; international business contrasted with domestic business; complexities of international business; internationalization stages and orientations; modes of entry into international businesses.

Unit 2: International Business Environment
Role of political and legal systems in international business; cultural environment of international business; implications of economic environment for international business.

Unit 3: International Trade
Theories of International Trade – Theory of Absolute Advantage Theory, Theory of Comparative Advantage, Factory Proportions theory and Leontief paradox, Product Life Cycle theory, Theory of National Competitive Advantage; Instruments of trade control.

Unit 4: Regional Economic Integration and International Economic Organizations.
Forms of regional economic integration; Integration efforts amongst countries in Europe, North America, and Asia: EU, USMCA, and SAARC; Cost and benefits of regional economic integration. International Economic Organisations: WTO- functions, structure and scope; World Bank and IMF.

Unit 5: International finance and contemporary issues in IB
Types of FDI - Greenfield investment, Mergers & Acquisition, strategic alliances; benefits and drawbacks of FDI. Overview of Exchange Rate systems. Contemporary issues in international business: Outsourcing and its potential for India; international business and sustainable development**.**

Reference Books:
Bennett, R. International Business, Delhi: Pearson.
Cavusgil, S. T., Knight, G. & Riesenberger. International Business: Strategy, Management and the New Realities. Pearson India.
Prema Kumari & Bhattacharya, International Business and Trade, Agra (U.P.), Shiksha Sagar Publisher and Distributors.
Charles, W L Hill & Jain, A. K. International Business, New Delhi: Tata McGraw Hill.
Chaturvedi, D.D., Jindal, D. & Kaur, R. International Business. Scholar Tech Press, Delhi.
Cherunilam,F. International Business: Text and Cases, 6th ed. PHI learning
Daniels, J. D., Radenbaugh, L. H. & Sullivan, D. P. International Business, Pearson Education.
Griffin, R. W & Pustay, M. W. International Business - A Managerial Perspective. Prentice Hall.
Joshi RM, (2009). International Business. Oxford University Press
Menipaz, E., Menipaz A. and Tripathi S.S. International Business: Theory and Practice. New Delhi. Sage Publications India Pvt. Ltd.

SEMESTER VIII

MAJOR COURSE- MJ 20:
BUSINESS ENVIRONMENT

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objective –
The course is aimed at acquainting the students with the nature and dimensions of the evolving environment in India which influence managerial decisions.

Course Learning Outcomes:
After successful completion of the course, the student will be able to
Identify and evaluate the complexities of business environment and their impact on the business.
Analyze the relationships between Government and business and understand the political, economic, legal and social policies of the country.
Analyze current economic conditions in developing emerging markets, and evaluate present and future opportunities.
Gain knowledge about the operation of different institutions in international business environment

Course Contents:

Unit - I: - INTRODUCTION
Nature and significance of environmental analysis for business decisions, Dimensions of Business Environment: Economics, Technological, Socio-cultural, Political, Legal-Regulatory and market Conditions.

Unit - II - Economic Environment:
Economic Policy - An Overview Changes in Government policies since 1991. Impact of liberalization, globalization, and structural reforms, Import policy and its domestic and international implications.

Unit – III - Technological Environment:
Dynamics of technological environment; Challenge of technology upgradation, Impact of foreign investment and foreign collaboration.

Unit – IV - Socio-Cultural Environment:
Demographic profile. Class structure and mobility. Rural- urban convergence. Changes in consumption habits and life styles. Social responsibilities of business.

Unit-V-New Industrial Policy, Fiscal Policy, and Monetary Policy
Meaning, Features and Objectives of New Industrial Policy. Introduction, Objectives, Instruments, and types of Fiscal Policy. Monetary Policy-Objectives, Tools, and Types of Monetary Policies.

Unit-VI Corporate Governance and Business Ethics
Overview of Corporate governance, Importance, Issues and Obligation. Concept of Business Ethics and CSR. Theories and importance of Corporate Social Responsibility of Business Ethics

Reference Books:
Cherunilam, Francis, Business Environment, Himalaya Pub. House, 1996.
Ghosh, P.K.Business and Government, 1998 Sultan Chand, Delhi.
Devis, Keith, and Blomstrom, Robert L, Business and Society: Environment and Responsibility, 1975.
Ghosh, P.K. and Kapoor, G.K.Business Policy and Environment, 1998, Sultan Chand, Delhi.
Adhikary, M. Economics Environment of Business (latest ed.), Sultan Chand, Delhi.
Jalan, B., India's Economic Crises, 1991. Oxford Univ. Press, New Delhi.
Dhingra, I.C., The Indian Economy: Environment and Policy, 1998, Sultan Chand, Delhi.

CCXVII.   ADVANCED MAJOR COURSE- AMJ 1:
FINANCIAL TECHNOLOGY AND ANALYTICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course aims to impart the knowledge of financial technology revolution, and the disruption, innovation, and opportunity therein. The course also aims to impart necessary skills to the learners which enable them to understand and analyse how advances and changes in technology can be harnessed and adopted to create new business paradigms for the financial industry.

Course Learning Outcomes:
At the end of the course, the students will be oriented towards appreciating the link between demography and development of an economy. He will understand the subject with the help various theoretical aspects of demography. He will have a grasp of quantitative and qualitative aspects of population study and various demographic concepts and indices.

Course Content:
UNIT- I: Introduction
   Evolution of technology in Financial Markets; FinTech for Entrepreneurs, Investors, Consumers; FinTech and the Transformation in Financial Services.
   The domains of FinTech; Fin Tech investments; FinTech Technologies; Business Models in Fin Tech. FinTech and Startups.

UNIT-II: FinTech Business Applications
   Lending and Personal Finance; FinTech and the Online Lending Landscape - Rise of alternate finance, future of SME lending.
   Funding Ecosystem; Crowd-funding and business financing; payments and retail transactions.
   Digitization of Financial Services (Retail Banking & Corporate Banking).

UNIT-III: Digital Payments, Cryptocurrencies, and Blockchain
   Digital Payments & Innovations; Cashless society; Developing Countries and DFS: The Story of Mobile Money; RTGS systems.
   Crypto-currencies and Blockchain – Understanding of Blockchain technology, its potential and application –overview of crypto currency, Legal and Regulatory Implications of Cryptocurrencies.

UNIT-IV: Tech in India
   FinTech in India: Opportunities and challenges; Role of FinTech in Financial Inclusion and Financial Integration; FinTech & Government Regulations.
   Implications of FinTech Developments for Banks and Bank Supervision.
   Social Implications of FinTech Transformation. Case studies on Airtel Payments Banks, ATOM, BHIM, BillDesk, Pay U, Zeta, PhonePe.

UNIT-V: Analytics
   Artificial Intelligence and Machine Learning applications in Accounts and Finance; Understanding the technology enabling FinTech - and what constitutes a FinTech application.
   Future of AI in Robo-Advice; RPA (Overview of Robotic Process Automation) Issues of privacy management in the financial services environment.
   Data Analytics in Financial Services; Data Security, its overview.
   Cyber security – Overview of cybersecurity; industry's best practices and standards.

Practical Exercises: The learners are required to:
   Identify a FinTech startup, analyse, and present a report on its business model.
   Analyse and prepare a report on the functioning of online crowdfunding platforms in India
   Identify a FinTech involved in SME lending business and analyse how they are contributing to restructuring the SME lending landscape.
   Analyse and prepare a report on the role of Digital India Project in building a Cashless society and evaluate its achievements

Prepare a case study on growth of FinTech in India and China over a period of the last five years.

Participate in simulation activity in class wherein learners are divided into groups. Each group has to present itself as a FinTech dealing in Robo- Advisory investment services and present their business plan.

Analyse and interpret case study on Robo -Advisor at Accenture.

Prepare a report on:

Increase in Mobile Banking Payments

Increase in FinTech deals in Indian Startups.

Reference Books:

Akkizidis, I., & Stagars, M. (2015). Marketplace Lending, Financial Analysis, and the Future of Credit. New Jersey: Wiley.

Chishti, S., & Barberis, J. (2016). The Financial Technology Handbook for Investors, Entrepreneurs and Visionaries. New Jersey: Wiley. Chishti, S., Craddock, T., Courtneidge, R., & Zachariadis, M. (2020). The PayTech Book. New Jersey: Wiley.

Diamandis, P. H., & Kotler, S. (2020). The Future Is Faster Than You Think: How Converging Technologies Are Disrupting Business, Industries, and Our Lives. New York: Simon & Schuster. Hill, J. (2018). FinTech and the Remaking of Financial Institutions. London: Academic Press, Elsevier.

CCXVIII.   ADVANCED MAJOR COURSE- AMJ 2:
ARTIFICIAL INTELLIGENCE FOR BUSINESS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:

This course aims to equip the learners with the basic ideas and techniques underlying the usage of Artificial Intelligence in Business. The course illustrates both the potential and current limitations of these techniques with examples from a variety of applications.

Course Learning Outcomes:

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

1   Identify how the AI is being leveraged by start-ups as a success tool;

Analyse and interpret the applicability of AI in HR functions;

Explain how algorithms is changing the board room landscape;

Discuss the customer services provided by various banks using AI;

Demonstrate the role of AI in transforming the retail sector;

Develop case study on the success story of AI driven business processes.

Course Content:

UNIT- I: Introduction

Artificial Intelligence: Concept, benefits, and scope. Differences between AI, Machine Learning (ML) and Deep Learning (DL) - AI applications, capabilities and competitive advantage; Industry drivers. AI strategy for the enterprise - Considerations for an AI strategy, AI & Startups. Internet of Things (IoT), Introduction to mobile computing and Cloud computing.

UNIT-II: AI Led Strategic Interventions

Algorithm: New member in the boardroom, Accelerated decision making with real time analytics, AI in operational models in an organisation.
AI: future of AI in HR, Talent sciences, Algorithms & Talent Acquisitions (TA), AI & transformation in Finance & Accounting.
CFO of tomorrow, Changing role of Chief Information Officer (CIO): Industry 4.0.

UNIT- III: AI in Banking & Insurance

Redefined banking industry – adoption of Analytics, AI powered financial services, Fraud mitigation in banks with AI, Reorienting customer retention, Risk management with AI.
AI driven transformation in Insurance, Digital based insurance model.

UNIT- IV AI in Retail

AI interventions in Retail Outlets. Emergence of smart customers, ad content predictions, Evolution of smart retailers, Omni channel experience, AI in consumer packaged goods, Fluid supply chain transformation with AI.
AI-Led marketing transformations, Data to Clusters - Ad content prediction - AI based Ad buy and CPC optimization, AI driven campaign management.
AI for Sales: Data to Classes - Insides Sales Rep workflow automation - Improved Lead, Opportunity Ranking and Reminder.

UNIT- V: Exponential Technologies

Beating cyber-attacks with Analytics, AI in automotive industry: driverless cars and drones, IoT Analytics: extracting value and transforming business, Real time streaming analytics.
Cryptocurrency Analytics, AI for customer service-data to scores, AI for Portfolio Management, Chatbots, Call center rep automation.

Practical Exercises: Learners are required to:

Identify a startup using AI and prepare a report on how it is leveraging AI for its business processes.
Analyse, interpret, and present key learnings of case study titled Making the business case for AI in HR
(Altemeyer, 2019)

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Participate in a simulation exercise of a boardroom meeting with a robot.
Identify a bank providing AI powered services and prepare a report on the facilities available for the customers through AI.
The learners are divided into groups and each group to represent a retail brand. With the use of AI, the group has to showcase how it has brought transformation in the business and customer experience.
Identify the success stories (at least five) of AI driven businesses (different sectors) across the globe and prepare a case study on the basis of your analysis of the same.

Reference Books:

Russell, S. J., & Norvig, P. (2019). Artificial Intelligence: A Modern Approach, 3rd Edition. New Jersey: Prentice Hall. Akerkar, R. (2018). Artificial Intelligence for Business. Basingstoke: Springer Nature
Dhanrajani, S. (2018). AI & Analytics: Accelerating Business Decisions. New Jersey: Wiley. Altemeyer, B. (2019). Making the business case for AI in HR: two case studies. Strategic HR Review, 18(2), 66-70.

CCXIX.   ADVANCED MAJOR COURSE- AMJ 3:
BUSINESS DATA ANALYTICS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04) **Theory: 60 Lectures**

Course Objectives:
The course aims to introduce the learners with the business intelligence and analytics, which include the use of data, statistical and quantitative analysis, exploratory and predictive models.

Course Learning Outcomes:
After completion of the course, learners will be able to:
1 Demonstrate skills for computation and aggregation of data using MS Excel;
Present data with the help of charts pivot tables;
Create Linear Regression Models using Excel and interpret the results;
Analyse data using R Studio Package and interpret the results;
Apply Textual data using Python and interpret the results.

Course Content:

UNIT- I: Introduction
Data & Data Science; Data analytics and data Conclusion using MS-Excel, Classification of Analytics, Introduction of Big Data, 5V of Big data, Big data as Solution in current business.
Traditional Business intelligence versus Big data technology, Challenges for big data analytics; Data driven decision making.

UNIT-II: Analytical Tools
Descriptive Statistics and Inferential Statistics; Advanced Analytical Techniques; Data Cleansing & Preparation; Data Summarization and Visualization.
Machine learning Algorithms. Describing data using charts and basic statistical measures. Correlation.

UNIT-III: Predictive Analytics
Simple Linear Regression; Coefficient of Determination; Residual Analysis; Confidence & Prediction intervals.
Multiple Linear Regression; Interpretation of Regression Coefficients; heteroscedasticity; multi-collinearity.

UNIT-IV: Getting started with R
Introduction to R and R Studio

UNIT-V: Textual Data Analysis
Basics of textual data analysis, significance, application, and challenges. Methods and Techniques of textual analysis: Text Mining, Categorization, Entity Extraction, Sentiment Analysis, Deep Linguistics.
Introduction to Textual Analysis using Python.

Practical Exercises: The learners are required to:
Showcase their understanding of basics of excel: Organizing data with Excel - Performing simple computations and aggregations using Excel - Working with Summing and other Reporting functions in Excel - Working with pivot tables and charts - Using Excel for Data Analytics: Power Query - Power Pivot - Power view - Power Map - Building tips - Display tips - Keyboard shortcuts – Mouse shortcuts - Standardized layouts - Understanding table based and spreadsheet-based layouts.
Showcase their understanding of data cleansing techniques using External Data - Searching and Combining Data with Power Query: Getting started with Power Query - Know the Environment tabs and toolbars - Access new or existing reports - Importing and combining data from databases, web, files - Splitting and aggregating data - Discovering and Analyzing Data with Power Pivot: Database concepts - Loading Data into Power Pivot - Using Power Query and Power map add-ins - Designing Pivot Table reports - Filtering data - Creating Custom functions and formulas - Formatting Pivot Tables - Managing Power Pivot Data - Setting Connection properties - Managing Data sources - Configuring Pivot Table Options, Preparation of Histograms - Pareto charts – Boxplots - Tree map

and Sunburst charts

Create Linear Regression Models using Excel; Interpretation of results. Applying tests for heteroscedasticity and multi-collinearity.

