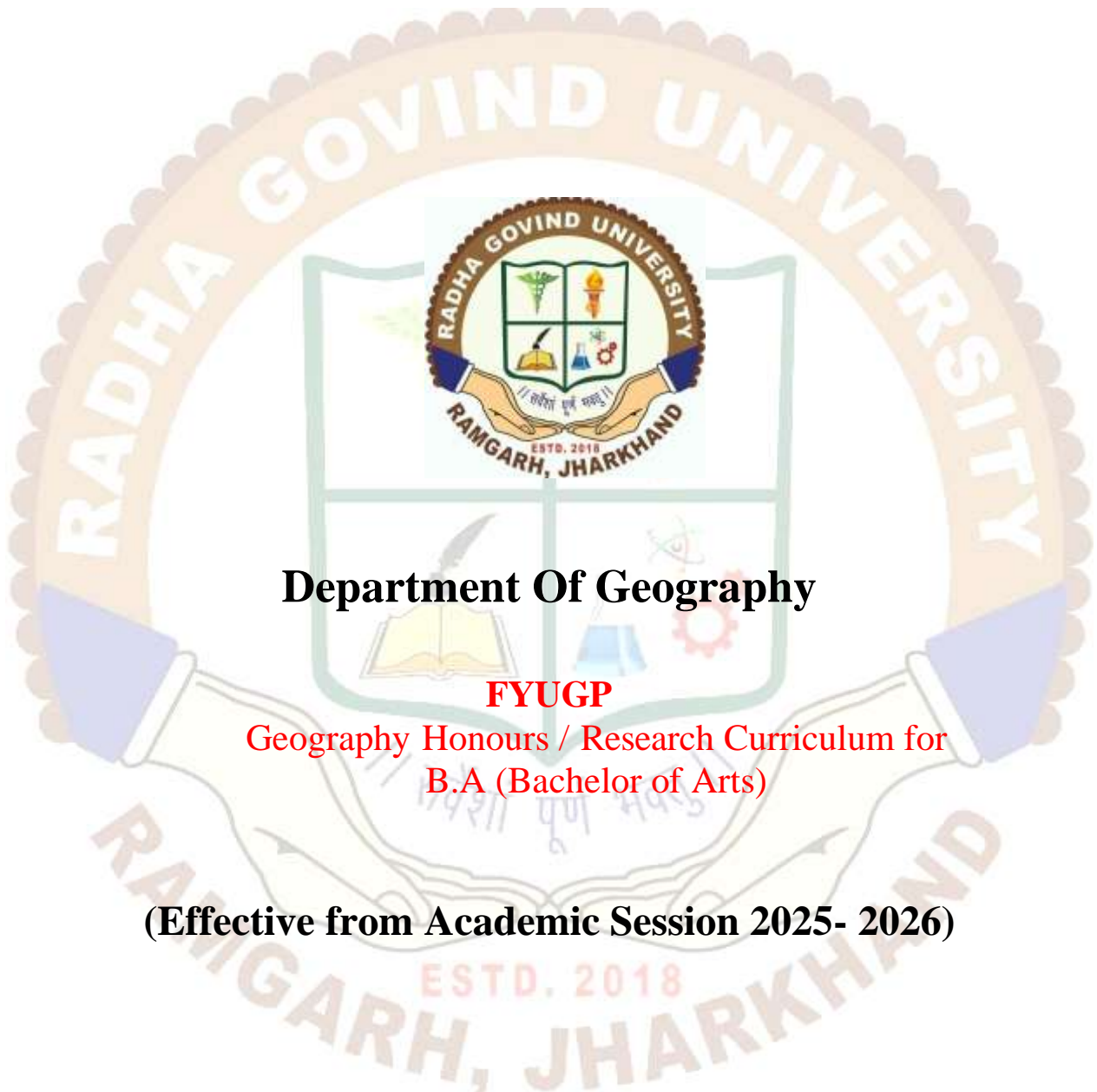


**RADHA GOVIND UNIVERSITY**

**RAMGARH, JHARKHAND**



**Department Of Geography**

**FYUGP**

**Geography Honours / Research Curriculum for  
B.A (Bachelor of Arts)**

**(Effective from Academic Session 2025- 2026)**



# Table of Content

<b>HIGHLIGHTS OF REGULATIONS OF FYUGP</b>	<b>1</b>
PROGRAMME DURATION	1
ELIGIBILITY	1
ADMISSION PROCEDURE	1
VALIDITY OF REGISTRATION	1
ACADEMIC CALENDAR	1
PROGRAMME OVERVIEW/ SCHEME OF THE PROGRAMME	2
CREDIT OF COURSES	2
CALCULATION OF MARKS FOR THE PURPOSE OF RESULT	2
PROMOTION CRITERIA	3
PUBLICATION OF RESULT	3
<b>COURSE STRUCTURE FOR FYUGP ‘HONOURS/ RESEARCH’</b>	<b>4</b>
Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under State Universities of Jharkhand [Total Credits = 160]	4
COURSES OF STUDY FOR FOUR YEAR UNDERGRADUATE PROGRAMME	5
Table 2: Semester wise Course Code and Credit Points for Single Major	5
NUMBER OF CREDITS BY TYPE OF COURSE	7
Table 3: Overall Course Credit Points for Single Major	7
Table 4: Overall Course Code and Additional Credit Points for Double Major	7
Table 5: Semester wise Course Code and Additional Credit Points for Double Major	8
SEMESTER WISE COURSES IN GEOGRAPHY MAJOR-1 FOR FYUGP	11
