

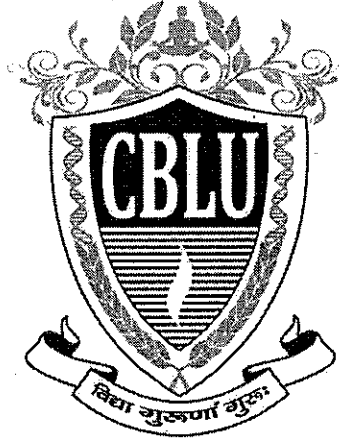
Annexure - A

# Chaudhary Bansi Lal University

Hansi Road, Prem Nagar, Bhiwani

*(A State University Established under Govt. of Haryana Act No 25 of 2014)*

वासुधैव कुटुम्बकम्  
(The world is one family.)



## Scheme & Syllabus of

### M.Sc. Geography

(In accordance with NEP-2020)

## DEPARTMENT OF GEOGRAPHY

Approved

PGBOS&R: 15 July 2025 & 31 Dec 2025

Faculty Board: 02 Aug 2025

IKS :  $\geq 5\%$

### Programme Learning Outcomes (PLO) of M.Sc. Geography

|              |                                                                                                                                                                                                                      |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PLO 1</b> | Demonstrate advanced knowledge about Geography with a critical understanding of the emerging developments and issues relating to the learners domain area.                                                           |
| <b>PLO 2</b> | Demonstrate advanced knowledge and understanding of principles, methods, and techniques applicable to the chosen field of study.                                                                                     |
| <b>PLO 3</b> | Demonstrate the capacity to extrapolate the acquired knowledge and skills to real-life situations and apply acquired competencies in new/unfamiliar contexts.                                                        |
| <b>PLO 4</b> | Demonstrate the ability to apply the acquired conceptual, operational or technical knowledge and a range of cognitive and practical skills to identify and address problems related to the chosen field of learning. |
| <b>PLO 5</b> | Demonstrate the apply advanced knowledge relating to research methods to carryout research and investigations to formulate evidence-based solutions to complex and unpredictable problems in the field of Geography. |
| <b>PLO 6</b> | Demonstrate the ability to communicate, in a well-structured manner the findings/ results of the research studies undertaken in the field of Geography.                                                              |
| <b>PLO 7</b> | Pursue self-paced and self- directed learning to upgrade knowledge and skills, including research-related skills avoiding unethical practices.                                                                       |

**Scheme of Examination and Syllabus for M.Sc. Geography (w.e.f. 2025-26)**

| Semester | Course Type   | Course Code   | Nomenclature of the Paper                                       | Credits | Hours/Week | External Assessment Marks | Internal Assessment Marks | Total Marks | Duration of Exam. |
|----------|---------------|---------------|-----------------------------------------------------------------|---------|------------|---------------------------|---------------------------|-------------|-------------------|
| I        | CC 1          | 25 PG GEO 101 | Principles of Geomorphology (Theory)                            | 3       | 3          | 50                        | 20                        | 70          | 3 Hours           |
|          |               |               | Principles of Geomorphology (Practical)                         | 1       | 2          | 20                        | 10                        | 30          | 1.5 Hours         |
|          | CC 2          | 25 PG GEO 102 | Advanced Climatology (Theory)                                   | 3       | 3          | 50                        | 20                        | 70          | 3 Hours           |
|          |               |               | Advanced Climatology (Practical)                                | 1       | 2          | 20                        | 10                        | 30          | 1.5 Hours         |
|          | CC 3          | 25 PG GEO 103 | Population and Development (Theory)                             | 3       | 3          | 50                        | 20                        | 70          | 3 Hours           |
|          |               |               | Population and Development (Practical)                          | 1       | 2          | 20                        | 10                        | 30          | 1.5 Hours         |
|          | CC 4          | 25 PG GEO 104 | Statistical Methods in Geography (Theory)                       | 3       | 3          | 50                        | 20                        | 70          | 3 Hours           |
|          |               |               | Statistical Methods in Geography (Practical)                    | 1       | 2          | 20                        | 10                        | 30          | 1.5 Hours         |
|          | CC 5          | 25 PG GEO 105 | Digital Cartography & Morphometric Analysis (Practical)         | 4       | 8          | 70                        | 30                        | 100         | 3 Hours           |
|          |               |               | Fluvial Geomorphology (Theory)                                  | 3       | 3          | 50                        | 20                        | 70          | 3 Hours           |
|          | 25 PG GEO 106 |               | Fluvial Geomorphology (Practical)                               | 1       | 2          | 20                        | 10                        | 30          | 1.5 Hours         |
| II       | 25 PG GEO 107 |               | Social and Spatial Inequalities (Theory)                        | 3       | 3          | 50                        | 20                        | 70          | 3 Hours           |
|          |               |               | Social and Spatial Inequalities (Practical)                     | 1       | 2          | 20                        | 10                        | 30          | 1.5 Hours         |
|          | 25 PG GEO 108 |               | Principles and Practices of Disaster Risk Reduction (Theory)    | 3       | 3          | 50                        | 20                        | 70          | 3 Hours           |
|          |               |               | Principles and Practices of Disaster Risk Reduction (Practical) | 1       | 2          | 20                        | 10                        | 30          | 1.5 Hours         |
|          | 25 PG GEO 109 |               | Theories and Models of Regional Development (Theory)            | 3       | 3          | 50                        | 20                        | 70          | 3 Hours           |
|          |               |               | Theories and Models of Regional Development (Practical)         | 1       | 2          | 20                        | 10                        | 30          | 1.5 Hours         |
|          | 25 PG GEO 110 |               | Foundations of Geospatial Technology (Theory)                   | 3       | 3          | 50                        | 20                        | 70          | 3 Hours           |
|          |               |               | Foundations of Geospatial Technology (Practical)                | 1       | 2          | 20                        | 10                        | 30          | 1.5 Hours         |
|          | 25 PG GEO 111 |               | MOOC/SWAYAM                                                     |         |            |                           |                           |             |                   |