Read datasets into R - Export data from R - Manipulate and Process Data in R - Use functions and packages in R - Demonstrate with a Case Study to perform basic analytics using R.

Use Python for analyzing textual data; Data loading into Python; Pre-processing and Text Cleanup; Generating a TF-IDF (Term Frequency Inverse Document Frequency) Matrix; Data Clustering; Visualization & Reporting.

Reference Books:

Alexander, M., Decker, J., & Wehbe, B. (2014). Microsoft Business Intelligence Tools for Excel Analysis. New Jersey: Wiley.

Kumar, D. U. (2017). Business Analytics: The Science of Data Driven Decision Making. N. Jersey: Wiley.

McKee, A. (2003). Textual Analysis: A Beginner's Guide. London: Sage Publication.

Motwani, B. (2019). Data Analytics with R. New Jersey: Wiley.

North, M. (2012). Data Mining for the masses. Athens, Georgia: Global Text Project.

Paul, T. (2011). R Cook book. New York: O Reilly Media'.

Provost, F., & Fawcett, T. (2013). Data Science for Business. New York: O'Reilly Media.

COURSES OF STUDY FOR FYUGP IN **"COMMERCE" MINOR**

MINOR COURSE-1A   **(SEM-I)**

MINOR COURSE- MN 1A:
INTRODUCTORY COMMERCE

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	**Pass Marks: Th (SIE + ESE) = 40**

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
To acquaint the learners from non-commerce streams about the basics of Business and management with the emerging trends in business and to enable them to apply these learning in starting a business, building careers and managing their personal finances.

Course Learning Outcomes:
After completion of the course the learners will be able to:
    Distinguish and explain the various forms of business;
    Explain the functions of Management of any business organisation;
    Analyse the managerial skills required to manage a business entity
    Assess the importance of the emerging trends in business
    Create a business model based on locally available resources

Course Content:

UNIT- I: Basics of Business
    Business- concept, definition, objectives, functions, characteristics. Concept of utility creation, importance, social responsibility of business and ethical conduct.
    Concept of industry, trade and commerce- types, auxiliaries to trade-types
    Organisation- meaning, importance, formal and informal organizations
    Types of business organizations- Concepts and basics of Sole proprietorship, partnership, undivided Hindu family business, Cooperative societies and Joint Stock Company

UNIT-II: Management
    Concept, definitions, need, importance. Theories of Management: Scientific management, Fayol's 14 principles of management, Human Relations approach, Behavioral approach, systems approach, contingency approach, MBO.
    Basic Managerial functions: Planning- concept and importance, different types of plans, Organizing-span of management, types of authority-line, staff and functional, formal and informal organisation, delegation of authority.
    Staffing: Concept of staffing - Recruitment and Selection; Orientation; Training and Development; Career Development; Performance Appraisal. Coordinating-meaning and importance
    Communication: Concept, purpose, process; Oral and written communication; Formal and informal communication networks, Barriers to communication, Overcoming barriers to communication. Emerging trends in communication.,
    Controlling: Concept, Process, Limitations, Principles of Effective Control
    Motivating: Theories of motivation, Maslow's hierarchy of needs, Herzberg's two factor theory and Vroom's Expectancy theory
    Leading: Concept and importance, qualities of an effective leader and leadership styles

UNIT-III: Business Environment and Emerging Trends
    Business Environment: Internal and external environment, forces of external environment, impact of changes in external environment.
    3Emerging trends in business: E-commerce, Network marketing, digital marketing, Business process outsourcing, Knowledge process outsourcing, green marketing, digital markets, Digital economy.

Practical Exercises:

The learners are required to:

Complete the exercise wherein they are given different situations and scenarios to start their own business (in terms of capital, liability, scale of operations, etc.) and are asked to select the most suitable form of business and justify the same highlighting the advantages and disadvantages of their choice.

Participate in role play activity for describing the various levels of Management and the ways the 14 Principles of Management are used in defining the policies of the chosen organisation.

Participate in simulation activity wherein each learner is asked to prepare plans with respect to increasing the effectiveness in their respective organisation.

Participate in simulation activity wherein learners are asked to draft roles and responsibilities of members in the chosen organisation.

Identify and create a business model based on the local resources

Reference Books:

Basu, C. R. (1998). Business Organization and Management. N. Delhi: McGraw Hill Publishing India.

Chhabra, T. N. (2011). Business Organization and Management. New Delhi: Sun India Publications.

Gupta, C. B. (2011). Modern Business Organization. New Delhi: Mayur Paperbacks.

Kaul, V. K. (2012). Business Organization and Management, Text and Cases. N. Delhi: Pearson Edu.

Koontz. H., & Weihrich. H. (2012). Essentials of Management: An International and Leadership Perspective. New York: McGraw Hill Education.

Robbins, S. P., Bhattacharyya, S., DeCenzo, D. A., & Agarwal, M. N. (2011). Essentials of Management. London: Pearson Education.

Terry, G. R. (2010). Principles of Management. Homewood, California: Richard D. Irwin Inc.

Singh, B. P., & Singh, A. K. (2002). Essentials of Management. New Delhi: Excel Books.

Soundaian, S. (2019). Principles of Management. Chennai: MJP Publishers

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MINOR COURSE-1B   **(SEM-III)**

MINOR COURSE- MN 1B:
FINANCIAL LITERACY

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course aims to offer an integrated approach to understand the concepts and applications of financial planning.

Course Learning Outcomes:
After completion of the course, learners will be able to:
Describe the importance of financial literacy and list out the institutions providing financial services;
Prepare financial plan and budget and manage personal finances;
Open, avail, and manage/operate services offered by banks;
Open, avail, and manage/operate services offered by post offices;
Plan for life insurance and property insurance;
Select instrument for investment in shares.

Course Content:
UNIT- I: Introduction
Meaning, importance and scope of financial literacy; Prerequisites of Financial Literacy – level of education, numerical and communication ability.
Various financial institutions – banks, insurance companies, Post Offices; Mobile App based services. Need of availing of financial services from banks, insurance companies and postal services.

UNIT-II: Financial Planning and Budgeting
Concept of economic wants and means for satisfying these needs; Balancing between economic wants and resources.
Meaning, importance and need for financial planning; Personal Budget, Family Budget, Business Budget and National Budget; Procedure for financial planning and preparing budget; Budget surplus and Budget deficit, avenues for savings from surplus, sources for meeting deficit.

UNIT-III: Banking Services
Types of banks; Banking products and services – Various services offered by banks; Types of bank deposit accounts – Savings Bank Account, Term Deposit, Current Account, Recurring Deposit, PPF, NSC etc.; Formalities to open various types of bank accounts, PAN Card, Address proof, KYC norm.
Various types of loans – short term, medium term, long term, micro finance, agricultural etc. and related interest rates offered by various nationalized banks and post office.
Cashless banking, e-banking, Check Counterfeit Currency; CIBIL, ATM, Debit and Credit Card, and APP based Payment system; Banking complaints and Ombudsman.

UNIT-IV: Financial Services from Post Office
Post office Savings Schemes: Savings Bank, Recurring Deposit, Term Deposit, Monthly Income Scheme, Kishan Vikas Patra, NSC, PPF, Senior Citizen Savings Scheme (SCSS), Sukanya Samriddhi Yojana/Account (SSY/SSA); India Post Payments Bank (IPPB).
Money Transfer: Money Order, E-Money order. Instant Money Order, collaboration with the Western Union Financial Services; MO Videsh, International Money Transfer Service, Electronic Clearance Services (ECS), Money gram International Money Transfer, Indian Postal Order (IPO).

UNIT-V: Protection and Investment Related Financial Services
Insurance Services: Life Insurance Policies: Life Insurance, Term Life Insurance, Endowment Policies, Pension Policies, ULIP, Health Insurance and its Plans, Comparison of policies offered by various life insurance companies.
Property Insurance: Policies offered by various general insurance companies.
Post office life Insurance Schemes: Postal Life Insurance and Rural Postal Life Insurance (PLI/RPLI).

Housing Loans: Institutions providing housing loans, Loans under Pradhanmantri Awas Yojana – Rural and Urban.

Investment avenues in Equity and Debt Instruments: Portfolio Management: Meaning and importance; Share Market and Debt Market, Sensex and its significance; Investment in Shares – selection procedure for investment in shares; Risk element; Investment Management -Services from brokers and Institutions, and self-management; Mutual Fund.

Practical Exercises: The learners are required to:

Visit banks, post offices, and insurance companies to collect information and required documents related to the services offered by these institutions and to know the procedure of availing of these services.

Fill up the forms to open accounts and to avail loans and shall attach photocopies of necessary documents.

Prepare personal and family budget for one/six/ twelve month on imaginary figures.

Reference Books:

Avadhani, V. A. (2019). Investment Management. Mumbai: Himalaya Publishing House Pvt. Ltd.

Chandra, P. (2012). Investment Game: How to Win. New Delhi: Tata McGraw Hill Education.

Kothari, R. (2010). Financial Services in India-Concept and Application. New Delhi: Sage Publications India Pvt. Ltd.

Milling, B. E. (2003). The Basics of Finance: Financial Tools for Non-Financial Managers. Indiana: Universe Company.

Mittra, S., Rai, S. K., Sahu, A. P., & Starn, H. J. (2015). Financial Planning. New Delhi: Sage Publications India Pvt. Ltd.

Zokaityte, A. (2017). Financial Literacy Education. London: Palgrave Macmillan.

MINOR COURSE-1C   **(SEM-V)**

MINOR COURSE- MN 1C:
STOCK MARKET OPERATIONS

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

<u>Course Objectives:</u>
The course aims to impart basic knowledge about the structure and functioning of the stock market in India and to learn trading on the stock exchange.

<u>Course Learning Outcomes:</u>
After completion of the course, learners will be able to:
Explain the basic concept of securities market; Practice trading on stock market; Analyse the legal framework of securities market; Explain different segment of Stock Exchange; Perform demat trading.

<u>Course Content:</u>
UNIT- I Introduction
Concept and types of Securities; Concept of return; Concept, types and measurement of risk.
Development of Securities market in India.

UNIT-II Primary Market
Concept, Functions and Importance; Functions of New Issue Market (IPO, FPO & OFS).
Methods of Floatation- fix price method and book building method; Pricing of Issues; Offer Documents.
Appointment and Role of Merchant Bankers, Underwriters, Lead Managers, Syndicate Members, Brokers, Registrars, Bankers, ASBA; SME IPOs and Listing of Securities.

UNIT-III Secondary Market
Concept; Functions and Importance; Mechanics of Stock Market Trading-Different Types of Orders, Screen Based Trading, Internet-Based Trading and Settlement Procedure.
Types of Brokers.

UNIT-IV Regulatory Framework
SEBI (Issue of Capital and Disclosure Requirements) Regulation 2018.
Stock Exchanges and Intermediaries; SEBI and Investor Protection; Securities Contract Regulation Act and SEBI (Listing Obligations and Disclosure Requirements) Regulation 2015.

UNIT-V Demat Trading
Concept and Significance; Role of Depositories and Custodian of Securities in Demat Trading.
SEBI Guidelines and other Regulations Relating to Demat Trading; Procedure of Demat Trading.

Practical Exercises: The learners are required to:
Prepare the steps involved in pre and post management of hypothetical case of IPO/FPO.
Make a comparative analysis of IPOs to identify parameters of success and causes of failure.
Expose themselves to trading screen of National Stock Exchange (www.nseindia.com) and demonstrate:
(i) Procedure of placing buying /selling order.   (ii) Trading Workstation Station (TWS) of spot market and financial derivative markets (Futures and Options).
Learn demat trading and investment with the help of relevant software (Working on Virtual trading platform).

Reference Books:
Gordon, E., & Natarajan, K. (2019). Financial Markets and Services. New Delhi: Himalaya Publishing House.
Benjamin, G. (1949). The Intelligent Investor. New York: Harper Publishing.
Dalton, J. M. (2001). How The Stock Market Works? New York: Prentice Hall Press.
Machiraju, H. R. (2019). Merchant Banking. New Delhi: New Age Publishers.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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MINOR COURSE-1D   (SEM-VII)

MINOR COURSE- MN 1D:
DIGITAL MARKETING

Marks: 25 (5 Attd. + 20 SIE: 1Hr) + 75 (ESE: 3Hrs) = 100	Pass Marks: Th (SIE + ESE) = 40

(Credits: Theory-04)   **Theory: 60 Lectures**

Course Objectives:
The course aims to provide knowledge about the concepts, tools, techniques, and relevance of digital marketing in the present changing scenario. It also enables the learners to learn the application of digital marketing tools and acquaint about the ethical and legal aspects involved therein.

Course Learning Outcomes:
After completion of the course, learners will be able to:
Identify and assess the impact of digital technology in transforming the business environment and also the customer journey;
Explain the way marketers think, conceptualize, test continuously to optimize their product search on digital platforms; Illustrate the measurement of effectiveness of a digital marketing campaign;
Introduction of AI in Digital Marketing;
Demonstrate their skills in digital marketing tools such as SEO, Social media, and Blogging for engaging the digital generation;
Explain the need for regulatory framework for digital marketing in India

Course Content:
UNIT- I   Introduction
Concept, scope, and importance of digital marketing. Traditional marketing versus digital marketing. Challenges and opportunities for digital marketing. Digital penetration in the Indian market. Benefits to the customer; Digital marketing landscape: an overview.
Ethical issues and legal challenges in digital marketing. Regulatory framework for digital marketing in India.

UNIT-II Digital Marketing Management
Digital-marketing mix. Segmentation, Targeting, Differentiation, and Positioning: Concept, levels, and strategies in a digital environment; Digital technology and customer-relationship management.
Digital consumers and their buying decision process.

UNIT-III Digital Marketing Presence
Concept and role of Internet in marketing. Online marketing domains. The P.O.E.M. framework. Website design and Domain name branding.
Search engine optimization: stages, types of traffic, tactics.
Online advertising: types, formats, requisites of a good online advertisement. Buying models.
Online public relation management.
Direct marketing: scope and growth. Email marketing, Facebook marketing, YouTube and Video marketing, Twitter Marketing, Instagram Marketing: types and strategies.

UNIT-IV Interactive Marketing
Interactive marketing: concept and options. Social media marketing: concept and tools. Online communities and social networks.
Blogging: types and role.
Video marketing: tools and techniques.
Mobile marketing tools.
PPC marketing. Payment options.

UNIT-V Artificial Intelligence in Marketing
Introduction of Artificial Intelligence in Marketing, how does AI Work, Benefit of AI in Marketing Automation, Content creation with AI, AI Tools available for Digital marketing.