Table 7: Semester wise Examination Structure in Discipline Courses	11
Table 8: Semester wise Course Code and Credit Points for Skill Enhancement Courses	12
Table 9: Semester wise Course Code and Credit Points for Minor Courses	12
<b>INSTRUCTION TO QUESTION SETTER</b>	<b>13</b>
<b>FORMAT OF QUESTION PAPER FOR SEMESTER INTERNAL EXAMINATION</b>	<b>14</b>
<b>FORMAT OF QUESTION PAPER FOR END SEMESTER UNIVERSITY EXAMINATION</b>	<b>15</b>
<b>SEMESTER I</b>	<b>17</b>
I. MAJOR COURSE –MJ 1: EVOLUTION OF GEOGRAPHICAL THOUGHT	17
II. SKILL ENHANCEMENT COURSE- SEC 1: FIELD TECHNIQUES AND SURVEYING METHODS	18
<b>SEMESTER II</b>	<b>19</b>
I. MAJOR COURSE- MJ 2: PHYSICAL GEOGRAPHY	19
II. MAJOR COURSE- MJ 3: PRACTICALS-I: (CARTOGRAPHIC TECHNIQUES)	20
III. SKILL ENHANCEMENT COURSE- SEC 2: INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEM AND GPS	21
<b>SEMESTER III</b>	<b>22</b>
I. MAJOR COURSE- MJ 4: HUMAN AND SETTLEMENT GEOGRAPHY	22
II. MAJOR COURSE- MJ 5: PRACTICALS-II: (STATISTICAL METHODS IN GEOGRAPHY)	23
III. SKILL ENHANCEMENT COURSE- SEC 3: ELEMENTARY COMPUTER APPLICATION SOFTWARES	24
<b>SEMESTER IV</b>	<b>25</b>
I. MAJOR COURSE- MJ 6: WORLD REGIONAL GEOGRAPHY	25
II. MAJOR COURSE- MJ 7: FUNDAMENTALS OF REMOTE SENSING & GIS	26