|       |               |                                                                       |   |   |    |    |     |           |
|-------|---------------|-----------------------------------------------------------------------|---|---|----|----|-----|-----------|
| CC 6  | 25 PG GEO 201 | Oceanography (Theory)                                                 | 3 | 3 | 50 | 20 | 70  | 3 Hours   |
|       |               | Oceanography (Practical)                                              | 1 | 2 | 20 | 10 | 30  | 1.5 Hours |
| CC 7  | 25 PG GEO 202 | Theories and Models in Human Geography (Theory)                       | 3 | 3 | 50 | 20 | 70  | 3 Hours   |
|       |               | Theories and Models in Human Geography (Practical)                    | 1 | 2 | 20 | 10 | 30  | 1.5 Hours |
| CC 8  | 25 PG GEO 203 | Regional Geography of India (Theory)                                  | 3 | 3 | 50 | 20 | 70  | 3 Hours   |
|       |               | Regional Geography of India (Practical)                               | 1 | 2 | 20 | 10 | 30  | 1.5 Hours |
| CC 9  | 25 PG GEO 204 | Remote Sensing & GIS (Theory)                                         | 4 | 4 | 70 | 30 | 100 | 3 Hours   |
| CC 10 | 25 PG GEO 205 | Remote Sensing & GIS (Practical)                                      | 4 | 8 | 70 | 30 | 100 | 3 Hours   |
| DEC 2 | 25 PG GEO 206 | Hydrology and Water Resource Management (Theory)                      | 3 | 3 | 50 | 20 | 70  | 3 Hours   |
|       |               | Hydrology and Water Resource Management (Practical)                   | 1 | 2 | 20 | 10 | 30  | 1.5 Hours |
| DEC 2 | 25 PG GEO 207 | Political Geography and Geopolitics (Theory)                          | 3 | 3 | 50 | 20 | 70  | 3 Hours   |
|       |               | Political Geography and Geopolitics (Practical)                       | 1 | 2 | 20 | 10 | 30  | 1.5 Hours |
| DEC 2 | 25 PG GEO 208 | Disasterscapes of India: Typologies and Regional Patterns (Theory)    | 3 | 3 | 50 | 20 | 70  | 3 Hours   |
|       |               | Disasterscapes of India: Typologies and Regional Patterns (Practical) | 1 | 2 | 20 | 10 | 30  | 1.5 Hours |
| DEC 2 | 25 PG GEO 209 | Regional Planning and Policy in India (Theory)                        | 3 | 3 | 50 | 20 | 70  | 3 Hours   |
|       |               | Regional Planning and Policy in India (Practical)                     | 1 | 2 | 20 | 10 | 30  | 1.5 Hours |
| DEC 2 | 25 PG GEO 210 | Remote Sensing: Principles and Applications (Theory)                  | 3 | 3 | 50 | 20 | 70  | 3 Hours   |
|       |               | Remote Sensing: Principles and Applications (Practical)               | 1 | 2 | 20 | 10 | 30  | 1.5 Hours |
| VAC 1 | 25 PG GEO 211 | MOOC/SWAYAM                                                           |   |   |    |    |     |           |
|       |               | Sacred Geography                                                      | 2 | 2 | 35 | 15 | 50  | 2 Hours   |

| CC 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------|
| Session: 2025-26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Part A - Introduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Name of Programme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | M.Sc. Geography                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Semester                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | II                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |               |
| Name of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Oceanography                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |               |
| Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 25 PG GEO 201                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |               |
| Course Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |               |
| Level of the course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 500-599                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |               |
| Pre-requisite for the course (if any)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | N.A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |               |
| Course Learning Outcomes (CLO)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <div><div>1. Describe the origin, structure, and relief features of ocean basins and explain the physical and chemical properties of seawater.</div><div>2. Analyze oceanic processes such as waves, tides, currents, and ocean-atmosphere interactions influencing climate and monsoon systems.</div><div>3. Evaluate marine ecosystems, resources, and environmental challenges with special reference to the Indian Ocean and Indian coastal regions.</div><div>4. Interpret oceanographic data, charts, and geospatial outputs to analyze marine processes, resources, and coastal hazards in India.</div></div> |           |               |
| Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Theory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Practical | Total         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1         | 4             |
| Teaching Hours per week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2         | 5             |
| Internal Assessment Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 10        | 30            |
| End Term Exam Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 20        | 70            |
| Max. Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 30        | 100           |
| Examination Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |               |
| Part B- Contents of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| <b>Instructions for Paper- Setter:</b> The examiner shall prepare seven questions, selecting two questions from each of the three units, with consideration given to the Course Learning Outcomes (CLOs). Among these, Question No. 1 will be a compulsory question comprising four short parts, each carrying two marks, and collectively covering the entire syllabus. The remaining questions will be descriptive in nature, each carrying 14 marks. Examinees will be required to attempt four questions: the compulsory Question No. 1 and one question from each of the three units. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           | Contact Hours |
| I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Fundamentals of Oceanography and Ocean Basins:</b> Nature, scope, and significance of oceanography in Geography and Earth System Science, Branches of oceanography, Origin, evolution and Distribution of oceans, Morphology of ocean basins: continental shelf, slope, rise, abyssal plains, mid-ocean ridges, seamounts, trenches, Physical and chemical properties of seawater: temperature, salinity, density, pressure, and heat budget, Latitudinal and vertical distribution of temperature and salinity                                                                                                   |           | 15            |