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

Practical Exercises: The learners are required to:
Prepare a report on the difference between the popularity of any brand using both digital
advertising as well as traditional advertising tools; versus any one brand still focusing most of funds on
traditional advertising tools.
Create a hypothetical advertising tools using Google Ads.
Prepare a report on all the possible sources of digital marketing like, Facebook, Instagram, etc.

Reference Books:
Chaffey, D., Chadwick, F. E., Johnston, K., & Mayer, R. (2008). Internet Marketing: Strategy, Implementation, and
Practice. New Jersey: Pearson Hall.
Frost, R. D., Fox, A., & Strauss, J. (2018). E- Marketing. Abingdon: Routledge. Gupta, S. (2018). Digital Marketing.
Delhi: Tata McGraw Hill Education.
Kapoor, N. (2018). Fundamentals of E-Marketing. Delhi: Pinnacle India.
Kotler, P., Kartajaya, H., & Setiawan, I. (2017). Digital Marketing: 4.0 Moving from Traditional to Digital. New
Jersey: John Wiley & Sons.
Ryan, D., & Calvin, J. (2016). Understanding Digital Marketing: Marketing Strategies for engaging the Digital
Generation. London: Kogan page.
Blanchard, O. A. (2011). Social Media ROI: Managing and Measuring Social Media Efforts in Your Organisation.
Indianapolis: Que Publishing.
Charlesworth, A. (2018). Digital Marketing: A Practical Approach. Abingdon: Routledge.
Gay, R., Charlesworth, A., & Esen, R. (2007). Online Marketing: A Customer-led Approach. Oxford: Oxford
University Press.
Tasner, M. (2015). Marketing in the Moment: The Digital Marketing Guide to generating more sales and reaching
your customer first. London: Pearson.
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FYUGP

INTRODUCTORY VOCATIONAL COURSES
For Semester-I & Semester-II

FOR UNDER GRADUATE COURSES UNDER RANCHI UNIVERSITY

Upgraded & Implemented from 3rd Sem. of Session 2022-26 & 1st Sem. of Session 2023-27 Onwards

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Implemented from
Academic Session 2022-2026

Members of Board of Studies for preparing Draft Syllabus for the Curriculum Framework and Credit System for the Four-Year Undergraduate Programme (FYUGP)

CHAIRMAN

Contents

HIGHLIGHTS OF REGULATIONS OF FYUGP

PROGRAMME DURATION

The Full-time, Regular UG programme for a regular student shall be for a period of four years with multiple entry and multiple exit options.

The session shall commence from **1st of July**.

ELIGIBILITY

The selection for admission will be primarily based on availability of seats in the Major subject and marks imposed by the institution. Merit point for selection will be based on marks obtained in Major subject at Class 12 (or equivalent level) or the aggregate marks of Class 12 (or equivalent level) if Marks of the Major subject is not available. Reservation norms of The Government of Jharkhand must be followed as amended in times.

ADMISSION PROCEDURE

The reservation policy of the Government of Jharkhand shall apply in admission and the benefit of the same shall be given to the candidates belonging to the State of Jharkhand only. The candidates of other states in the reserved category shall be treated as General category candidates. Other relaxations or reservations shall be applicable as per the prevailing guidelines of the University for FYUGP.

ACADEMIC CALENDAR

Each year the University shall draw out a calendar of academic and associated activities, which shall be strictly adhered to. The same is non-negotiable. Further, the Department will make all reasonable endeavors to deliver the programmes of study and other educational services as mentioned in its Information Brochure and website. However, circumstances may change prompting the Department to reserve the right to change the content and delivery of courses, discontinue or combine courses and introduce or withdraw areas of specialization.

PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME

Undergraduate degree programmes of either 3 or 4-year duration, with multiple entries and exit points and re-entry options within this period, with appropriate certifications such as:
a Certificate after completing 1 year (2 semesters) of study in the chosen fields of study,
a Diploma after 2 years (4 semesters) of study,
a Bachelor after a 3-year (6 semesters) programme of study,
a Bachelor (with Hons. / Research) after a 4-year (8 semesters) programme of study

VALIDITY OF REGISTRATION

Validity of a registration for FYUGP will be for maximum for Seven years from the dateof registration.

CALCULATION OF MARKS FOR THE PURPOSE OF RESULT

Student's final marks and the result will be based on the marks obtained in Semester Internal Examination and End Semester Examination organized taken together.

Passing in a subject will depend on the collective marks obtained in Semester internal and End Semester University Examination both. However, students must pass in Theory and Practical Examinations separately.

PROMOTION AND SPAN PERIOD

The Requisite Marks obtained by a student in a particular subject will be the criteria for promotion to the next Semester.

No student will be detained in odd Semesters (I, III, V & VII).

To get promotion from Semester-II to Semester-III a student will be required to pass in at least 75% of Courses in an academic year (a student has to pass in minimum 9 papers out of the total 12 papers. However, it will be necessary to procure pass marks in each of the paper before completion of the course.

To get promotion from Semester-IV to Semester-V (taken together of Semester I, II, III & IV) a student has to pass in minimum 16 papers out of the total 22 papers.

Eligibility to get entry in Semester VII is to secure a minimum of 7.5 CGPA up to semester VI along with other criteria imposed by the Institution.

PUBLICATION OF RESULT

The result if the examination shall be notified by the Controller of Examinations of theUniversity in different newspapers and also on University website.

If a student is found indulged in any kind of malpractice/ unfair means during examination, the examination taken by the student for the semester will be cancelled. The candidate has to reappear in all the papers of the session with the students of next coming session and his oneyear will be detained. However, marks secured by the candidate in all previous semesters will remain unaffected.

There shall be no Supplementary or Re-examination for any subject. Students who have failed in any subject in an even semester may appear in the subsequent even semester examination for clearing the backlog. Similarly, the students who have failed in any subject in an odd semester may appear in the subsequent odd semester examination for clearing the backlog.

Regulation related with any concern not mentioned above shall be guided by the Regulationsof the University for F FYUGP.

COURSE STUCTURE FOR FYUGP **'HONOURS/ RESEARCH'**

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 176]

Semester	Common Courses (29)									Introductory Courses (15)		Internship/ Project (4)	Major* (54) + Adv. Major (24)	Minor** (32)		Research Courses (18)				Total Credit
	Language and Communication Skills (Modern Indian Language including TRL) (6)	Language and Communication Skills (English) (6)	Environmental Studies (3)	Understanding India (2)	Health & Wellness, Yoga Education, Sports & Fitness (2)	Digital Education (3)	Mathematical & Computational Thinking and Analysis (2)	Value-Based Course/ Global Citizenship Education (2)	Community Engagement/ NCC/ NSS/ (3)	Introductory Courses [Natural Sc./ Humanities/ Social Sc./Commerce] (9)	Introductory Course [Vocational Studies] (6)			Natural Sc./ Humanities/ Social Sc./ Commerce (18)	Vocational Studies (14)	Research Methodology Courses (6)	Research Proposal, Review of literature (4)	Research Internship/ Field Work (4)	Preparation of the Research Project Report (4)	176
1	2	3	4	5	6	7	8			9	10	11	14	15	16	17	18	19	20	21
I	6			2	2					3	3		6							**22**
II		6					2	2		3	3		6							**22**
Exit Point: Undergraduate Certificate																				
III			3			3			3	3		4	6							**22**
IV													6+6	6	4					**22**
Exit Point: Undergraduate Diploma																				
V													6+6	6	4					**22**
VI													6+6	6	4					**22**
Exit Point: Bachelor's Degree																				
VII													6+6 (Adv. Topics)			6	4			**22**
VIII													6+6 (Adv. Topics)		2			4	4	**22**
Exit Point: Bachelor's Degree with Hons. /Research																				

*There will be four disciplinary areas: A-Natural Science, B-Humanities, C-Social Science, and D-Commerce; each having basket of courses. A student will have to select a 'Major'from any of the four disciplinary areas (out of A, B, C & D). The selection for admission will be primarily based on availability of seats in Major and marks imposed by the institution.

**A student has to select three subjects for 'Introductory Regular Courses' from a pool of subjects associated with the Major offered by the institution. One of the three subjects will continue as 'Minor' from semester IV onwards, based on the academic interest and performance of the student.

Session 2022-26 onwards

COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME

Table 2: Course structure for Undergraduate Certificate Programme *[May Exit after Sem.-II]*

Semester	Common Courses		Introductory Courses			Major	Total Credits
Sem.-I LCS (MIL/TRL)	Understanding India	Health & Wellness, Yoga Education, Sports & Fitness	IRC-1	IVS-1A		MJ-1	
(6 Credits)	(2 Credits)	(2 Credits)	(3 Credits)	(3 Credits)		(6 Credits)	**(22)**
Sem.-II LCS (Hindi)	Global Citizenship Education	Mathematical & Computational Thinking	IRC-2	IVS-1B		MJ-2	
(6 Credits)	(2 Credits)	(2 Credits)	(3 Credits)	(3 Credits)		(6 Credits)	**(22)**

Total = 44 Credits

(LCS: Language and Communication Skills; MIL: Modern Indian Languages; TRL: Tribal Regional Languages;IRC: Introductory Regular Courses; IVS: Introductory Vocational Studies, MJ: Major)

Table 3: Course structure for Undergraduate Diploma Programme *[May Exit after Sem.-IV]*

Semester	Common Courses			Introductory Courses	Major	Minor	Internship/ Project	Vocational	Total Credits
Sem.-III	Environmental Studies	Community Engagement/ NCC/ NSS	Digital Education	IRC-3	MJ-3		Internship/ Project		
	(3 Credits)	(3 Credits)	(3 Credits)	(3 Credits)	(6 Credits)		(4 Credits)		**(22)**
Sem.-IV					MJ-4, MJ-5	MN-1		VS-1	
					(6+6=12 Credits)	(6 Credits)		(4 Credits)	**(22)**

Total = 88 Credits

(MN: Minor; VS: Vocational Studies)

Table 4: Course structure for Bachelor's Degree Programme   *[May Exit after Sem.-VI]*

Semester	Major Courses	Minor Courses	Vocational	Total Credits
Sem.-V	MJ-6, MJ-7 (6+6 = 12 Credits)	MN-2 (6 Credits)	VS-2 (4 Credits)	**(22)**
Sem.-VI	MJ-8, MJ-9 (6+6= 12 Credits)	MN-3 (6 Credits)	VS-3 (4 Credits)	**(22)**

Total = 132 Credits

Table 5: Course structure for Bachelor's Degree with Hons./Research Programme

Semester	Advance Courses	Research Courses	Vocational	Total Credit

Sem.-VII	AMJ-1, AMJ-2	Research Methodology (6+6=12 Credits)	Research Proposal (6 Credits)	(4 Credits)	(22)
Sem.-VIII	AMJ-3, AMJ-4 (6+6=12 Credits)	Research Int./Field Work (4 Credits)	Research Report (4 Credits)	VSR (2 Credits)	(22)

Total = 176 Credits

(AMJ: Advance Major; VSR: Vocational Studies associated with Research)

SEMESTER WISE COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME   **2022 onwards**

Table 6: Semester wise Course Code and Credit Points:

Semester	Common, Introductory, Major, Minor, Vocational & Internship Courses		Credits
	Code	Papers	
I	CC-1	Language and Communication Skills (Modern Indian language including TRL)	6
	CC-2	Understanding India	2
	CC-3	Health & Wellness, Yoga Education, Sports & Fitness	2
	IRC-1	Introductory Regular Course-1	3
	IVS-1A	Introductory Vocational Studies-1	3
	MJ-1	Major paper 1 (Disciplinary/Interdisciplinary Major)	6
II	CC-4	Language and Communication Skills (Hindi)	6
	CC-5	Mathematical & Computation Thinking Analysis	2
	CC-6	Global Citizenship Education & Education for Sustainable Development	2
	IRC-2	Introductory Regular Course-2	3
	IVS-1B	Introductory Vocational Studies-2	3
	MJ-2	Major paper 2 (Disciplinary/Interdisciplinary Major)	6
III	CC-7	Environmental Studies	3
	CC-8	Digital Education (Elementary Computer Applications)	3
	CC-9	Community Engagement & Service (NSS/ NCC/ Adult Education)	3
	IRC-3	Introductory Regular Course-3	3
	IAP	Internship/Apprenticeship/ Project	4
	MJ-3	Major paper 3 (Disciplinary/Interdisciplinary Major)	6
IV	MJ-4	Major paper 4 (Disciplinary/Interdisciplinary Major)	6
	MJ-5	Major paper 5 (Disciplinary/Interdisciplinary Major)	6
	MN-1	Minor Paper 1 (Disciplinary/Interdisciplinary Minor)	6

	VS-1	Vocational Studies-1 (Minor)	4
V	MJ-6	Major paper 6 (Disciplinary/Interdisciplinary Major)	6
	MJ-7	Major paper 7 (Disciplinary/Interdisciplinary Major)	6
	MN-2	Minor Paper 2 (Disciplinary/Interdisciplinary Minor)	6
	VS-2	Vocational Studies 2 (Minor)	4
VI	MJ-8	Major paper 8 (Disciplinary/Interdisciplinary Major)	6
	MJ-9	Major paper 9 (Disciplinary/Interdisciplinary Major)	6
	MN-3	Minor Paper 3 (Disciplinary/Interdisciplinary Minor)	6
	VS-3	Vocational Studies 3 (Minor)	4
VII	AMJ-1	Advance Major paper 1 (Disciplinary/Interdisciplinary Major)	6
	AMJ-2	Advance Major paper 2 (Disciplinary/Interdisciplinary Major)	6
	RC-1	Research Methodology	6
	RC-2	Research Proposal	4
VIII	AMJ-3	Advance Major paper 3 (Disciplinary/Interdisciplinary Major)	6
	AMJ-4	Advance Major paper 4 (Disciplinary/Interdisciplinary Major)	6
	RC-3	Research Internship/Field Work	4
	RC-4	Research Report	4
	VSR	Vocational Studies (Associated with Research)	2
		Total Credit	**176**

Abbreviations:

CC   Common Courses
IRC   Introductory Regular Courses
IVS   Introductory   Vocational
Studies
IAP   Internship/Apprenticeship/
ProjectVS   Vocational Studies
MJ   Major   Disciplinary/Interdisciplinary
CoursesMN Minor
Disciplinary/Interdisciplinary Courses
AMJ Advance   Major   Disciplinary/Interdisciplinary
CoursesRC Research Courses

VSR   Vocational Studies associated with Research

SEMESTER I & II

CCXX.   <u>INTRODUCTORY VOCATIONAL COURSES – IVC</u>:

(Credits: Theory-01 + Practical 02 = 03)