III. MAJOR COURSE- MJ 8: PRACTICALS-III: (REMOTE SENSING & GIS) .....	27
<b>SEMESTER V .....</b>	<b>28</b>
I. MAJOR COURSE- MJ 9: ECONOMIC GEOGRAPHY.....	28
II. MAJOR COURSE- MJ 10: GEOGRAPHY OF INDIA & JHARKHAND.....	29
III. MAJOR COURSE- MJ 11: PRACTICALS-IV: (INSTRUMENTAL SURVEY AND SOCIO-ECONOMIC PROJECT WORK) .....	30
<b>SEMESTER VI .....</b>	<b>31</b>
I. MAJOR COURSE- MJ 12: POPULATION GEOGRAPHY .....	31
II. MAJOR COURSE- MJ 13: AGRICULTURAL GEOGRAPHY.....	32
III. MAJOR COURSE- MJ 14: REGIONAL PLANNING AND DEVELOPMENT .....	33
IV. MAJOR COURSE- MJ 15: PRACTICALS-V: (PHYSICAL SURVEY PRACTICAL).....	34
<b>SEMESTER VII .....</b>	<b>35</b>
I. MAJOR COURSE- MJ 16: NATURAL RESOURCE MANAGEMENT AND ENVIRONMENTAL GEOGRAPHY .....	35
II. MAJOR COURSE- MJ 17: SOCIAL AND TRIBAL GEOGRAPHY.....	36
III. MAJOR COURSE- MJ 18: TRANSPORT AND TOURISM GEOGRAPHY .....	37
IV. MAJOR COURSE- MJ 19: PRACTICALS-VI: (ADVANCED CARTOGRAPHY) .....	38
<b>SEMESTER VIII .....</b>	<b>39</b>
I. MAJOR COURSE- MJ 20: GEOMORPHOLOGY .....	39
II. ADVANCED MAJOR COURSE- AMJ 1: URBAN GEOGRAPHY.....	40
III. ADVANCED MAJOR COURSE- AMJ 2: SOIL AND HYDROLOGY .....	41
IV. ADVANCED MAJOR COURSE- AMJ 3: PRACTICALS-VII: (ADVANCE MAJOR PRACTICAL) .....	42
<b>MINOR COURSE-1A (SEM-I).....</b>	<b>43</b>
I. MINOR COURSE- MN 1A: INTRODUCTORY GEOGRAPHY .....	43
II. MINOR COURSE- MN 1A PR: MINOR PRACTICALS-1A PR.....	44
<b>MINOR COURSE-1B (SEM-III).....</b>	<b>45</b>
III. MINOR COURSE- MN 1B: GEOGRAPHY OF INDIA AND JHARKHAND .....	45
IV. MINOR COURSE- MN 1B PR: MINOR PRACTICALS-1B PR.....	46
<b>MINOR COURSE-1C (SEM-V).....</b>	<b>47</b>
V. MINOR COURSE- MN 1C: ENVIRONMENTAL GEOGRAPHY & SUSTAINABLE DEVELOPMENT .....	47
VI. MINOR COURSE- MN 1C PR: MINOR PRACTICALS-1C PR.....	48
<b>MINOR COURSE-1D (SEM-VII).....</b>	<b>49</b>
VII. MINOR COURSE- MN 1D: CLIMATE CHANGE VULNERABILITY AND ADAPTATION .....	49
VIII. MINOR COURSE- MN 1D PR: MINOR PRACTICALS-1D PR.....	50

**Students are instructed to**  
**Refer Syllabus of Allied/ Opted Subjects from R.G.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 **1<sup>st</sup> 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 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.
- 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. a student has to pass in minimum 3 papers out of the total 4 papers.
- ix. 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.



## COURSE STRUCTURE FOR FYUGP 'HONOURS/ RESEARCH'

Table 1: Credit Framework for Four Year Undergraduate Programme (FYUGP) under Private 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 1 <sup>st</sup> or 2 <sup>nd</sup> 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.



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	
<b>I</b>	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
<b>II</b>	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
<b>III</b>	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
<b>IV</b>	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
<b>V</b>	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
<b>VI</b>	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
<b>VII</b>	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
<b>VIII</b>	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
		<b>Total Credit</b>	<b>160</b>

**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**

<b>Courses</b>	<b>Nature of Courses</b>	<b>3 yr UG Credits</b>	<b>4 yr UG Credits</b>
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	<b>Courses to be developed by the University</b>	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
<b>Total Credits =</b>		<b>120</b>	<b>160</b>

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

<b>Courses</b>	<b>Nature of Courses</b>	<b>3 yr UG Credits</b>	<b>4 yr UG Credits</b>
Major 1	Core courses	60	80
Major 2	Core courses	48	64
Minor	i. Discipline/ Interdisciplinary courses and ii. Vocational Courses	24	32
Multidisciplinary	3 Courses	9	9
AEC	Language courses	8	8
SEC	<b>Courses to be developed by the University</b>	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
<b>Total Credits =</b>		<b>168</b>	<b>224</b>

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

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

**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

**2023 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.)
<b>I</b>	MJ-1	Evolution of Geographical Thought	4	25	75	---
<b>II</b>	MJ-2	Physical Geography	4	25	75	---
	MJ-3	Practical-I (Cartographic Techniques)	4	---	---	100
<b>III</b>	MJ-4	Human and Settlement Geography	4	25	75	---
	MJ-5	Practical-II (Statistical Methods in Geography)	4	---	---	100
<b>IV</b>	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
<b>V</b>	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
<b>VI</b>	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
<b>VII</b>	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
<b>VIII</b>	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	---
	RC-2	Project Dissertation/ Research Internship/ Field Work	8	---	---	200
		<b>Total Credit</b>	<b>92</b>			