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| II                                                    | <b>Ocean Dynamics and Climate Interaction:</b> Waves: types and characteristics. Tides: theories, spring and neap tides, tidal patterns of the Indian coast, Ocean currents: causes, types, and global circulation. Indian Ocean circulation and monsoon-driven currents. Ocean–atmosphere interaction and heat transfer, ENSO and Indian Ocean Dipole (IOD) and their climatic influence. Sea-level changes and coastal implications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 15                                  |
| III                                                   | <b>Marine Ecosystems, Resources, and Environmental Issues:</b> Marine ecosystems: pelagic and benthic systems, Coral reefs, mangroves, and estuaries. Marine productivity and food chains, Living and non-living marine resources, India's Exclusive Economic Zone (EEZ) and Blue Economy, Marine pollution and environmental degradation, Coastal hazards: cyclones, storm surges, tsunamis, Climate change and ocean warming.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 15                                  |
| IV                                                    | <b>Instructions for external practical examiner:</b> There will be three questions in all and candidate has to attempt two exercises.<br>Distribution of marks for evaluation<br><i>Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks</i><br><br><b>Lab Exercises/ Practicum:</b><br>1. Interpretation of SST and salinity charts of the Indian Ocean (2)<br>2. Inventory and analysis of ISRO oceanographic missions, satellites, and data products related to ocean studies (e.g., OCEANSAT series, SARAL–Altika, SCATSAT, INSAT data) (3)<br>3. Analysis of wave characteristics along the Indian coast (1)<br>4. Tidal analysis of selected Indian ports (Mumbai, Chennai, Kolkata, Kochi) (1)<br>5. Mapping of major surface currents of the Indian Ocean using atlases/GIS (2)<br>6. Identification and mapping of major fishing grounds of India (1)<br>7. Mapping coral reefs and mangrove ecosystems of India using satellite images (1)<br>8. Analysis of coastal hazards (cyclones/tsunami-prone zones) of India (2)<br>9. Preparation of a thematic map on marine resources/coastal vulnerability using GIS (1) | 30                                  |
| <b>Total Contact Hours</b>                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>75</b>                           |
| <b>Suggested Evaluation Methods</b>                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |
| <b>Internal Assessment: 30</b>                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>End Term Examination: 70</b>     |
| <b>Theory: 20</b>                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Theory: 50<br/>Practicum: 20</b> |
| <b>Practicum: 10</b>                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |
| Class Participation                                   | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                     |
| Seminar/presentation/assignment/quiz/class test etc.: | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                     |
| Mid-Term Exam                                         | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                     |

### Part C-Learning Resources

#### Recommended Books/e-resources/LMS:

1. Thurman, H. V., & Trujillo, A. P. (2017). *Essentials of Oceanography*. Pearson.
2. Garrison, T. (2016). *Oceanography: An Invitation to Marine Science*. Cengage Learning.
3. Pickard, G. L., & Emery, W. J. (1990). *Descriptive Physical Oceanography*. Pergamon Press.
4. Pinet, P. R. (2018). *Invitation to Oceanography*. Jones & Bartlett.
5. Sharma, R. C., & Vatal, M. (1985). *Oceanography for Geographers*. Chaitanya Publishing House.
6. Rao, A. D., & Sivakumar, R. (2010). *Indian Oceanography*. Oxford & IBH.
7. Talley, L. D., Pickard, G. L., Emery, W. J., & Swift, J. H. (2011). *Descriptive Physical Oceanography*. Academic Press.
8. Tomczak, M., & Godfrey, J. S. (2003). *Regional Oceanography: An Introduction*. Pergamon.
9. Ministry of Earth Sciences (MoES), Government of India – Reports and Publications.
10. INCOIS & NIOT (India) – Oceanographic data portals and technical documents.

| CC 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------|
| Session: 2025-26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |               |
| Part A - Introduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |               |
| Name of Programme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | M.Sc. Geography                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |               |
| Semester                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | II                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |               |
| Name of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Theories and Models in Human Geography                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |               |
| Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 25 PG GEO 202                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |               |
| Course Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |               |
| Level of the course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 500-599                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
| Pre-requisite for the course (if any)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | N.A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |           |               |
| Course Learning Outcomes (CLO)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <div>1. Understand the philosophical foundations, evolution, and major theoretical perspectives in Human Geography.</div> <div>2. Critically evaluate key spatial, economic, social, and behavioural models used in human geographical analysis.</div> <div>3. Apply theories and models to interpret patterns of population, settlements, economic activities, and regional development.</div> <div>4. Use quantitative, cartographic, and geospatial techniques to apply and test human geography models with Indian examples.</div>                |           |               |
| Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Theory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Practical | Total         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1         | 4             |
| Teaching Hours per week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2         | 5             |
| Internal Assessment Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 10        | 30            |
| End Term Exam Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 20        | 70            |
| Max. Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 30        | 100           |
| Examination Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
| Part B- Contents of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |               |
| <b>Instructions for Paper- Setter:</b> The examiner shall prepare seven questions, selecting two questions from each of the three units, with consideration given to the Course Learning Outcomes (CLOs). Among these, Question No. 1 will be a compulsory question comprising four short parts, each carrying two marks, and collectively covering the entire syllabus. The remaining questions will be descriptive in nature, each carrying 14 marks. Examinees will be required to attempt four questions: the compulsory Question No. 1 and one question from each of the three units. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |               |
| Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           | Contact Hours |
| I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Philosophical Foundations and Evolution of Human Geography:</b> Nature, scope, and significance of Human Geography, Philosophical foundations of human geographical thought: environmental determinism, possibilism, and neo-determinism, Areal differentiation and regional approach, Quantitative revolution and spatial science, Behavioural and humanistic geography, Radical, welfare, and Marxist geography, Post-modernism, feminist geography, and critical approaches, Relevance of theories in contemporary human geographical research. |           | 15            |