List of Vocational Courses for Semester-I & II under provisions of FYUGP

Mushroom Cultivation

Organic farming

E-filing of returns

Digital marketing

Communicative English

Computer Basics and Multimedia

Functional Hindi

Fundamental of Science Laboratory

Sericulture

10.Fisheries

11.Bee

Keeping

12.Textile Management

13.Introduction to Stock

Market14.Tour and Travel

15.Forestry and Wild Life

16.Beauty and Wellness

MUSHROOM CULTIVATION – IRC 1

CCXXI.   <u>Semester - 1</u>

<u>MUSHROOM CULTIVATION – IRC 1A:</u>   (Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

***Note:** There may be subdivisions in each question asked in Theory Examinations.*

Course Learning Outcomes:

Understand the basics of mushroom
Develop interest in mushroom cultivation
Produce quality spawn for different mushroom.
Procure mushroom spawn from authentic source.
Prepare compost, casing soil and manage crop
Pick, wash, grade and pack the harvested button mushroom
Prepare substrate and manage crop Pick, grade and

Course Content:

UNIT- I Introduction to mushroom

History of mushroom
Nutritional and medicinal properties of mushroom
Scope and opportunities
Types of edible and medicinal mushroom
Nature of work

UNIT- II Mushroom Spawn (seed) production

Preparation of pure culture
Preparation of mother spawn
Production of planting spawn
Storage /Transportation of spawn
Criteria for selection of good quality spawn

UNIT- III   Cultivation of Button mushroom

Procurement of rawmaterials

Wetting of substrate materials/ formulation

Outdoor fermentationin stacks/ turning schedule by long method

Short method of composting done in two phases: phase-1 (Outdoor/ bunker) andphase-2

bulk pasteurisation chambers)

Spawning of compost/spawn run

Casing and case-run

Cropping andharvesting ofmushroom

Post-harvest handling

UNIT- IV Cultivation of Oyster mushroom

Procurement of raw materials

Substrate formulation

Substrate wetting and treatments: Hot water/ steam

Spawning of substrate and filling in container/ bag, spawn run

Exposing of bags for cropping

Cropping and harvesting of mushroom

Post-harvest handling

CCXXII.   MUSHROOM CULTIVATION PRACTICAL- IRC 1A LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: **60 Lectures**

Orientation to a mushroom farm

Identification of different types of mushrooms

Preparation of pure culture

Preparation of mother spawn

Production of planting spawn Storage

Transportation of spawn

Post-harvest handling

Substrate wetting and treatments: Hot water/ steam

Spawning of substrate and filling in container/ bag, spawn run

Exposing of bags for cropping

Cropping and harvesting of mushrooms

Post-harvest handling

CCXXIII.   Semester - 2

MUSHROOM CULTIVATION – IRC 1B: (Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: *There may be subdivisions in each question asked in Theory Examinations.*

Course Learning Outcomes:

Prepare substrate and manage crop
Pick, grade and pack the harvested paddy straw mushroom
Prepare substrate and manage crop
Pick, grade and pack the harvested milky mushroom
Prepare substrate and manage crop
Pick, grade and pack the harvested economically important and medicinal mushroom
Identify and manage Insect- Pests affecting mushroom

Course Content:

UNIT- I Cultivation of Paddy Straw mushroom

Procurement of raw materials: Paddy straw bundles
Substrate wetting and treatments: Hot water/ steam
Stacking of paddy straw bundles in a heap and spawning in layers
Polythene cover of the heap for spawn run
Cropping and harvesting of mushrooms
Post-harvest handling

UNIT- II Cultivation of Milky mushroom

Procurement of raw materials
Substrate formulation
Substrate wetting and treatments: Hot water/ steam
Spawning of substrate and filling in container/ bag, spawn run
Casing and case-run
Exposing of bags for cropping
Cropping and harvesting of mushroom
Post-harvest handling

UNIT- III Cultivation of other economically important and medicinal mushroom

Shiitake Mushroom
Kabul Dhingri (King oyster) Mushroom
Reishi (Ganoderma) Mushroom
Kira ghas (Cordycep) Mushroom

UNIT- IV Insect-Pests management in cultivated mushroom
Major insect pests- Mushroom flies/ nematodes/mites
Post-harvest handling

CCXXIV.   <u>MUSHROOM CULTIVATION PRACTICAL- IRC 1B LAB:</u>

Marks: Pr (ESE: 3Hrs) =25	**Pass Marks: Pr (ESE) = 10**

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: **60 Lectures**

Substrate wetting and treatments: Hot water/ steam

Stacking of paddy straw bundles in a heap and spawning and covering of the heap with polythene for spawn run

Cropping and harvesting of mushrooms

Post-harvest handling

Substrate wetting and treatments: Hot water/ steam

Spawning of substrate and filling in container/ bag, spawn run

Casing and case-run

Cropping and harvesting of mushroom

Post-harvest handling

Substrate preparation for economically important and medicinal mushroom

Crop management

Post-harvest handling

Identification and management of pests by chemical and non-chemical methods

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---- ORGANIC FARMING – IRC 2

CCXXV.   Semester - 1

ORGANIC FARMING – IRC 2A: (Credits: Theory-01

+ Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: *There may be subdivisions in each question asked in Theory Examinations.*

Course Content:

UNIT- I Agronomy

Organic farming- concept, characteristics, significance, organic ecosystem, scope of organic farming in India
Principles and types of organic farming

UNIT- II Soil Science

Organic farming for sustainable agriculture; Manures- compost, methods of composting
Green manuring, vermicompost and biofertilizer

UNIT- III Fundamental of organic farm management

Land management in organic farming
Water management in organic farming

UNIT- IV Post harvest management

Processing, labeling of organic produce
Storage and transport of organic produce

CCXXVI.   ORGANIC FARMING PRACTICAL- IRC 2A LAB:

Marks: Pr (ESE: 3Hrs) =25   **Pass Marks: Pr (ESE) = 10**

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: 60 Lectures

Field visit of organic farming
Seed and seed treatment
Preparation of Farm Yard Manure (FYM) & compost
Water management in organic agricultural

CCXXVII.   <u>Semester - 2</u>

<u>ORGANIC FARMING – IRC 2B:</u>   (Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

UNIT- I Agronomy

Choice of crops & varieties in organic farming
Initiative by Govt/NGOs/Other organizations for promotion of organic farming

UNIT- II Soil Science

Harmful effect of non-judicious chemical fertilization
Organic farming practices for improving soil health

UNIT- III Fundamental of organic farm management

Organic insect disease management
Organic pest disease management

UNIT- IV Post harvest management

Organic Quality control standards
Certification- types, process & procedure and agencies

CCXXVIII. ORGANIC FARMING PRACTICAL- IRC 2B LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: 60 Lectures

Crop planning & management in organic agriculture
Identification of different fungal and bacterial biocontrol agents
Application of manures and composts
Preparation of plant protection inputsPeriods
Application of plant protection inputs

---- E-FILING OF RETURNS – IRC 3

CCXXIX.   __Semester - 1__

__E-FILING OF RETURNS – IRC 3A:__   (Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

***Note:** There may be subdivisions in each question asked in Theory Examinations.*

__Course Content:__

UNIT- I Conceptual Framework

Meaning of e-filing; difference between e-filing and regular filing of returns; benefits and limitations of e-filing.

UNIT- II Types of E-filing

Types of e-filing; e-filing process: relevant notifications.

UNIT- III Income tax

Introduction to income tax - basic terminology, types of assets, income taxable under different heads, basics or computation or total income and tax liability, deductions available from gross total income

UNIT- IV E-filing of ITRs

PAN card, due date or filing of income tax return. Instructions for filling out form ITR-1. ITR- 2, ITR-3. ITR-4.ITR-4S.ITR-S, ITR-6.

ILING OF RETURNS PRACTICAL- IRC 3A LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	= 15 marks
Practical record notebook	= 05 marks
Viva-voce	= 05 marks

PRACTICALS: 60 Lectures

Introduction to Income tax Portal:
preparation of electronic return (practical workshops)

CCXXX.   <u>Semester - 2</u>

<u>E-FILING OF RETURNS – IRC 3B:</u>   (Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

<u>*End Semester Examination (ESE 75 marks):*</u>

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

<u>Course Content:</u>

UNIT- I TDS and e-filing of TDS returns

Introduction to the concept of TDS; provision regarding returns of TDS: types of forms forfiling
TDS returns;

UNIT- II Fundamental of GST
Introduction: GST Basics, Objective of implementation of GST, Benefits of GST, Component of GST, Important Definitions, Meaning and Scope of Supply.

UNIT- III Tax
Levy and Collection of Tax: Tax Liability on Composite and Mixed Supply, Levy andCollection of Tax, Composition Levy, Exemption from Tax.

UNIT- IV GST and E-filing of GST returns
Introduction to GST, Registration; relevant notifications regarding e-filing of GST returns:steps for preparing GST returns: practical workshop on-filing of GST returns.

<u>ILING OF RETURNS PRACTICAL- IRC 3B LAB:</u>

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

<u>*End Semester Examination (ESE):*</u>

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	= 15 marks
Practical record notebook	= 05 marks
Viva-voce	= 05 marks

PRACTICALS: **60 Lectures**

The student shall be required to write a Project Report based on the case study of any aspect of either of Income Tax or GST. He/She shall focus on a particular problem area and prepare a report based on the study of the course by taking one particular problem faced by the different assesses.

---- DIGITAL MARKETING – IRC 4

CCXXXI.   Semester - 1

DIGITAL MARKETING – IRC 4A: (Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	**Pass Marks: Th (ESE) = 30**

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

UNIT- I Introduction

What is marketing?
What is Digital Marketing? Understanding Marketing Process Understanding Digital Marketing Process
Increasing Visibility, What is visibility? Types of visibility, Examples of visibility
Visitors Engagement, What is engagement? Why it is important Examples of engagement Bringing Targeted Traffic
Inbound and outbound marketing
Converting Traffic into Leads, Types of Conversion, Understanding Conversion Process Tools Needed

UNIT-II Digital Marketing Vs. Traditional Marketing

What's the difference between digital marketing and traditional marketing, and why does it matter?
Benefits of Traditional Marketing
The Downside to Traditional Marketing Benefits of Digital Marketing
Why Digital Marketing Wins Over Traditional Marketing? Tools of Digital Marketing
How We Use Both Digital & Traditional Marketing

UNIT-III Website Planning Process

What is Internet?
Understanding domain names & domain extensions Different types of websites
Based on functionality Based on purpose
Planning & Conceptualising a Website Booking a domain name & web hosting Adding domain name to web Server Adding webpages & content
Adding Plugins

Building website using CMS in Class Identifying objective of website Deciding on number of pages
required Planning for engagement options Landing Pages & Optimization Creating blueprint of every
webpage Best & Worst Examples

UNIT-IV Search Engine Optimization

Understand Search Engines & Google
What is SEO? Introduction to SERP What are search engines? How search engines work
Major functions of a search engine What are keywords?

Different types of keywords Google keyword planner tool Keywords research process Understanding keywords mix Long Tail Keywords
Google Search Tips & Hacks

CCXXXII.   **DIGITAL MARKETING PRACTICAL- IRC 4A LAB:**

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: 60 Lectures

What is Search Engine's Algorithms?
How Algorithms Works?
Why a Search Engine needs to update its Algorithm?
Why a Search Engine penalizes a Website?
How to optimize your site for Google
Creating Facebook page
Uploading contacts for invitation
Exercise on fan page wall posting
Increasing fans on fan page
How to do marketing on fan page (with examples)
Fan engagement
Important apps to do fan page marketing
Facebook advertising
Types of Facebook advertising
Best practices for Facebook advertising
Understanding Facebook best practices

CCXXXIII.   Semester - 2

DIGITAL MARKETING – IRC 4B: (Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

UNIT- I Social Media Marketing-I

What is Social Media?
Understanding the existing Social Media paradigms & psychology
How social media marketing is different than others
Forms of Internet marketing Facebook   marketing Understanding Facebook marketing

UNIT- II Social Media Marketing-II

Linkedin Marketing What is LinkedIn? Understanding LinkedIn
Company profile vs Individual profiles Understanding Linkedin groups
How to do marketing on LinkedIn groups Linkedin advertising & it's best practices
Increasing ROI from LinkedIn ads Linkedin publishing
Company pages Adv on linkedIn Display vs text Twitter Marketing
Understanding Twitter
Tools to listen & measure Influence on Twitter: Tweet Deck, Klout, Peer Index

UNIT- III Google Analytics

Introduction to Google Analytics
How Google analytics works
Understanding Google analytics account structure
Understanding Google analytics insights
Understanding cookie tracking
Types of cookie tracking used by Google analytics
Starting with Google analytics
How to set up analytics account
How to add analytics code in website
Understanding goals and conversions

UNIT- IV Google Adwords & Online Display Advertising

Google AdWords Overview

Understanding inorganic search results

Introduction to Google Adwords & PPC
advertising
Overview of Microsoft Adcenter (Bing & Yahoo)
Setting up Google Adwords account
Understanding Adwords account structure
Campaigns, Adgroups, Ads, Keywords, etc
Types of Advertising campaigns- Search,
Display, Shopping & video

CCXXXIV.   DIGITAL MARKETING PRACTICAL- IRC 4B LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities   = 15 marks

Practical record notebook   = 05 marks

Viva-voce   = 05 marks

PRACTICALS: 60 Lectures

How to do marketing on Twitter
Black hat techniques of twitter marketing
Advertising on Twitter
Creating campaigns
Types of ads
Tools for twitter marketing
Twitter Advertising
Twitter Cards
Using youtube for business
Developing youtube video marketing
Strategy
Bringing visitors from youtube videos to your website
Creating Video A Dgroups

---- COMMUNICATIVE ENGLISH – IRC 5

CCXXXV.   Semester - 1

COMMUNICATIVE ENGLISH – IRC 5A: (Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

UNIT- I Introduction to Communicative English-I

Introduction to Communicative English: Introduction, Language as a Tool, Fundamentals of Communicative English, Process of Communication, Barriers to Effective CommunicativeEnglish,

UNIT-II Introduction to Communicative English-II

Different styles and levels in Communicative English (Communication Channels). Interpersonal and Intrapersonal Communication Skills, How to improve and Develop Interpersonal and Intrapersonal Communication Skills.

UNIT-III Introduction to Phonetics

Introduction, Phonetic Transcription, English Pronunciation, Pronunciation Guidelines Related to consonants and vowels, Sounds Mispronounced, Silent and Non-silent Letters, Syllables and Structure,

UNIT-IV Word Accent and Stress Shift

Word Accent and Stress Shift,– Rules for Word Accent, Intonation – purposes of intonation, Spelling Rules and Words often Misspelt – Exercises on it. Common Errors in Pronunciation

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CCXXXVI.   COMMUNICATIVE ENGLISH PRACTICAL- IRC 5A LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: 60 Lectures

Listening Skills

The student should be able to listen to s text read aloud in normal speed with focus on intonation.

After listening the student can fill-in-blanks, choose a suitable title, make a summary, supply required information and be able to answer comprehension questions from the passage read aloud.