**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.)
<b>I</b>	SEC-1	Field Techniques and Surveying Methods	3	---	75	---
<b>II</b>	SEC-2	Introduction to Geographic Information System and GPS	3	---	75	---
<b>III</b>	SEC-3	Elementary Computer Application Softwares	3	---	75	---
		<b>Total Credit</b>	<b>9</b>			

**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.)
<b>I</b>	MN-1A	Introductory Geography	4	15	60	25
<b>III</b>	MN-1B	Geography of India and Jharkhand	4	15	60	25
<b>V</b>	MN-1C	Environmental Geography & Sustainable Development	4	15	60	25
<b>VII</b>	MN-1D	Climate Change Vulnerability and Adaptation	4	15	60	25
		<b>Total Credit</b>	<b>16</b>			



## 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 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:**

Subject/ Code		Exam Year
<b>F.M.</b> =10	<b>Time</b> =1 Hr.	
<b>General Instructions:</b> <ol style="list-style-type: none"> <li>i. <b>Group A</b> carries very short answer type compulsory questions.</li> <li>ii. <b>Answer 1 out of 2</b> subjective/ descriptive questions given in <b>Group B</b>.</li> <li>iii. Answer in your own words as far as practicable.</li> <li>iv. Answer all sub parts of a question at one place.</li> <li>v. Numbers in right indicate full marks of the question.</li> </ol>		
<b><u>Group A</u></b>		
1.	<ol style="list-style-type: none"> <li>i. ....</li> <li>ii. ....</li> <li>iii. ....</li> <li>iv. ....</li> <li>v. ....</li> </ol>	[5x1=5]
<b><u>Group B</u></b>		
2. ....		[5]
3. ....		[5]
<b>Note:</b> There may be subdivisions in each question asked in Theory Examination.		

**Question format for 20 Marks:**

Subject/ Code		Exam Year
<b>F.M.</b> =20	<b>Time</b> =1 Hr.	
<b>General Instructions:</b> <ol style="list-style-type: none"> <li>i. <b>Group A</b> carries very short answer type compulsory questions.</li> <li>ii. <b>Answer 1 out of 2</b> subjective/ descriptive questions given in <b>Group B</b>.</li> <li>iii. Answer in your own words as far as practicable.</li> <li>iv. Answer all sub parts of a question at one place.</li> <li>v. Numbers in right indicate full marks of the question.</li> </ol>		
<b><u>Group A</u></b>		
1.	<ol style="list-style-type: none"> <li>i. ....</li> <li>ii. ....</li> <li>iii. ....</li> <li>iv. ....</li> <li>v. ....</li> </ol>	[5x1=5]
2. ....		[5]
<b><u>Group B</u></b>		
3. ....		[10]
4. ....		[10]
<b>Note:</b> 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:**

F.M. =50	Subject/ Code Time=3Hrs.	Exam Year
<b>General Instructions:</b> <ol style="list-style-type: none"> <li><b>Group A</b> carries very short answer type <b>compulsory</b> questions.</li> <li><b>Answer 3 out of 5</b> subjective/ descriptive questions given in <b>Group B</b>.</li> <li>Answer in your own words as far as practicable.</li> <li>Answer all sub parts of a question at one place.</li> <li>Numbers in right indicate full marks of the question.</li> </ol>		
<b><u>Group A</u></b>		
1.		[5x1=5]
i.	.....	
ii.	.....	
iii.	.....	
iv.	.....	
v.	.....	
<b><u>Group B</u></b>		
2.	.....	[15]
3.	.....	[15]
4.	.....	[15]
5.	.....	[15]
6.	.....	[15]
<b>Note:</b> There may be subdivisions in each question asked in Theory Examination.		