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                      |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| II                                                    | <b>Spatial Organization, Population, and Settlement Models:</b> Concept of spatial organization and spatial interaction. Models of spatial interaction: gravity model and intervening opportunity model. Population theories and models: Malthusian theory and Demographic Transition Model. Migration theories and models. Rural settlement patterns and agricultural land-use models. Urban structure models: concentric zone, sector, and multiple nuclei models. Central Place Theory: assumptions, hierarchy, spacing, applications, and limitations. Applicability of classical models in the Indian context.                                                                                                                                                                                                                                                                                                                                                      | 15                                                   |
| III                                                   | <b>Economic, Regional, and Development Models:</b> Location Theories: Von Thünen's agricultural location model. Weber's industrial location theory, Lösch's market area theory. Industrial location and regional development models. Growth pole theory and cumulative causation. Core-periphery and dependency models. World-systems theory. Models of regional inequality and development planning. Application of models to Indian regional development. Critical evaluation and contemporary relevance of human geographical models.                                                                                                                                                                                                                                                                                                                                                                                                                                 | 15                                                   |
| IV                                                    | <b>Instructions for external practical examiner:</b> There will be three questions in all and candidate has to attempt two exercises.<br>Distribution of marks for evaluation<br><i>Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks</i><br><br><b>Lab Exercises/ Practicum:</b><br><br>1. Application of gravity model using population and distance data (Indian cities) (02)<br>2. Central Place Theory: hierarchy and spacing analysis using selected Indian towns (2)<br>3. Testing Von Thünen's agricultural land-use model with Indian examples (01)<br>4. Urban land-use analysis using concentric zone or multiple nuclei model (2)<br>5. Population growth analysis using Demographic Transition Model (India/States) (1)<br>6. Migration analysis using census-based data (push-pull factors) (1)<br>7. Regional development analysis using core-periphery framework (1)<br>8. Mapping spatial interaction and accessibility using GIS tools (2) | 30                                                   |
| <b>Total Contact Hours</b>                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 75                                                   |
| <b>Suggested Evaluation Methods</b>                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                      |
| <b>Internal Assessment: 30</b>                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>End Term Examination: 70</b>                      |
| <b>Theory: 20</b>                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Practicum: 10</b>                                 |
| Class Participation                                   | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Class Participation Nil                              |
| Seminar/presentation/assignment/quiz/class test etc.: | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Seminar/Demonstration/Viva-voce/Lab records etc.: 10 |
| Mid-Term Exam                                         | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Mid-Term Exam Nil                                    |
|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Theory: 50<br/>Practicum: 20</b>                  |

### Part C-Learning Resources

#### Recommended Books/e-resources/LMS:

1. Johnston, R. J., Gregory, D., Pratt, G., & Watts, M. (2009). *The Dictionary of Human Geography* (5th ed.). Wiley-Blackwell.
2. Gregory, D., Johnston, R., Pratt, G., Watts, M., & Whatmore, S. (2011). *The Sage Handbook of Human Geography*. Sage Publications.
3. Haggett, P. (2001). *Geography: A Global Synthesis*. Pearson Education.
4. Haggett, P., Cliff, A. D., & Frey, A. (1977). *Locational Analysis in Human Geography*. Edward Arnold.
5. Chorley, R. J., & Haggett, P. (1967). *Models in Geography*. Methuen.
6. Knox, P. L., & Marston, S. A. (2016). *Human Geography: Places and Regions in Global Context*. Pearson.
7. Pacione, M. (2009). *Urban Geography: A Global Perspective*. Routledge.
8. Mandal, R. B. (2011). *Introduction to Human Geography*. Concept Publishing Company (India).
9. Singh, R. L. (Ed.) (2005). *Environmental Geography*. Rawat Publications (Indian perspective on human–environment interaction).
10. Census of India (Latest Edition). Registrar General of India – for population and migration analysis.

| CC 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------|
| Session: 2025-26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
| Part A - Introduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
| Name of Programme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | M.Sc: Geography                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
| Semester                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | II                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |               |
| Name of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Regional Geography of India                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
| Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 25 PG GEO 203                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |               |
| Course Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |               |
| Level of the course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 500-599                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |               |
| Pre-requisite for the course (if any)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | N.A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Course Learning Outcomes (CLO)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <div>1. Understand the physical, cultural, and economic diversity of India using a regional framework.</div> <div>2. Analyze the interrelationships between physical environment, resources, population, and economic activities across Indian regions.</div> <div>3. Critically evaluate regional disparities, development issues, and planning regions in India.</div> <div>4. Apply regional analysis techniques using maps, statistical data, and geospatial tools to interpret Indian regions.</div> |           |               |
| Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Theory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Practical | Total         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1         | 4             |
| Teaching Hours per week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2         | 5             |
| Internal Assessment Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 10        | 30            |
| End Term Exam Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 20        | 70            |
| Max. Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 30        | 100           |
| Examination Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |               |
| Part B- Contents of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
| <b>Instructions for Paper- Setter:</b> The examiner shall prepare seven questions, selecting two questions from each of the three units, with consideration given to the Course Learning Outcomes (CLOs). Among these, Question No. 1 will be a compulsory question comprising four short parts, each carrying two marks, and collectively covering the entire syllabus. The remaining questions will be descriptive in nature, each carrying 14 marks. Examinees will be required to attempt four questions: the compulsory Question No. 1 and one question from each of the three units. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
| Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           | Contact Hours |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Conceptual Framework and Physical Regionalization of India: Concept, scope, and significance of regional geography, Approaches to regionalization: physical, economic, cultural, and planning regions, India as a geographical unity and diversity, Physiographic divisions of India, Climate regions of India: monsoon mechanism, climatic types, Natural vegetation and soil regions of India, Influence of physical environment on regional development.                                               |           | 15            |