Speaking Skill

Reading aloud of dialogues, texts, poems, speeches focusing on intonation.Self-introduction

Role plays on any two-situations.   Telephonic Conversations.

CCXXXVII. Semester - 2

COMMUNICATIVE ENGLISH – IRC 5B: (Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

UNIT- I Basic English Communicative Grammar and Vocabulary Part - I:

Grammar: Basic English Grammar and Parts of Speech - Nouns, Pronouns, Adjectives, Verbs, Adverbs, Conjunctions, Articles and Preposition. Preposition, kinds of Preposition and Prepositions often Confused. Articles: Use of Articles Indefinite and Definite Articles, Pronunciation of 'The', words ending 'age', some plural forms. Introduction to Vocabulary,All Types of Vocabulary –Exercises on it.

UNIT- II Basic English Communicative Grammar and Vocabulary Part - II:
Question Tags, Question Tags for Assertive Sentences (Statements) – Some Exceptions in Question Tags and Exercises, One Word Substitutes and Exercises. Strong and Weak forms of words, Words formation - Prefixes and Suffixes (Vocabulary), Contractions and Abbreviations. Word Pairs (Minimal Pairs) – Exercises, Tense and Types of tenses, The Sequence of Tenses (Rules in use of Tenses) and Exercises on it.

UNIT- III Communication Skills for Employment:
Information Transfer: Oral Presentation - Examples and Practice. Extempore / Public Speaking, Difference between Extempore / Public Speaking, Communication Guidelines for Practice.Mother Tongue Influence (MTI) – South Indian Speakers, Various Techniques for Neutralization of Mother Tongue Influence – Exercises.Reading and Listening Comprehensions

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CCXXXVIII. COMMUNICATIVE ENGLISH PRACTICAL- IRC 5B LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	= 15 marks
Practical record notebook	= 05 marks
Viva-voce	= 05 marks

PRACTICALS: 60 Lectures

Personality Development

Initiation
Physical
Appearance
Audience Purpose

Interpersonal Skills

Appropriate use of non-verbal skills in face to face communication [i.e. Viva –Voce, group
–interviews, GDs and seminars.]

Presenting in GD, Seminars and Conferences.

Leadership
Quality   Time
Management
Achieving   the
target

---- COMPUTER BASICS AND MULTIMEDIA – IRC 6

CCXXXIX.   Semester - 1

COMPUTER BASICS AND MULTIMEDIA – IRC 6A:

(Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

UNIT- I Introduction to Computer System

Basic Computer Concept Computer Organisation, Windows OS: Windows XP Vs Windows7

UNIT-II Microsoft Office 2016-I

MS Word-Tools, menu Bar, Insert, Design, Layout, References, Mailing, Review, View

UNIT-III Microsoft Office 2016-II

MS Excel, MS PowerPoint - Tools, menu Bar, Insert, Design, Layout, References, Mailing,Review, View

UNIT-IV Internet & its usage

CCXL. ## COMPUTER BASICS AND MULTIMEDIA PRACTICAL- IRC 6A LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	= 15 marks
Practical record notebook	= 05 marks
Viva-voce	= 05 marks

PRACTICALS: **60 Lectures**

Create a Visiting Card of your college using page size as follows a) Page width="3.2" b)Page height="2.2"

Write a leave letter to the Principal by using different alignments, correct formats in MS Word

Mail Merge in MS Word

creating different types of charts

create different types of power point presentation

CCXLI. <u>Semester - 2</u>

<u>COMPUTER BASICS AND MULTIMEDIA – IRC 6B:</u>

(Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

<u>*End Semester Examination (ESE 75 marks):*</u>

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

<u>Course Content:</u>

UNIT- I Multi Media Fundamentals

Multimedia, Multimedia Objects, Multimedia in business and work, Multimedia hardware, Memory & Storage devices, Communication devices.

UNIT- II Multimedia Tools

Presentation tools, object generation which includes video sound; image capturing, Authoringtools, card and page-based authoring tools.

UNIT- III Sound/Audio-I

Perception of sound, hearing sensitivity, frequency range, sound- wave length, the speed of sound. measuring the sound, musical sounds, noise signal, dynamic range, pitch, harmonics- equalization- reverberation time, Sound isolation and room acoustics- treatments- studio layout –room dimensions.

UNIT- III Sound/Audio-II

The Basic set-up of recording system; The production chain and responsibilities. Microphones types -phantom power, noise, choosing the right mike; Mixing console; Inputdevices; Output devices; Audio Publishing

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CCXLII. **COMPUTER BASICS AND MULTIMEDIA - IRC 6B LAB:**

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: 60 Lectures

Photoshop-Use different tools
Page maker -Use different tools
Corel Draw – Use different tools
Flash – Use different tools

---- FUNCTIONAL HINDI – IRC 7

CCXLIII.   Semester - 1

FUNCTIONAL HINDI – IRC 7A: (Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

क) राजभाषा नीति: हिंदी के प्रयोग का संवैधानिक प्रावधान (धारा -343) राजभाषा अधिनियम 1963 ई. और 1976 ई.

के बाद निर्धारित नियम, 1960 ई. के राजभाषा आदेश का महत्व, 1968 ई. हिंदी मिश्रण तथा प्रसाधन और राज नवनिर्णत |

ख) हिंदी के कार्यालयी पत्राचार: पत्राचार का उद्देश्य और महत्व, पत्र व्यवहार के प्रकार जैसे - मूलपत्र, अर्धस्मरण पत्र, अधिशासकीय पत्र, ज्ञापन पत्र,

आदेश पृष्ठांकन, अंतर्विभागीय टिप्पणी, मानक मसादे (5यॅट), निविदापत्र, सूचनाएँ रिपोर्तया के लिए विज्ञापन, प्रेस विज्ञप्ति और रिपोर्ट |

CCXLIV.   <u>FUNCTIONAL HINDI PRACTICAL- IRC 7A LAB:</u>

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: **60 Lectures**

1. 5ॉर्टिंग ®ा है, अDzे ड्राि4ंग के सामाQ िनयम।

2. आिधकारक पाठों का ॑ाPपण: िविभ॒ ॑कार के ॑ाPपण, साधारण कायालय पा, परपा पा, कायालय

3. yापन, संकब, कायालय आदेश, अनु4ारक, अध॔सरकारी पा, प॒ृांकन, ॑ेस नोट, िवyापन,

4. िनिवदा, ॑ाPपण के िलए भाषा।

5. नोिटंग का महॏ, सामाQ िनयम और नोिटंग के िलए िनद॔श।

6. सटीक लेखन - महॏ और उपयोिगता, एक के िलए अिनवाय आदश सटीक लेखन।

7. सेमी-ड्राि4ंग, नोिटंग और . सटीक लेखन.

CCXLV.　　Semester - 2

FUNCTIONAL HINDI – IRC 7B:　　　　　　(Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.

　　Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

क) व्यवहारिक हिंदी व्याकरण:

, वचन, क्रिया, विशेषण, हिंदी की प्रकृति, अंग्रेजी की तुलना में हिंदी, वाक्य विन्यास के नियम एवं शैलिकं उपसर्ग तथा प्रत्यय, हिंदी

उर्वति मुहिडया, अर्थ, संबंध, भाषण की शैली तथा लहजा |

ख) अनुवाद परिभाषित शब्दावली और पदबंध:

1.　अनुवाद - संकल्पना, प्रकृति और प्रकार, शब्दानुवाद, भावानुवाद, पूर्ण अनुवाद, सह　　　　　　वाद, श्रेय अनुवाद , अध्ययन

　　　　¢ऽं (विषय वस्तु) और महत्व |

2.　कार्यालयी भाषा एRट भाग (3) के अतगत आने वाले अभिलेखों का द्विभाषी करण |

3.　कार्यालयी पत्रों, स्मरण पत्रों , परिपत्र, रिपोर्टो, कयस　　　　　चिय, मिनिस और बैठकों का कायव　　　　हिया का अनुवाद |

4.　मंत्रालयों, उपक्रम, बक, निगमों, कंपनियों, रेलवे, वायु- सबे आदि और विविध ¢ऽं जं का विशिष्ट शब्दावली

　　पदबंधों तथा वाक्यों का अध्ययन |

5.　शब्द निर्माण के नियम |

अनुशंसित पुस्तकों की सूची

1.　राजभाषा संकाप – डॉ. दिलीप सिंह

2.　नियोजनमूलक हिंदी – डॉ. बालेंदशेखर तिवारी

3.　कार्यालयी हिंदी – डॉ. बालेंदशेखर तिवारी, अभिषेक अवतंस

4.　नियोजनमूलक हिंदी – डॉ. विनोद भाटे

5.　नियोजनमूलक हिंदी – डॉ. विनोद गोदरे

6. राष्ट्रभाषा हिंदी k समस्याएं और समाधान – आ. देवेंद्रनाथ शर्मा

7. पारिभाषिक शब्दावली – कुछ समस्याएं – डॉ. भोलानाथ तिवारी

8. भारत सरकार का राजभाषा नीति – डॉ. अरविंद कुलश्रेष्ठ

9. हिंदी वर्तनी का ऐतिहासिक उपयोग – डॉ. हरिवंश तरुण

10. आधुनिक हिंदी व्याकरण और रचना – डॉ. वासुदेव नंदन प्रसाद

11. अपनी हिंदी कैसे सुधारें – विनोद कुमार

12. नियोजनम क भाषा और अनुवाद – डॉ. गोपाल सिंह

13. सुबोध हिंदी व्याकरण और रचना – डॉ. रामनंदन शास्त्री

14. अनुवाद विज्ञान – डॉ. भोलानाथ तिवारी

15. अनुवाद विविध – प्रो. सूर्यप्रकाश दीक्षित, सत्यदेव मिश्र

CCXLVI.   <u>**FUNCTIONAL HINDI PRACTICAL- IRC 7B LAB:**</u>

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

<u>*End Semester Examination (ESE):*</u>

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: **60 Lectures**

1. अनुवाद की परिभाषाएँ , अनुवाद का महत्व, अनुवाद की प्रक्रिति, ® ा अनुवाद एक कला है या विज्ञान?

2. विभभ प्रकार के अनुवाद, आव4क योग्यताएं एक अDż अनुवादक की।

3. मुहावरों और अनुवाद से संबंधित सम4ाएं ,मुहावरे, नीतिवचन के अनुवाद से संबंधित सम4ाएं ।

4. किवता का अनुवाद, नाटक का अनुवाद,वैज्ञानिक साहिw का अनुवाद

5. तकनीकी और परिभाषित शब्दावली तैयार करना और अनुवाद मॅं इसका महत्व।

---- FUNDAMENTAL OF SCIENCE LABORATORY – IRC 8

CCXLVII.   Semester - 1

FUNDAMENTAL OF SCIENCE LABORATORY – IRC 8A:

(Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

Unit-I Elementary knowledge of Chemistry Unit-

II Safe Handling of Chemicals and Gases

Chemical Spills
Guidelines for Mercury Waste Management & Disposal
Guidelines for Handling of Ethidium Bromide
Guidelines for Bis-acrylamide
Guidelines for Phenol/ Chloroform
Compressed Gas Safety
Safe Handling of Cryogenic liquids
Handling of Dry Ice
Guidelines for Imaging Stations

Unit-III Specialty Laboratories

Working with Radioactive Materials
Laser Lab

Unit-IV Emergency Response

Fires
Accident Reporting

VOCATIONAL COURSES   FYUGP   RANCHI UNIVERSITY
Emergency Contact numbers
Committees

CCXLVIII.   FUNDAMENTAL OF SCIENCE LABORATORY - IRC 8A LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: 60 Lectures

Laboratory instruments Chemistry

Safe Handling, Cleaning and storage of common apparatus.

Test tube, Beakers, Erlenmeyer flask, Volumetric flask, graduated cylinder, Pipette, Graduated pipette, Disposable pipette, Burette, Burette clamp. Funnel, Buchner Funnel,Buchner funnel vacuum filtration setup,
Clamp, Test tube holder, Bunsen burner, Petri dish, Glass rod, Graduated Dropper Tongs, Utility clamp, Spot test plate, Tripod for Bunsen burner, Wash bottle, Spatula, Round-bottom flasks, Glass Condenser, Filter paper Separatory funnel, Filtering flask, etc

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CCXLIX.   <u>Semester - 2</u>

<u>FUNDAMENTAL OF SCIENCE LABORATORY – IRC 8B:</u>

(Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

<u>*End Semester Examination (ESE 75 marks):*</u>

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

Unit-I Elementary knowledge of Physics

Unit-II Laboratory instruments Physics

CCL. FUNDAMENTAL OF SCIENCE LABORATORY PRACTICAL- IRC 8B LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: 60 Lectures

Laboratory instruments Physics

Safe Handling, Cleaning and storage of common apparatus.

Resistor, Rheostat, Multimeter, Voltmeter, Ammeter, Galvanometer, Potentiometer, Battery Eliminator, Daniel Cell, Leclanche Cell
Meter Bridge with Pencil Jockey, Ohm's Law Apparatus, Compass, Magnet, Prism, Lens, Mirror,Glass Slab, Optical Bench
Pendulum, Parallelogram Apparatus, Tuning Fork, Vibration Generator, Wave Motion Apparatus.

---- SERICULTURE – IRC 9

CCLI. <u>Semester - 1</u>

<u>**SERICULTURE – IRC 9A:**</u>   (Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

<u>*End Semester Examination (ESE 75 marks):*</u>

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: *There may be subdivisions in each question asked in Theory Examinations.*

Course Content:

Unit-I

History of Sericulture.

Unit-II

Types of Silkworms, Distribution in India and other countries.

Unit-III

Production of mulberry and non-mulberry silk in India and other countries. Comp. Production efficiencies.

Unit-IV

Sericulture organization in India – Administrative set up – Research and training set up – Seed production – Cocoon production and Marketing of cocoon and silk – Reeling and Weaving sectors – Exports and imports –Tariff protection.

CCLII.   <u>**SERICULTURE PRACTICAL- IRC 9A LAB:**</u>

Marks: Pr (ESE: 3Hrs) =25   **Pass Marks: Pr (ESE) = 10**

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: **60 Lectures**

Estimation of Hatching and Brushing Percentage of Silkworm Eggs
Estimation of Moisture Content of Mulberry Leaves for Chawki Rearing
Determination of Mulberry Leaf Driage in the Rearing Bed -
Estimation of Silkworm Larval Density in the Rearing Bed and Silkworm Population During Chawki Rearing
Estimation of Larval Density and Shoot Quantity Required for Late Age Rearing (Shoot Feeding Method) for 100 dfls

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CCLIII.   Semester - 2

SERICULTURE – IRC 9B: (Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:
   Unit-I

Sericulture through five-year Plans.

Unit-II

Sericulture as rural industry – Employment Potentiality – Comparison with other rural industries.

Unit-III

Action plans for development of Sericulture through five years plan –World Bank Projects – Indo-Swiss projects.