**Question format for 60 Marks:**

F.M. =60	Subject/ Code Time=3Hrs.	Exam Year
<b>General Instructions:</b> <ol style="list-style-type: none"> <li><b>Group A</b> carries very short answer type <b>compulsory</b> questions.</li> <li><b>Answer 3 out of 5</b> subjective/ descriptive questions given in <b>Group B</b>.</li> <li>Answer in your own words as far as practicable.</li> <li>Answer all sub parts of a question at one place.</li> <li>Numbers in right indicate full marks of the question.</li> </ol>		
<b><u>Group A</u></b>		
1.		[5x1=5]
i.	.....	
ii.	.....	
iii.	.....	
iv.	.....	
v.	.....	
2.	.....	[5]
3.	.....	[5]
<b><u>Group B</u></b>		
4.	.....	[15]
5.	.....	[15]
6.	.....	[15]
7.	.....	[15]
8.	.....	[15]
<b>Note:</b> There may be subdivisions in each question asked in Theory Examination.		

Question format for 75 Marks:

F.M. = 75	Subject/ Code Time=3Hrs.	Exam Year
<b>General Instructions:</b>		
i. <b>Group A</b> carries very short answer type <b>compulsory</b> questions. ii. <b>Answer 4 out of 6</b> subjective/ descriptive questions given in <b>Group B</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.		
<b><u>Group A</u></b>		
1.		[5x1=5]
i.	.....	
ii.	.....	
iii.	.....	
iv.	.....	
v.	.....	
2.	.....	[5]
3.	.....	[5]
<b><u>Group B</u></b>		
4.	.....	[15]
5.	.....	[15]
6.	.....	[15]
7.	.....	[15]
8.	.....	[15]
9.	.....	[15]
<b>Note:</b> There may be subdivisions in each question asked in Theory Examination.		

Question format for 100 Marks:

F.M. = 100	Subject/ Code Time=3Hrs.	Exam Year
<b>General Instructions:</b>		
i. <b>Group A</b> carries very short answer type <b>compulsory</b> questions. ii. <b>Answer 4 out of 6</b> subjective/ descriptive questions given in <b>Group B</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.		
<b><u>Group A</u></b>		
1.		[10x1=10]
i.	.....	
ii.	.....	
iii.	.....	
iv.	.....	
v.	.....	
vi.	.....	
vii.	.....	
viii.	.....	
ix.	.....	
x.	.....	
2.	.....	[5]
3.	.....	[5]
<b><u>Group B</u></b>		
4.	.....	[20]
5.	.....	[20]
6.	.....	[20]
7.	.....	[20]
8.	.....	[20]
9.	.....	[20]
<b>Note:</b> There may be subdivisions in each question asked in Theory Examination.		



## SEMESTER I

### I. 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. Hartshorn, 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): Bhugolik 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

## II. 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

### I. 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



## II. 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):Prayogtmak 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.



### III. 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

### I. 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 Christler,

#### Reference Books:

1. Chandna, R.C., (2017):Population Geography, Kalyani Publishers, New Delhi.
2. Roy D (2022): Population Geography, 2<sup>nd</sup> 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.

## II. 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



### 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.

#### 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)**

**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 4<sup>th</sup> 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

### I. 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 Daws 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)
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

## II. 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.

### III. 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

### I. 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, Kishalaya Publications Pvt. Ltd., New Delhi



## II. 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

**III. 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

### I. 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. Tripathi ((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



## II. 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 & Dhillon (2000): Agriculture Geography, Prayag Pustak Bhavan, 20 A, University road, Allahabad-211002, UP.
6. Jasbir singh (2001): Agriculture geography, Prayog Pustak Bhavan, 20 A, University road, Allahabad-211002, UP.
7. Memonia CB (1998): Agriculture 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



### III. 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/imbbalances, 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 : Global 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

**IV. 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

## SEMESTER VII

### I. 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. Cunningham, W. P. and Cunningham, 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



## II. 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.



### III. 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.

**IV. 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, climatogenic, 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



## 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 Trends 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

### 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 (strahler's, Shreve, 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<sub>H</sub> 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)

**I. 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

## II. 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)**
**III. MINOR COURSE- MN 1B:  
GEOGRAPHY OF INDIA AND JHARKHAND**

<b>Marks: 15 (5 Attd. + 10 SIE: 1Hr) + 60 (ESE: 3Hrs) = 75</b>
--

<b>Pass Marks: Th (SIE + ESE) = 30</b>
--

**(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.
-



#### IV. 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

---

**MINOR COURSE-1C**


---

**(SEM-V)****V. 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.
-

**VI. 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



---

**MINOR COURSE-1D**


---

**(SEM-VII)****VII. 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.
-

# **VIII. 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.