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                   |     |                                     |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-----|-------------------------------------|
| II                                                    | <b>Population, Cultural, and Economic Regions of India:</b> Population distribution, density, growth, and regional patterns. Population composition: linguistic, religious, and tribal regions. Settlement patterns: rural and urban regions of India, Agricultural regions of India: cropping patterns and agricultural regionalization, Industrial regions: major industrial belts and clusters, Transport and communication regions, Resource regions: water, mineral, and energy resources, Regional patterns of economic development and disparities.                                                                                                                                                                                                                                                                                                                       |                                                   |     | 15                                  |
| III                                                   | <b>Planning Regions and Regional Development Issues:</b> Concept of planning regions and regional planning in India, Regionalization by Planning Commission and NITI Aayog, Specific Regions of India: drought-prone, flood-prone, tribal, desert, hill, and coastal regions, Regional inequalities and development challenges, Special economic regions and corridors, Border regions and strategic regions, Sustainable regional development and environmental issues, Case studies of selected Indian regions.                                                                                                                                                                                                                                                                                                                                                                |                                                   |     | 15                                  |
| IV                                                    | <b>Instructions for external practical examiner:</b> There will be three questions in all and candidate has to attempt two exercises.<br>Distribution of marks for evaluation<br><i>Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks</i><br><br><b>Lab Exercises/ Practicum:</b><br><br>1. Delineation of physiographic regions of India using outline maps (1).<br>2. Climatic regionalization of India based on rainfall and temperature data (2)<br>3. Mapping population density and growth patterns of Indian states (2)<br>4. Identification and mapping of agricultural regions of India (2)<br>5. Mapping major industrial regions and transport corridors (2)<br>6. Regional analysis of resource distribution (minerals, power) (2)<br>7. Preparation of a regional development profile of a selected Indian state/region using GIS or secondary data (2) |                                                   |     | 30                                  |
| <b>Total Contact Hours</b>                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                   |     | 75                                  |
| <b>Suggested Evaluation Methods</b>                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                   |     |                                     |
| <b>Internal Assessment: 30</b>                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                   |     | <b>End Term Examination: 70</b>     |
| <b>Theory: 20</b>                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Practicum: 10</b>                              |     | <b>Theory: 50<br/>Practicum: 20</b> |
| Class Participation                                   | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Class Participation                               | Nil |                                     |
| Seminar/presentation/assignment/quiz/class test etc.: | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Seminar/Demonstration/Viva-voce/Lab records etc.: | 10  |                                     |
| Mid-Term Exam                                         | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Mid-Term Exam                                     | Nil |                                     |

### Part C-Learning Resources

#### Recommended Books/e-resources/LMS:

1. Singh, R. L. (Ed.). (2009). *India: A Regional Geography*. National Geographical Society of India.
2. Husain, M. (2014). *Geography of India*. McGraw-Hill Education.
3. Khullar, D. R. (2018). *India: A Comprehensive Geography*. Kalyani Publishers.
4. Spate, O. H. K., & Learmonth, A. T. A. (1967). *India and Pakistan: A General and Regional Geography*. Methuen.
5. Sharma, T. C., & Coutinho, J. (2006). *Economic Geography of India*. Macmillan India.
6. Singh, G. (2010). *Geography of India*. Atma Ram & Sons.
7. Planning Commission of India. (2014). *Report on Regional Development*. Government of India.
8. NITI Aayog. (2020). *Strategy for New India @75*. Government of India.
9. Census of India. (2011). *Primary Census Abstract*. Registrar General of India.

| CC 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------|
| Session: 2025-26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Part A - Introduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Name of Programme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | M.Sc. Geography                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Semester                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | II                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |               |
| Name of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Remote Sensing & GIS (Theory)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |               |
| Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 25 PG GEO 204                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |               |
| Course Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | CC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |               |
| Level of the course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 500-599                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |               |
| Pre-requisite for the course (if any)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | N.A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |               |
| Course Learning Outcomes (CLO)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <ol style="list-style-type: none"><li>1. Understand the principles, platforms, sensors, and data characteristics of remote sensing systems.</li><li>2. Understand the concepts, data structures, and analytical techniques of Geographic Information Systems.</li><li>3. Analyze spatial data using digital image processing and GIS-based analytical methods.</li><li>4. Apply Remote Sensing and GIS techniques for resource assessment, environmental analysis, and regional planning.</li></ol>                                                                                                                  |           |               |
| Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Theory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Practical | Total         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -         | 4             |
| Teaching Hours per week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -         | 4             |
| Internal Assessment Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | -         | 30            |
| End Term Exam Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | -         | 70            |
| Max. Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | -         | 100           |
| Examination Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |               |
| Part B- Contents of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| <b>Instructions for Paper- Setter:</b> The examiner shall prepare nine questions, selecting two questions from each of the four units, with consideration given to the Course Learning Outcomes (CLOs). Among these, Question No. 1 will be a compulsory question comprising seven sub-parts, each carrying two marks, and collectively covering the entire syllabus. The remaining questions will be descriptive in nature, each carrying 14 marks. Examinees will be required to attempt five questions: the compulsory Question No. 1 and one question from each of the four units. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           | Contact Hours |
| I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Fundamentals of Remote Sensing:</b> Nature, scope, and development of remote sensing, Radiation principles and laws of black body radiation: Planck's Law, Stefan–Boltzmann Law, Wien's Displacement Law, and Kirchhoff's Law, Electromagnetic radiation and the electromagnetic spectrum, Energy–matter interaction, Atmospheric effects on electromagnetic radiation, Spectral reflectance characteristics of Earth surface features, Platforms and sensors: ground, airborne, and satellite platforms, Types of sensors: passive and active sensors, Spatial, spectral, radiometric, and temporal resolutions. |           | 15            |