Unit-IV

Sericulture Research in India and its impact and also research being carried out in the universities.

CCLIV.   SERICULTURE PRACTICAL- IRC 9B LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: **60 Lectures**

Estimation of Uzi Fly Infestation During Late Age Silkworm Rearing
Evaluation of Different Types of Mountages and its Effects on Defective Cocoons
Estimation of Cocoon Shell Ratio
Estimation of Defective Cocoon Percentage from the Given Sample of Cocoon
Identification of Different Silkworm Diseases and Method of their Disposal

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---- FISHERIES – IRC 10

CCLV.　　　Semester - 1

FISHERIES – IRC 10A:　　　　　　　　　　　　　　　　(Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

Unit I: Introduction to Fisheries

Brief Introduction to Fisheries
Importance of fish
Potential of Fisheries.

Unit II: Types of fisheries
Fresh Water Fisheries
Brackish water Fisheries
Marine fisheries
Capture and Culture fisheries

Unit III: Present status of Inland fisheries in India
Present status of fresh water fisheries
Present status of brackish water fisheries

CCLVI.   <u>FISHERIES PRACTICAL- IRC 10A LAB:</u>

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

<u>End Semester Examination (ESE):</u>

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: 60 Lectures

Fish Biology
Ichthyology
Limnology

CCLVII.   <u>Semester - 2</u>

<u>FISHERIES – IRC 10B:</u>   (Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

***Note:** There may be subdivisions in each question asked in Theory Examinations.*

<u>Course Content:</u>

Unit I: A general account of commercially Important fishes and Shell fishes

Fresh Water Fishes
Brackish water fishes
Shell-fishes
Marine fishes

Unit II: Different methods of fishing in Fresh water
Hooks & Lines used in fishing
Different types of Traps used
Common fishing gears in India

Unit III: General characteristics of lotic and lentic waters
Introduction to lotic and lentic water bodies.
Characteristics of lotic and lentic waters.

Unit IV: Growth and age Determination
1. Importance of growth and age studies Methods of age and growth determination

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CCLVIII.   **FISHERIES PRACTICAL- IRC 10B LAB:**

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: **60 Lectures**

Fisheries Ecology

Aquatic Flora and Fauna

Fish Farming Technique and Hatchery Management

Fish Nutrition

---- BEE KEEPING – IRC 11

CCLIX.   Semester - 1

BEE KEEPING – IRC 11A: (Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

Unit I:

Introduction to Bee Keeping
History, Present scenario & scope
Selection of bee species & races
Identification of flora and location of site

Unit II:

Procurement of bee box and other tools
Building & division of comb and colony
Manage insects and diseases and nuisance in bee hives
Knowledge the scientific methods of bee keeping

Unit III:

Understand Role of a Bee Keeper
Understand the requirement of different bee species and preparing flowering calendar
Understands using Bee boxes including cleaning of Boxes and various tools and equipment
used in Bee keeping
Understand the importance of health and hygiene in Bee keeping

Unit IV:

Bee Boxes Maintenance
Building of comb and colony
Raw production at different life stages of bees
Clean & Maintain Bee Boxes

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CCLX.   BEE KEEPING PRACTICAL- IRC 11A LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: 60 Lectures

Identification of Honey Bee Species
Castes of Honey Bees
Bee Biology
Life Cycle of Honeybees
Assembling a Beehive

CCLXI.   Semester - 2

BEE KEEPING – IRC 11B: (Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

Unit I:

Use of other tools required in Bee Keeping
Building and division of colony
Procuring different raw produce of honey bees
Able to protect the bee hives from insects

Unit II:
Manage insects and diseases and nuisance in bee hives
Collection and preservation of honey
Prepare month wise calendar of operations in bee keeping
Colony Management and diseases
Harvesting of honey from the combs
Processing of honey
Preservation of honey
Marketing of honey

Unit III:
Business Opportunity Identification
Problem solving
Time management
Effective
Business Management skills

Unit IV:
Trainee is able to analyze major trends in a given economic sector / sub-sector and identify
Business Opportunities
Develop effective personal management skills like time management and communicationskills.
Trainees are able to devise a simple marketing and sales strategies and plan for a small business
Work out Business plan and economics of the project

CCLXII.   BEE KEEPING PRACTICAL- IRC 11B LAB:

Marks: Pr (ESE: 3Hrs) =25   **Pass Marks: Pr (ESE) = 10**

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities   = 15 marks

Practical record notebook   = 05 marks

Viva-voce   = 05 marks

PRACTICALS: **60 Lectures**

Beekeeping Equipments
Lighting a Smoker
Catching a Stray Swarm from a Post of Tree
Installing Packaged Bee Colony
Transferring Nucleus to Hive Box

---- TEXTILE MANAGEMENT – IRC 12

CCLXIII.   Semester - 1

TEXTILE MANAGEMENT – IRC 12A: (Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

Unit 1. Introduction:

Classification of textile fibres according to their nature and origin, b) essential and desirable properties of textile fibres, c) staple fibre and continuous filaments, d) comparision of natural and man made fibres.

Unit 2. Natural fibres:

a) Vegetable (bast, leaf and seed fibres), b) animals (wool and silk) and c) mineral (glass, asbestos and metallic fibres). d) cotton: concept of varieties; definition of grading, distinctive properties and end uses, e) jute:- varieties, distinctive properties and end uses, f) flax and pineapple fibres:- brief introduction and uses, g) protein fibres:- wool:- classification, distinctive properties and end uses, silk:- classification, distinctive properties and end uses.

Unit 3. Man-made fibres:

a) Classification, b) regenerated fibres-acetate, viscose & diverse forms of viscose, cuprammonium, alginate. - general properties, end uses, c) synthetic fibres: principles of polycondensation with reference to polyesters, polyamides and polyurethanes, principles of poly addition with reference to acrylics, polyolefins, polyvinyl chlorides and co-polymers, d) chemical properties & end uses of polyester, polyamide and poly acrylonitrile fibres, e) introduction to the production of manmade fibres:

Unit 4. Texturing:

1. Introduction, purpose, bulked and textured yarns, methods of texturing thermoplastic and non- thermoplastic yarns, basic principles, feed material characteristics-study of twist-set-detwist, false twist, edge crimp, stuffer box crimp; knit de-knit techniques of texturing and the techniques of modified stretch yarn; properties and uses of textured and bulked yarns.

CCLXIV.   TEXTILE MANAGEMENT PRACTICAL- IRC 12A LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: 60 Lectures

To study and sketch the working mechanism of bale opener /breaker
To study and sketch the working mechanism of hopper feeder.
To study and sketch the working mechanism of step cleaner or similar
To study and sketch the working mechanism of scutcher and lap preparation
Determination of openness of tufts.
Determination of trash content in cotton.

CCLXV.   Semester - 2

TEXTILE MANAGEMENT – IRC 12B: (Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

Unit 1.

Staple fibre Spinning (brief idea): Introduction, raw material, ginning, opening, cleaning, blending, equalizing, drafting, yarn formation, different systems of spinning.

Unit 2.

Introductory concept of Ginning: Cotton ginning and bailing-object of ginning, different methods and their limitations, description of modern ginning machine, ginning performanceon yarn quality, impurities

Unit 3.

Opening and Cleaning: Opening and cleaning: Introduction, the need for opening and cleaning, type of opening and degree of opening, impurities to be eliminated.

Unit 4.

Blending: The purpose of blending, selection of blend constituents, measures of blending, blending procedures- merits and demerits.

CCLXVI.   **TEXTILE MANAGEMENT PRACTICAL- IRC 12B LAB:**

Marks: Pr (ESE: 3Hrs) =25   **Pass Marks: Pr (ESE) = 10**

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: **60 Lectures**

To study and sketch the working mechanism of a card with respect to flow of material
To study and sketch the working mechanism of feed systems
To study and sketch the working mechanism of flats
To study and sketch the working mechanism of delivery and web collection
To study and sketch the working mechanism of coiler and sliver packing
To study different settings of the card

---- INTRODUCTION TO STOCK MARKET – IRC 13

CCLXVII.   <u>Semester - 1</u>

<u>INTRODUCTION TO STOCK MARKET – IRC 13A:</u>

(Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

<u>*End Semester Examination (ESE 75 marks):*</u>

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

Unit I: Financial System And Services:

Nature and role of financial structure - Financial system and financial markets - Financial system and economic development -Indian financial system: an overview; Investment alternatives and evaluation; Reforms in financial system, Investment banking; Credit Rating; Factoring and Forfaiting; Housing Finance; Leasing and hire purchase; Financial inclusion and Microfinance

Unit II: Financial Markets:

 Money market- meaning, constituents & function; Money market instruments – call money, treasury bills, and certificate of deposits, Commercial bills, and trade bills, Acceptance Houses, Discount Houses; Capital markets – primary and secondary market; Government securities markets; Role of SEBI - an overview and recent developments. Role of RBI, SEBI. DFHI, SHCI in Financial Markets.

Unit III: Financial Institutions:

Reserve bank of India – organization, management, and function; Commercial banks - meaning, functions and investment policies; Development banks – concept, objectives, and function; Insurance companies – objectives, role, and investment practices, -IRDS; Unit Trust of India – objective, function, and schemes; role and functions of non-banking financial institutions; Merchant banking-functions and role.

Sources of finance – Financial Instruments – Types, Features and advantages – Equity and special types of equity, ADRs & GDRs; Preferred stock - Equity derivatives – Credit derivatives

Asset –backed securities - Convertibles and warrants - Types of Bonds and debentures

Non- Marketable Financial Assets - Options instruments - securitization

Unit V: Mutual Funds:

Concept and performance of Mutual funds; Regulation of Mutual funds (with special reference to SEBI guidelines); Designing and marketing of mutual fund schemes; Latest mutual funds schemes in India – an overview; Mutual Fund Evaluation and Tax aspects of Mutual Fund Investments.

CCLXVIII. <u>INTRODUCTION TO STOCK MARKET PRACTICAL- IRC 13A LAB:</u>

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

<u>*End Semester Examination (ESE):*</u>

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS:　　　　　　　　　　　　　　　　　　　　　　　60 Lectures

Visit to a local market to study various marketing functions performed by different agencies(market functionaries).
Identification of marketing channels for selected mutual fund
　2.Identification of marketing channels for selected Equity
3.Identification of marketing channels for selected commodity.
Collection of data regarding marketing cost and marketing margins of different commodities and presentation of report in the class.
Visit to market institutions – NAFED, SWC, CWC, cooperative marketing society, etc. to study their organization and functioning.
Application of principles of comparative advantage of international trade

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CCLXIX.   Semester - 2

INTRODUCTION TO STOCK MARKET – IRC 13B:

(Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

Unit – 1: Capital Markets in India

An overview of Indian Securities Market, Meaning, Functions, Intermediaries, Role ofPrimary Market – Methods of floatation of capital – Problems of New Issues Market – IPO's
– Investor protection in primary market – Recent trends in primary market – SEBI measuresfor primary market.

Unit – 2: Stock exchanges and its Functions:

Meaning, Nature, Functions of Secondary Market – Organisation and Regulatory frameworkfor stock exchanges in India – SEBI: functions and measures for secondary market – Overview of major stock exchanges in India - Listing of Securities: Meaning – Merits and Demerits – Listing requirements, procedure, fee – Listing of rights issue, bonus issue, further issue – Listing conditions of BSE and NSE – Delisting

Unit - 3: Trading, settlement and Surveillance System in Stock Exchanges:

Different trading systems – BSE - BOLT System – Different types of settlements - Pay-in and Pay-out – Bad Delivery – Short delivery – Auction – NSE – NEAT system options – Market types, Order types and books – De-mat settlement – Physical settlement – Institutional segment
– Funds settlement – Valuation debit – Valuation price – Bad and short delivery Risk management system in BSE & NSE – Margins – Exposure limits – Surveillance system in BSE & NSE – Circuit breakers

Unit - 4: Stock Market Indices:

Meaning, Purpose, and Construction in developing index – Methods (Weighted Aggregate Value method, Weighted Average of Price Relatives method, Free-Float method) – Stockmarket indices in India – BSE Sensex - Scrip selection criteria –

Other BSE indices (briefly) – NSE indices – S&P CNX Nifty – Scrip selection criteria – Construction – Stock market indices in foreign countries (Overview).

Unit – 5: Commodity and Currency Markets:

Commodity exchanges: evolution and history

– role in globalizing economy – governing regulations – price –risk management – commodity exposure – hedge accounting – currency futures – managing exchange rate – carbon markets – weather derivatives – ETFs – Purpose, Importance, types, construction

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CCLXX.   INTRODUCTION TO STOCK MARKET PRACTICAL- IRC 13B LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: 60 Lectures

Plotting and study of demand and supply curves and calculation of elasticities.
Study of relationship between market arrivals and prices of some selected commodities.
3.Computation of marketable and marketed surplus of important commodities.
Study of price behaviour over time for some selected commodities
5.Construction of index numbers.