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| II                                                    | <b>Remote Sensing Data and Image Interpretation:</b> Satellite systems and sensors: Landsat, IRS, Sentinel, MODIS, Cartosat. Data products and formats, Visual image interpretation elements: tone, texture, shape, size, pattern, association. Digital image processing concepts: image enhancement, filtering, classification (supervised and unsupervised). Accuracy assessment, Applications of remote sensing in land use/land cover mapping, agriculture, water resources, forestry, and disaster management (Indian examples). | 15                       |
| III                                                   | <b>Fundamentals of Geographic Information Systems (GIS):</b> Concept, components, and functions of GIS, Spatial data models: vector and raster data structures, Attribute data and database management systems, Data input, editing, and topology, Coordinate systems, map projections, and georeferencing, Spatial data quality and errors. GIS software overview (Open Source Softwares)                                                                                                                                            | 15                       |
| IV                                                    | <b>Spatial Analysis, Modeling, and Applications of GIS:</b> Spatial analysis techniques: overlay, buffering, network analysis, surface analysis, Digital Elevation Models (DEMs) and terrain analysis, Spatial interpolation techniques, GIS modeling and decision support systems, Integration of Remote Sensing and GIS. Applications of GIS in urban planning, environmental management, resource planning, climate studies, and regional development, Emerging trends: Web GIS, GPS integration, and geospatial governance.       | 15                       |
| Total Contact Hours                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 60                       |
| Suggested Evaluation Methods                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |
| Internal Assessment: 30                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | End Term Examination: 70 |
| Class Participation                                   | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Theory: 70               |
| Seminar/presentation/assignment/quiz/class test etc.: | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |
| Mid-Term Exam                                         | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |
| Part C-Learning Resources                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                          |

**Recommended Books/e-resources/LMS:**

1. Lillesand, T. M., Kiefer, R. W., & Chipman, J. W. (2015). *Remote Sensing and Image Interpretation*. Wiley.
2. Jensen, J. R. (2016). *Introductory Digital Image Processing: A Remote Sensing Perspective*. Pearson.
3. Campbell, J. B., & Wynne, R. H. (2011). *Introduction to Remote Sensing*. Guilford Press.
4. Burrough, P. A., McDonnell, R. A., & Lloyd, C. D. (2015). *Principles of Geographical Information Systems*. Oxford University Press.
5. Longley, P. A., Goodchild, M. F., Maguire, D. J., & Rhind, D. W. (2015). *Geographic Information Systems and Science*. Wiley.
6. Aronoff, S. (1995). *Geographic Information Systems: A Management Perspective*. WDL Publications.
7. DeMers, M. N. (2008). *Fundamentals of Geographic Information Systems*. Wiley.
8. NRSC. (2019). *Remote Sensing Applications in India*. National Remote Sensing Centre, ISRO.
9. Chang, K. T. (2018). *Introduction to Geographic Information Systems*. McGraw-Hill Education.
10. ISRO. (Latest Edition). *Indian Remote Sensing Satellite Systems and Applications*. Government of India.

| CC-10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                             |           |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------|
| Session: 2025-26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                             |           |       |
| Part A - Introduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                             |           |       |
| Name of Programme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | M.Sc. Geography                                                                                                                                                                                                                                                                                                                                                                             |           |       |
| Semester                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | II                                                                                                                                                                                                                                                                                                                                                                                          |           |       |
| Name of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Remote Sensing & GIS (Practical)                                                                                                                                                                                                                                                                                                                                                            |           |       |
| Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 25PG-GEO-205                                                                                                                                                                                                                                                                                                                                                                                |           |       |
| Course Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | CC                                                                                                                                                                                                                                                                                                                                                                                          |           |       |
| Level of the course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 500-599                                                                                                                                                                                                                                                                                                                                                                                     |           |       |
| Pre-requisite for the course (if any)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | N.A.                                                                                                                                                                                                                                                                                                                                                                                        |           |       |
| Course Learning Outcomes (CLO)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <ol style="list-style-type: none"><li>1. Handle and preprocess satellite data using standard remote sensing software.</li><li>2. Perform visual and digital image interpretation for thematic mapping.</li><li>3. Create, manage, and analyze spatial databases using GIS tools.</li><li>4. Integrate Remote Sensing and GIS techniques for applied geographical problem-solving.</li></ol> |           |       |
| Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Theory                                                                                                                                                                                                                                                                                                                                                                                      | Practical | Total |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0                                                                                                                                                                                                                                                                                                                                                                                           | 4         | 4     |
| Teaching Hours per week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0                                                                                                                                                                                                                                                                                                                                                                                           | 8         | 8     |
| Internal Assessment Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0                                                                                                                                                                                                                                                                                                                                                                                           | 30        | 30    |
| End Term Exam Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0                                                                                                                                                                                                                                                                                                                                                                                           | 70        | 70    |
| Max. Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0                                                                                                                                                                                                                                                                                                                                                                                           | 100       | 100   |
| Examination Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3 hours                                                                                                                                                                                                                                                                                                                                                                                     |           |       |
| Part B- Contents of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                             |           |       |
| <p><b>Instructions for Lab Exercises &amp; Practical Record:</b> Students are required to complete all practical exercises outlined in the syllabus, ensuring that at least 7–8 exercises are prepared and documented from each unit. Proper pagination and organization of the record are mandatory for appearing in the final examination.</p> <p><b>Instructions for Paper- Setter:</b> The examiner shall set eight exercises based on the syllabus, with two exercises from each unit. Students are required to attempt four exercises, selecting one from each unit. All exercises carry equal marks.</p> <p style="text-align: center;"><b>Distribution of Marks for Evaluation</b></p> <p>Exercise = 10x4=40                      File Record = 15                      Viva-voce : 15</p> |                                                                                                                                                                                                                                                                                                                                                                                             |           |       |

| Unit                                                          | Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Contact Hours                                             |    |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----|
| I                                                             | <b>Satellite Data Handling and Image Pre-Processing:</b> Introduction to remote sensing software (ERDAS Imagine / ENVI / QGIS), Importing and managing satellite data (Landsat, Sentinel, IRS), Image sub-setting and layer stacking, Radiometric and geometric corrections, Image enhancement techniques: contrast stretching, filtering, band combinations, Preparation of false colour composites (FCCs).                                                                                                           | 30                                                        |    |
| II                                                            | <b>Image Interpretation and Digital Classification:</b> Visual image interpretation using elements such as tone, texture, shape, size, pattern, and association, Preparation of interpretation keys, Digital image classification techniques: supervised and unsupervised classification. Accuracy assessment and error matrix, Land use / land cover (LULC) mapping using satellite imagery, Change detection analysis using multi-temporal data.                                                                     | 30                                                        |    |
| III                                                           | <b>GIS Database Creation and Spatial Analysis:</b> Creation of vector and raster databases, Digitization of spatial features and attribute data entry, Georeferencing of maps and images, Topology creation and error correction, Spatial analysis techniques: buffering, overlay analysis, proximity analysis, Network and surface analysis, Preparation of thematic maps using GIS.                                                                                                                                  | 30                                                        |    |
| IV                                                            | <b>Integration of Remote Sensing &amp; GIS and Applications:</b> Integration of satellite data with GIS layers, Digital Elevation Model (DEM) generation and terrain analysis (slope, aspect, relief), Watershed and drainage analysis, Site suitability analysis using multi-criteria evaluation. Application-oriented projects in urban planning, agriculture, water resources, environmental management, and disaster studies (Indian case studies), Preparation of a mini-project and map layout for presentation. | 30                                                        |    |
| Total Contact Hours                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 120                                                       |    |
| <b>Suggested Evaluation Methods</b>                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                           |    |
| <b>Internal Assessment: 30</b>                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>End Term Examination: 70</b>                           |    |
| ➤ Practicum                                                   | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ➤ Practicum                                               | 70 |
| ○ Lab Participation:                                          | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Examination (Lab Exercises, Practical Record & Viva) : 70 |    |
| ○ Seminar/presentation/assignment/quiz/Practical Record etc.: | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                           |    |
| ○ Field/Lab Performances:                                     | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                           |    |
| <b>Part C-Learning Resources</b>                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                           |    |

**Recommended Books/e-resources/LMS:**

1. Lillesand, T. M., Kiefer, R. W., & Chipman, J. W. (2015). *Remote Sensing and Image Interpretation: Laboratory Manual*. Wiley.
2. Jensen, J. R. (2016). *Remote Sensing of the Environment: An Earth Resource Perspective – Exercises and Applications*. Pearson.
3. Sabins, F. F. (2007). *Remote Sensing: Principles and Interpretation with Practical Applications*. Waveland Press.
4. Campbell, J. B., & Wynne, R. H. (2011). *Introduction to Remote Sensing: Laboratory Exercises*. Guilford Press.
5. Chang, K. T. (2018). *Introduction to Geographic Information Systems: Practical Workbook*. McGraw-Hill Education.
6. DeMers, M. N. (2008). *Fundamentals of Geographic Information Systems: Laboratory Manual*. Wiley.
7. NRSC. (2020). *Remote Sensing and GIS Training Manual*. National Remote Sensing Centre, ISRO, Hyderabad.
8. ISRO. (2019). *Manual on Satellite Data Products and Applications*. Government of India.
9. QGIS Development Team. (Latest Edition). *QGIS Training Manual*. QGIS.org.
10. ESRI. (Latest Edition). *ArcGIS Desktop: Step-by-Step Exercise Manual*. ESRI Press.

| DEC-02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------|
| Session: 2025-26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |               |
| Part A - Introduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |               |
| Name of Programme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | M.Sc. Geography                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |               |
| Semester                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | II                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |               |
| Name of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Hydrology and Water Resource Management                                                                                                                                                                                                                                                                                                                                                                                                                |           |               |
| Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 25PG GEO 206                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
| Course Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DEC                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |               |
| Level of the course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 500-599                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |               |
| Pre-requisite for the course (if any)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | N.A.                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |               |
| Course Learning Outcomes (CLO)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1. Understand the hydrological cycle, processes, and components governing surface and groundwater systems.<br>2. Analyze hydrological data and basin characteristics for understanding runoff, floods, and droughts.<br>3. Evaluate water resources, management strategies, and water-related issues in India.<br>4. Apply hydrological methods, data analysis, and GIS techniques for water resource assessment and management.                       |           |               |
| Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Theory                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Practical | Total         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1         | 4             |
| Teaching Hours per week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2         | 5             |
| Internal Assessment Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 10        | 30            |
| End Term Exam Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 20        | 70            |
| Max. Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 70                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 30        | 100           |
| Examination Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |               |
| Part B- Contents of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |               |
| <b>Instructions for Paper- Setter:</b> The examiner shall prepare seven questions, selecting two questions from each of the three units, with consideration given to the Course Learning Outcomes (CLOs). Among these, Question No. 1 will be a compulsory question comprising four short parts, each carrying two marks, and collectively covering the entire syllabus. The remaining questions will be descriptive in nature, each carrying 14 marks. Examinees will be required to attempt four questions: the compulsory Question No. 1 and one question from each of the three units. |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |               |
| Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           | Contact Hours |
| I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Fundamentals of Hydrology: Hydrology: nature, scope, and significance in Geography and Earth system science, Hydrological cycle and water balance. Precipitation: forms, measurement, and spatial distribution. Evaporation, evapotranspiration, and infiltration, Surface runoff: factors affecting runoff and runoff estimation, Stream flow and river regimes, Groundwater: occurrence, aquifers, porosity, permeability, and groundwater movement. |           | 15            |