---- TRAVEL AND TOURISM – IRC 14

CCLXXI. <u>Semester - 1</u>

<u>TRAVEL AND TOURISM – IRC 14A:</u>   (Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

<u>End Semester Examination (ESE 75 marks):</u>

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

<u>Course Content:</u>

Unit-I Growth of Travel Through Ages

An Ancient Phenomenon

Accounts of Famous Travellers

Pleasure Travel

Religion as A Motivator

The Grand Tour

The Origin of the Concept of the Annual Holiday

Industrial Revolution & The Development of Travel

Effects of The Great War on the Transport System

Advent of the Jet

Advent of High Speed Trains

Unit-II Growth & Development of Modern Tourism

Post - Second World War Phenomenon

Causes of Rapid Growth

Meaning & Nature of Tourism

Basic Components of Tourism

Elements of Tourism

Unit-III Motivation for Travel

Basic Travel Motivations

Sociology of Tourism
Role of State in Promoting Social Tourism
Social Significance of Travel
Evolution of Demand
Factors Influencing the Growth of Tourism

Unit-IV The Organisation of Tourism

Need For Organisation
Factors Influencing Type of Organisation
Recommendation of The UN Conference
The Nationall Tourist Organisation
Tourist Organisation in India
Tourist Organisation in Italy

Unit-V The Measurement of Tourism

Need for Measuring Tourism Phenomenon
Importance of Tourist Statistics
Definition of the Term 'Tourist'
Definition by Tthe League of Nation & The U.N
European Travel Commission
United Nations Rome Conference
Domestic Tourism
General Problems of Measurements

CCLXXII.   TRAVEL AND TOURISM PRACTICAL- IRC 14A LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: 60 Lectures

Types of Maps
India Tourism Map
Bihar Tourism Map
Jharkhand Tourism Map

CCLXXIII.   <u>Semester - 2</u>

<u>TRAVEL AND TOURISM – IRC 14B:</u>   (Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

<u>End Semester Examination (ESE 75 marks):</u>

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: *There may be subdivisions in each question asked in Theory Examinations.*

Course Content:

Unit-I Tourism Planning & Development

Planning For Tourism
Co-Ordination In Planning
Assessment of Tourist Demand & Supply
Establishing Objectives
Territorial Planning
Basic Infrastructure
Financial Planning

Unit-Ii

Human Resource Planning
Administrative Structure , Tourism Marketing
Promotion Monitoring Progress
Time Factor
Environment Planning
Regional Planning Considerations

Unit-Iii

Economic & Social Significance of Tourism
Economic Benefits
The Multiplier Effect Development of
Infrastructure
Regional Development
Effects On Employment

Unit-Iv

Tourism & Economic Value of Cultural Resources
Cultural Tourism In India
Tourism & Intrenational Ubderstanding
Manila Declaration On World Tourism

Unit-VInternational Organisations & Tourism

Early History of Co-Operative Endeavour International Union of official Travel Organisation

World Tourism Organisation (WTO)

Pacific Area Travel Association (PATA)

International Air Transport Association (IATA)

International Civil Aviational Organisation (ICAO)

CCLXXIV. <u>TRAVEL AND TOURISM PRACTICAL- IRC 14B LAB:</u>

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

<u>*End Semester Examination (ESE):*</u>

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: 60 Lectures

Familiarization with Travel Documents (Passport, Visa, Health Check, Travel Insurance, Special Permits, Disembarkation and Embarkation Card etc)

Immigration Check, Customs Formalities, TBRE Form etc

Application Forms , Formats and procedure for obtaining above documents

Types of Itineraries (Cultural Tour, Wild Life Tour, Monuments , Adventure Tours etc)

Costing and Planning of Itineraries

Preparation of Tour Packages

---- FORESTRY AND WILD LIFE – IRC 15

CCLXXV.   <u>Semester - 1</u>

<u>FORESTRY AND WILD LIFE – IRC 15A:</u>   (Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

<u>*End Semester Examination (ESE 75 marks):*</u>

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: *There may be subdivisions in each question asked in Theory Examinations.*

<u>Course Content:</u>

UNIT I

Forest Ecology: Definition Concept of ecosystem, structure and function of ecosystem, biotic and abiotic components, energy flow in the ecosystem, food chain, food web, trophic level. Succession: Definition, course of succession, types of succession mechanism of succession of documentary succession, weed in succession, climax concept in succession, Biome.

UNIT II

Concept of community, attributes, physiognomy, species composition, species diversity, methods of sampling forest community. Community ecology: definition, characterization of community; composition, structure, origins and development of community, method of study of community, unit of vegetation classification. Population ecology, population characteristic, population growth, population interactions.

UNIT III

Definition of Wildlife, Important wildlife sanctuary & National park in India & Chhattisgarh. In-situ & Ex-situ conservation techniques of wildlife, Wildlife conservation projects- Tiger, Elephant, Lion and Crocodile.

UNIT IV

Introduction to wildlife, forest & wildlife, important of wildlife & value of wildlife, status of wildlife in India. IUCN revised red list categories, Red Data Book and listing,

wildlife census, radio telemetry in wildlife studies. Captive wildlife: Zoo and safari parks Captive breeding for conservation Central Zoo Authority of India.

CCLXXVI.   **FORESTRY AND WILD LIFE PRACTICAL- IRC 15A LAB:**

Marks: Pr (ESE: 3Hrs) =25	**Pass Marks: Pr (ESE) = 10**

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: **60 Lectures**

Vegetation survey to study forest composition.
Quantification of litter accumulation and decomposition.
Estimation of nutrients in soil plant samples.
Herbarium preparation.
Identification of wildlife.
Exercise on the census methods, use of software for analysis of census data.

CCLXXVII. Semester - 2

FORESTRY AND WILD LIFE – IRC 15B: (Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

UNIT I

Wasteland- Definition, distribution in India, types of wastelands, wasteland development and management, selection of tree species for wasteland development, development through aforestation and reforestation.

UNIT II

Reclamation & restoration of problematic land- Mined area, degraded land, saline & alkaline land, waterlogged area, desert & other lands, industrial plantation

UNIT III

Definition and concept of watershed, definition of watershed management, factor influencing watershed, identification of watershed problems, objective of watershed management, planning for watershed development, development of vegetative barriers for soil and water conservation.

UNIT IV

Wasteland and watershed management approaches: Biological approaches, community approaches. Mechanical engineering approaches, water harvesting techniques and recycling of rain water.

CCLXXVIII. **FORESTRY AND WILD LIFE PRACTICAL- IRC 15B LAB:**

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: **60 Lectures**

Determination of soil chemical properties of different wastelands.
Assessment of vegetation on wasteland.
Visit of watershed and wasteland area and report submission
Plantation techniques on wastelands.

---- BEAUTY AND WELLNESS – IRC 16

CCLXXIX.   Semester - 1

BEAUTY AND WELLNESS – IRC 16A: (Credits: Theory-01 + Practical 02)

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

End Semester Examination (ESE 75 marks):

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

***Note:** There may be subdivisions in each question asked in Theory Examinations.*

Course Content:

UNIT I: Perform basic skin care services -I

Anatomical structure of the skin -The layers of the epidermis: the dermis, the subcutaneous layer; the hair follicle, the hair shaft, the sebaceous gland, arrector pili muscle, sweat gland, and sensory nerve endings Functions of the skin – Sensitivity, heat regulation, absorption, protection, excretion, secretion and vitamin D production

UNIT II: Perform basic skin care services-II

Characteristics of the skin and skin types – oily, dry, combination etc.
Actions of the facial, neck and shoulder muscles – bones of the head, neck and shoulder girdle,

UNIT III: Perform basic skin care services-III

position of the head, face, neck, chest and shoulder. Effect of the natural ageing process on the skin, facial muscles and muscle tone Different types of skin products and methods to apply Importance of cleansing, toning, patch test & bleach. Need for skin warming, different types of skin warming devices and its effect on the skin Black head/ white head extraction Bleach preparation & application Face clean-up
Different types of masks and their effects on the skin Masks: Cream, warm oil, clay, peel off, thermal, etc. links between mask application timing and skin condition

Equipment, materials, products, techniques and treatment planning for waxing Anatomy and physiology of skin that relates to waxing treatment Contra-indications & contra-actions that affect or restrict waxing treatments Understand how to work safely and effectively when providing waxing treatments to the clients Various techniques associated with and working temperatures for the different types of hot wax and warm wax

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CCLXXX. <u>BEAUTY AND WELLNESS PRACTICAL- IRC 16A LAB:</u>

Marks: Pr (ESE: 3Hrs) =25   **Pass Marks: Pr (ESE) = 10**

Instruction to Question Setter for

<u>End Semester Examination (ESE):</u>

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: **60 Lectures**

Draw & label the structure of skin.

Demonstration of various facial strokes, muscles, pressure points & lymphatic drainage

Identification of skin type & condition

Perform facial strokes on dummies

Demonstration of performing cleansing process

Analyzing skin sensitivity & conduct patch test

CCLXXXI. <u>Semester - 2</u>

<u>BEAUTY AND WELLNESS – IRC 16B:</u>   (Credits: Theory-01 + Practical 02)

Theory: 15 Lectures

Marks: 75 (ESE: 3 Hrs) = 75	Pass Marks: Th (ESE) = 30

Instruction to Question Setter for

<u>*End Semester Examination (ESE 75 marks):*</u>

*There will be **two** group of questions. **Group A is compulsory** which will contain three questions. **Question No.1 will be very short answer type** consisting of five questions of 1 mark each. **Question No.2 & 3 will be short answer type** of 5 marks. **Group B will contain descriptive type** six questions of fifteen marks each, out of which any four are to answer.*

Note: There may be subdivisions in each question asked in Theory Examinations.

Course Content:

UNIT I: Makeup Services-I

Basic Skin Types and Skin
TonesMakeup Products
Selection and Application of Right Makeup Products to Enhance Facial Features

UNIT II: Makeup Services-II

The Colour Wheel Basic
 Bindi Designs Draping

Makeup Removal Methods

UNIT III: Facial Beauty Services

Facial Steamer
Electro Facial Skin Treatment

UNIT IV: Salon Reception Duties

Client Care
Maintain Reception Area
Process Payments

UNIT V: Creating Positive Impression at Work Place

Creating Positive Impression at Work Place

CCLXXXII. BEAUTY AND WELLNESS PRACTICAL- IRC 16B LAB:

Marks: Pr (ESE: 3Hrs) =25	Pass Marks: Pr (ESE) = 10

Instruction to Question Setter for

End Semester Examination (ESE):

There will be one Practical Examination of 3Hrs duration. Evaluation of Practical Examination may be as per the following guidelines:

Experiment/Activities	*= 15 marks*
Practical record notebook	*= 05 marks*
Viva-voce	*= 05 marks*

PRACTICALS: 60 Lectures

Conduct skin test to check for reaction
Assess the hair growth pattern
Demonstrate pre- & post preparation of client for waxing
Demonstration of the process for warming the wax
Perform waxing process as per requirement

FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION

Question format for **50 Marks**:

Subject/ Code

F.M. =50   Time=3Hrs.   Exam Year

General Instructions:

Group A carries very short answer type **compulsory** questions.
Answer 3 out of 5 subjective/ descriptive questions given in **Group B**.
Answer in your own words as far as practicable.
Answer all sub parts of a question at one place.
Numbers in right indicate full marks of the question.

Group A

[5x1=5]

    i.   ....
    ii.   ....
    iii.   ....
    iv.   ....
    v.   ....

Group B

2. ....   [15]
3. ....   [15]
4. ....   [15]
5. ....   [15]
6. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

Question format for **75 Marks**:

Subject/ Code

F.M. = 75   Time=3Hrs.   Exam Year

General Instructions:

    i.   **Group A** carries very short answer type **compulsory** questions.
    ii.   **Answer 4 out of 6** subjective/ descriptive questions given in **Group B**.
    iii.   Answer in your own words as far as practicable.
    iv.   Answer all sub parts of a question at one place.
    v.   Numbers in right indicate full marks of the question.

Group A

1.   [5x1=5]

    i.   ....
    ii.   ....
    iii.   ....
    iv.   ....
    v.   ....

2. ....   [5]
3. ....   [5]

Group B

4. ....   [15]
5. ....   [15]
6. ....   [15]

Note: There may be subdivisions in each question asked in Theory Examination.

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AK SINGH COLLEGE ,JAPLA, PALAMU

7. ....   [15]
8. ....   [15]
9. ....   [15]

AK SINGH COLLEGE ,JAPLA, PALAMU

Principal
A.K. Singh College
Japla, Palamu

Question format for **100 Marks**:

Subject/ Code

F.M. = 100   Exam Year

~~Time=3Hr.~~

General Instructions:

Group A carries very short answer type **compulsory** questions.
Answer 4 out of 6 subjective/ descriptive questions given in **Group B**.
Answer in your own words as far as practicable.
Answer all sub parts of a question at one place.
Numbers in right indicate full marks of the question.

~~Group A~~

1.
i.	....	vi.	....
ii.	....	vii.	....
iii.		viii.	
iv.	....	ix.	....

[10x1=10]

2. ....   [5]
3. ....   [5]

Group B

4. ....   [20]
5. ....   [20]
6. ....   [20]
7. ....   [20]
8. ....   [20]
9.   [20]

Note: There may be subdivisions in each question asked in Theory Examination.

Principal
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Japla, Palamu

AK SINGH COLLEGE ,JAPLA, PALAMU

ACADEMIC CALENDAR
A.K. SINGH COLLEGE, JAPLA
JULY 2022 TO JUNE 2023

A. K. Singh college, Japla has committed its Vision to uphold and instil a high sense of dedication and discipline in Student's minds and to ensure globally fit higher education by exploring qualitative logical, eritical and ethical Education.

JULY 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

DATE OF

Teaching/ Working Days	Total
2nd,4th,5th,6th,7th,8th,11th,12th,14th,15th,16th,18th,19th,20th,21st, 22nd,23th,25th,26th,27th,28th,29th ,30th	23
Sundays:- 3th, 10th, 17th, 24th, 31st	5
Holidays:- 11th – Rathyatra, 9th – Id- Ul- Zoha, 13th – Guru purnima	3

Commencement of End Sem. Exam. Of Sem.- III CBCS (Session 2023-23) and Backlog from 04.07.2022 to 17.07.2022. Classes remained Postponded.

Principal
04/2022
A.K.Singh College
Japla, Palamau

AUGUST 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

DATE OF

Teaching/ Working Days	Total
1st,2nd,3rd,4th,5th,6th,12th,13th,16th,17th,18th,20th,22nd,23rd,24th ,25th,26th,27th ,29th,30th	20
Sundays:- 7th, 14th, 21st, 28th	4
Holidays:-8th- Last Monday of Sawan, (9th – 11th)- Moharam and Raksha Bandhan, 15th – Independence Day, 19th – Janmashtmi, 31st- Ganesh Chaturthi	7

2.Commencement of MSE of Sem.-IV (Session 2021-24) from 22.08.2022 to 27.08.2022 (Department Wise).

25/04/2022

Principal
A.K.Singh College
Japla, Palamau

SETEMBER 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

DATE OF

Teaching/ Working Days	Total
1st,2nd,3rd,5th,8th,10th,12th,13th,14th,15th,19th,20th,21st,22nd, 23rd,24th	16
Sundays:- 4th , 11th, 18th, 25th	4
Holidays:-(6-7Sept.)- Karma puja, 9 Sept Anant Chaturdarshi, (16–17Sept.)- Chahallum/Vishwakarma Puja, (26,27,28,29,30Sept.)-Kalashsthapna, Vijay Dashmi Miled- Un- Nabi/Birhday of prophet Mohammad	10

25/09/22

Principal
A.K.Singh College
Japla, Palamau

OCTOBER 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

DATE OF

Teaching/ Working Days	Total
10th,11th,12th,13th,14th,15th,17th,18th,19th,20th,21st, 22nd,23th,25th,26th,27th,28th,29th ,30th	11
Sundays:- 2nd, 9th, 16th, 23rd, 30th	5
Holidays:- 1st to 8th – Vijay Dashami, Miled- un- Nabi,(22th , 24th , 25th, 26th, 27th ,28th ,29th ,31st)- Dhanteras, Deepawali, Chhath Puja	15
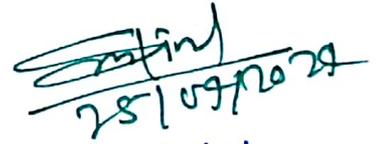
Principal
A.K.Singh College
Japla, Palamau

NOVEMBER 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

DATE OF

Teaching/ Working Days	Total
1st,2nd,3rd,4th,5th,7th,9th,10th,11th,12th,14th,16th,17th,18th,19th,21^{s}^{t}, 22nd,23th,25th,26th,28th,29th ,30th	24
Sundays:- 6th, 13th, 20th, 27th	4
Holidays:- 8th – Guru Jaynati,15th –Jharkhand Sthapna Diwas, Birsa Jaynati	02

Commencement of End Sem. Exam of Sem.- I (All Backlog) from 09.11.2022 to 28.11.2022 and Sem.- II CBCS (session 2021-24) and Backlog from 09.11.2022 to 01.12.2022. Classes remained postponded.

25/04/2022

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Japla, Palamau

DECEMBER 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

DATE OF

Teaching/ Working Days	Total
1st,2nd,3rd,5th,6th,7th,8th,9th,10th,12th,13th,14th,15th,16th,17th, 19th,20th,21st, 22nd	19
Sundays:- 4th , 11th, 18th, 25th	4
Holidays (23rd – 31st)= Chirsmas and Winter Vacation	08

1. Commencement of ESE of part-I (All Backlog) From 06.12.2022 to 16.12.2022 Classes remained postponded.
2. Commencement of ESE of Sem.- IV (session 2019-22) from 06.12.2022 to 21.12.2022 Classes remained postponded.

25/04/2022

Principal
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JANUARY 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

DATE OF

Teaching/ Working Days	Total
2nd,3rd,4th,6th,7th,9th,10th,11th,12th,14th,16th,17th,18th, 19th,20th,21st, 24th,25th,28th, 30th ,31st	21
Sundays:- 1st , 8th, 15th, 22nd , 29th	5
Holidays :- 5th – Guru Govind Singh Jayanti, 13th -14th – Maker Sankranti Tisu parblohri, 23th- Subhas Chandra Bose Jaynti, 26th -Republic Day, 27th –Basant Panchami	05

1. Commencement of End Sem. Examination of Sem.-IV CBCS (Session 2022-23)   and Backlog Exam. 2022 from 18.01.2022 to 25.02.2023 Classes remaind postponded/ Suspended.
2. Commencement of MSE of Sem.- IV (Session 2020-23) from 03.01.2023 to 11.01.2023. (Depart. Wise)

25/04/2022

Principal
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FEBRUARY 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

DATE OF

Teaching/ Working Days	Total
1st ,2nd ,3rd,6th,7th,8th, 9th,10th,11th,13th,14th,15th ,16th ,17th, 20th,21st, 24th,25th,27th,28th	22
Sundays:- 5th , 12th, 19th, 26th	4
Holidays :- 5th – Hasart Ali Birthday, 18th - Mahashivratri	02

Due to ESE of Sem.-IV CBCS (Session 2020-23) and Backlog Exam. 2022 Classess remained postponded/ suspended upto 25.02.2023.

Principal
A.K.Singh College
Japla, Palamau

MARCH 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

DATE OF

Teaching/ Working Days	Total
1st,2nd,3rd,4th,13th,14th,15th,16th,17th,18th,20th,21st,22nd,23rd ,24th,25th,28th, 29th	18
Sundays:- 5th , 12th, 19th, 26th	4
Holidays :- 6th ,7th,8th,9th,10th,11th – Holi and Sab-E- Barat, 24th – Sarhul, 30th ,31th- Ram Navmi	09
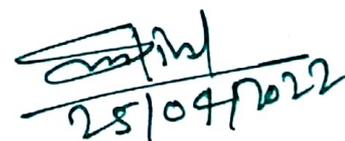
25/04/2022

Principal
A.K.Singh College
Japla, Palamau

APRIL 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

DATE OF

Teaching/ Working Days	Total
$1^{st}, 3^{rd}, 5^{th}, 6^{th}, 11^{th}, 12^{th}, 15^{th}, 17^{th}, 18^{th}, 20^{th}, 21^{st}, 22^{nd}, 24^{th}, 25^{th}, 26^{th}, 27^{th}, 28^{th}, 29^{th}$	19
Sundays:- 2nd , 9th, 16th, 23th , 30th	5
Holidays :- 4th – Mahabir Jayanti, $7^{th}, 8^{th}, 10^{th}$– Good Friday Ester Monday, 13th-14th – Baishakhi Ambedkar Jayanti	06

Commencement of Mid Sem. Exam. Of Sem.- I&II (Session 2022-26) from 18.04.2023 to 26.04.2023 (Department Wise).

25/04/2022

Principal
A.K.Singh College
Japla, Palamau

MAY 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

DATE OF

Teaching/ Working Days	Total
2nd,3rd,4th,6th,8th,9th,10th,11th,12th,13th	10
Sundays:- 7th , 14th, 21th, 28th	4
Holidays :- 1st – Majdoor Diwas, 5th – Budh Purnima, 15th-31th – Summer Vacation	17

Commencement of Mid Sem. Exam. Of Sem.- V (Session 2020-23) from 04.05.2023 to 18.05.2023 (Department Wise).

25/04/2022

Principal
A.K.Singh College
Japla, Palamau

JUNE 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

DATE OF

Teaching/ Working Days	Total
$12^{th},13^{th},14^{th},15^{th},16^{th},17^{th},19^{th},21^{st},22^{nd},23^{th},24^{th},26^{th},27^{th},$ 28th	14
Sundays:- 4th , 11th, 18th, 25th	4
Holidays :- ($1^{st} - 10^{th}$)- Summer Vacation, 20th – Rathyatra, 29th-30th – Id- Ul- Zulam Huldiwas	12

Commencement of MSE of Sem.- III (Session 2021-24) from 26.06.2023 to 05.07.2023 (Department Wise).

28/09/2022

Principal
A.K.Singh College
Japla, Palamau

SESSION 2022-23

A. K. SINGH COLLEGE, JAPLA

MASTER ROUTINE NATURAL & PHYSICAL SCIENCE, COMMERCE, MATHEMATICS & ARTS (HUMANITIES & SOCIAL SC)

Day	Semester	09 30 10	10 10 10	10 50 11 30	11 30 12 30	12 30 01 30	01 30 02 30	02 30 03 30
MONDAY	SEM-1 2023-27	MJ-01+ZOOL-H-1,PHY-H-2,CHE-C-3,BOT-SC-5,MAT-C-19,COM-C-21	MN-1A+ZOOL-H-1,PHY-H-2,CHE-C-3,BOI-SC-5,MAT-C-19,COM-C-21	MJ-01+HIN-H-1,HIS-H-2,URD-C-3,SNK-SC-5,ECO-SC-12,ENG-C-18,SOC-C-19,PSY-C-20,POL-Sc-C-21,GEO-C-22,HOME-Sc-C-23,PHIL-C-24,	LEISURE HOUR	LEISURE HOUR		PDC-H-1,AMANAT-C-22,ENG,SP-C18,YOGA-SEMINAR HALL/C-24,COMP-C-14/SC-12,TAX-C-21, GROUND)
	SEM-2 2022-26 C-20	MJ-02+PHY-SC-12,CHE-C-18,MAT-C-21	CC-5+PHY-SC-12,CHE-C-18,MAT-C-20		LEISURE HOUR	LEISURE HOUR		SPORTS (COLLEGE CAMPUS GROUND)
	SEM-3 2023-24 C-23	HCC-11+ PHY-C-19,CHE-C-20,MAT-C-23	IIC-2+PHY-SC-12,CHE-C-18,MAT-C-20	LEISURE HOUR	LEISURE HOUR			
TUESDAY	SEM-1 2023-27	MJ-Q2+PHY-SC-12,CHE-C-18,MAT-C-23	H-CC-12+PHY-C-19,CHE-C-20,MAT-C-23	H-DSE-02+HIN-H-1,HIS-H-2,URD-C-3,SNK-SC-5,ECO-SC-12,ENG-C-18,SOC-C-19,PSY-C-20,POL-Sc-C-21,GEO-C-22,HOME-Sc-C-23,PHIL-C-24,	LEISURE HOUR	LEISURE HOUR		PDC-H-1,AMANAT-C-22,ENG-SP-C18,YOGA-SEMINAR HALL/C-24,COMP-C-14/SC-12,TAX-C-21,
	SEM-2 2022-26 C-23	MJ-1a+PHY-H-2,CHE-C-3,MATH-19	GE/GEN+PHY-C-19,CHE-C-20,MAT-C-23	MN-1A+HIN-H-1,HIS-H-2,URD-C-3,SNK-SC-5,ECO-SC-12,ENG-C-18,SOC-C-19,PSY-C-20,POL-Sc-C-21,GEO-C-22,HOME-Sc-C-23,PHIL-C-24,	LEISURE HOUR	LEISURE HOUR		SPEECH/DEBATE COMPETITION (SEMINAR HALL)
	SEM-3 2023-24 C-23	HCC-11+ PHY-C-19,CHE-C-20,MAT-19	MDC-1+ PHY-H-2,CHE-C-3,MATH-19		LEISURE HOUR	LEISURE HOUR		
WEDNESDAY	SEM-1 2023-27	MJ-1+MAT-C-19,PHY-H-2,CHE-C-3,MAT-C-19	AEC-1+MIL-HN-H-1,MIL-ENG-H-2,MAT-C-19	GE/GEN+HIN-H-1,HIS-H-2,URD-C-3,SNK-SC-5,ECO-SC-12,ENG-C-18,SOC-C-19,PSY-C-20,POL-Sc-C-21,GEO-C-22,HOME-Sc-C-23,PHIL-C-24,	LEISURE HOUR	LEISURE HOUR		PDC-H-1,AMANAT-C-22,ENG-SP-C18,YOGA-SEMINAR HALL/C-24,COMP-C-14/SC-12,TAX-C-21,
	SEM-2 2022-26	MJ-2+PHY-SC-12,CHE-C-18,MAT-C-20	VAC-1+PHY-H-2,CHE-C-3,MAT-C-19	MDC-1+HIN-H-1,HIS-H-2,URD-C-3,SNK-SC-5,ECO-SC-12,ENG-C-18,SOC-C-19,PSY-C-20,POL-Sc-C-21,GEO-C-22,HOME-Sc-C-23,PHIL-C-24,	LEISURE HOUR	LEISURE HOUR		INDOOR GAMES (GIRLS / BOYS COMMON ROOM
	SEM-3 2023-24 20	H-DSE-14+PHY-SC-12,CHE-C-18,MAT-C-20	IRC-2+ZOOL-C-3,BOT-SC-5,MAT-C-20		LEISURE HOUR	LEISURE HOUR		
THURSDAY	SEM-1 2023-27 24	H-DSE-14+ZOOL-H-1,PHY-H-2,CHE-C-3,PHY-C-21,COM-C-22,CHE-C-23,PHY-C-24	GE/GEN+PHY-H-2,CHE-C-18,MAT-C-19,PHY-C-19,CHE-C-20,MAT-C-23	AEC-3 (MIL HN)+HIN, ENG, URD, SNK, PHI-H-1, HIS, SOC, PSY, POL Sc-H-2, HOME Sc, GEO, ECO-C-3	LEISURE HOUR	LEISURE HOUR		PDC-H-1,AMANAT-C-22,ENG,SP-C18,YOGA-SEMINAR HALL/C-24,COMP-C-14/SC-12,TAX-C-21,
	SEM-2 2022-26 20,	CC-6+CHE-C-3, PHY-SC-12, MAT-C-20,	IVS-1B+ALL B.Sc.-S+H-1, ALL COM, SmC-18, MAT-C-20	AEC-1+MIL-HN-H-1,MIL-ENG-H-2,COM-C-21	LEISURE HOUR	LEISURE HOUR		CULTURAL PROGRAM/ACTIVITIES (SEMINAR HOL)
	SEM-3 2023-24	H-DSE-14+PHY-SC-12,MAT-C-20,			LEISURE HOUR	LEISURE HOUR		
FRIDAY	SEM-1 2023-27	MJ-1a+PHY-H-2,CHE-C-3,MATH-19	SEC-1x2+ZOOL-H-1,PHY-H-1,CHE-C-3,BOT-SC-5,MAT-19	CC-4+HIN-H-1,HIS-H-2,URD-C-3,SNK-SC-5,ECO-SC-12,ENG-C-18,SOC-C-19,PSY-C-20,POL-Sc-C-21,GEO-C-22,HOME-Sc-C-23,PHIL-C-24,	LEISURE HOUR	LEISURE HOUR		PDC-H-1,AMANAT-C-22,ENG-SP-C18,YOGA-SEMINAR HALL/C-24,COMP-C-14/SC-12,TAX-C-21,
	SEM-2 2022-26 21,	CC-4+ZOOL-H-1,BOT-SC-5,COM-C-21,CHE-C-18,MAT-C-20 20	CC-5+PHY-SC-12,CHE-C-18,MAT-C-3, IVS-1B+ALL Sc-S-H-1, ALL COM-H-2, MAT-C-3	CC-6+HIN-H-1,HIS-H-2,URD-C-3,SNK-SC-5,ECO-SC-12,ENG-C-18,SOC-C-19,PSY-C-20,POL-Sc-C-21,GEO-C-22,HOME-Sc-C-23,PHIL-C-24,	LEISURE HOUR	LEISURE HOUR		EXTRACURRICULAR ACTIVITIES (SEMINAR HALL)
	SEM-3 2023-24 C-24	CC-4+CHE-C-3, PHY-SC-12, MAT-C-20	GE/GEN+MAT-C-19, CHE-C-20, MAT-SC-5		LEISURE HOUR	LEISURE HOUR		
SATURDAY	SEM-1 2023-27	MJ-1a+PHY-H-2,CHE-C-19,MAT-C-20	SEC-1+PHY-H-2,MAT-C-19	MAT-C-3	SEC-1+HIN-H-1,HIS-H-2,URD-C-3,SNK-SC-5,ECO-SC-12,ENG-C-18,SOC-C-19,PSY-C-20,POL-Sc-C-21,GEO-C-22,HOME-Sc-C-23,PHIL-C-24,	LEISURE HOUR		PDC-H-1,AMANAT-C-22,ENG-SP-C18,YOGA-SEMINAR HALL/C-24,COMP-C-14/SC-12,TAX-C-21,
	SEM-3 2022-26 20	CC-4+PHY-SC-12,CHE-C-18,MAT-C-20	GE/GEN+ZOOL-H-1,BOT-SC-5,PHY-SC-12,CHE-C-18,COM-C-21,MAT-SC-5		IVS-1B+HIN-H-1,HIS-H-2,URD-C-3,SNK-SC-5,ECO-SC-12,ENG-C-18,SOC-C-19,PSY-C-20,POL-Sc-C-21,GEO-C-22,HOME-Sc-C-23,PHIL-C-24,	LEISURE HOUR		NSS ACTIVITIES (SEMINAR HALL/COLLEGE GROUND)
	SEM-5 2021-24 23	H-DSE-2+ZOOL-H-1,PHY-SC-5,PHY-C-19,CHE-C-20,COM-C-21,MAT-C-23	PDC-6+S, AMANAT-C-18,YOGA-C-20,TAX-C-19,COMP-C-21,ENG-SP-C-22,					

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Principal
A.K.Singh College
Japla, Palamau

01/05/2022