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                       |     |                             |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-----|-----------------------------|
| II                                                    | <b>Drainage Basin Hydrology and Hydrological Hazards:</b> Drainage basin as a hydrological unit, Morphometric analysis of drainage basins, Hydrographs: components, unit hydrograph concept, Floods: causes, frequency analysis, and flood control measures, Droughts: types, causes, and indices, Soil erosion and sediment yield, Watershed management approach, Case studies of Indian river basins.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                       |     | 15                          |
| III                                                   | <b>Water Resource Management and Policy Issues:</b> Surface and groundwater resources of India, Water demand and availability, Irrigation systems and command area development, Multipurpose river valley projects, Inter-basin water transfer, Groundwater development and problems, Water quality issues and pollution, Integrated Water Resource Management (IWRM), Rainwater harvesting and watershed development, Water governance, policies, and transboundary water issues in India.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                       |     | 15                          |
| IV                                                    | <b>Instructions for external practical examiner:</b> There will be three questions in all and candidate has to attempt two exercises.<br><br>Distribution of marks for evaluation<br><i>Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks</i><br><br><b>Exercises:</b><br>1. Analysis of rainfall data and calculation of mean rainfall using arithmetic mean method (2)<br>2. Estimation of average rainfall using Thiessen polygon method (2)<br>3. Computation of mean rainfall using isohyetal method (2)<br>4. Preparation and interpretation of hydrographs from discharge data (2)<br>5. Estimation of runoff using simple empirical & digital methods (2)<br>6. Morphometric analysis of a drainage basin using Survey of India toposheets or DEMs (2)<br>7. Watershed delineation and drainage analysis using GIS techniques (2)<br>8. Analysis of groundwater level data and preparation of water table contour maps (2) |                                                       |     | 30                          |
|                                                       | Total Contact Hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                       |     |                             |
| Suggested Evaluation Methods                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                       |     | 75                          |
| Internal Assessment: 30                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                       |     | End Term Examination: 70    |
| Theory: 20                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Practicum: 10                                         |     | Theory: 50<br>Practicum: 20 |
| Class Participation                                   | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Class Participation                                   | Nil |                             |
| Seminar/presentation/assignment/quiz/class test etc.: | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Seminar/<br>Demonstration/Viva-voce/Lab records etc.: | 10  |                             |
| Mid-Term Exam                                         | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Mid-Term Exam                                         | Nil |                             |

### Part C-Learning Resources

#### Recommended Books/e-resources/LMS:

1. Chow, V. T., Maidment, D. R., & Mays, L. W. (2014). *Applied Hydrology*. McGraw-Hill Education.
2. Ward, R. C., & Robinson, M. (2000). *Principles of Hydrology*. McGraw-Hill.
3. Subramanya, K. (2013). *Engineering Hydrology*. Tata McGraw-Hill.
4. Singh, V. P. (1992). *Elementary Hydrology*. Prentice Hall.
5. Maidment, D. R. (2002). *Handbook of Hydrology*. McGraw-Hill.
6. Sharma, K. D., & Singh, V. P. (2016). *Hydrology and Water Resources of India*. Springer.
7. Central Water Commission. (Latest Edition). *Water Resources of India*. Government of India.
8. National Institute of Hydrology. (Latest Edition). *Hydrological Data and Training Manuals*. Roorkee.
9. FAO. (2011). *Guide to Integrated Water Resources Management*. Food and Agriculture Organization.
10. Central Ground Water Board. (Latest Edition). *Groundwater Year Book of India*. Government of India.

| DEC-02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
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| Session: 2025-26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Part A - Introduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Name of Programme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | M.Sc. Geography                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Semester                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | II                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |               |
| Name of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Political Geography and Geopolitics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |           |               |
| Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 25PG GEO 207                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |               |
| Course Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DEC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |           |               |
| Level of the course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 500-599                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |               |
| Pre-requisite for the course (if any)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | N.A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |               |
| Course Learning Outcomes (CLO)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1. Understand the concepts, scope, and evolution of Political Geography and Geopolitics.<br>2. Analyze the spatial dimensions of state, territory, boundaries, power, and political processes.<br>3. Critically evaluate classical and contemporary geopolitical theories in a global and Indian context.<br>4. Apply cartographic, spatial, and analytical techniques to interpret geopolitical patterns, conflicts, and strategic regions.                                                                                         |           |               |
| Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Theory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Practical | Total         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1         | 4             |
| Teaching Hours per week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2         | 5             |
| Internal Assessment Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 10        | 30            |
| End Term Exam Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 20        | 70            |
| Max. Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 30        | 100           |
| Examination Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |               |
| Part B- Contents of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| <b>Instructions for Paper- Setter:</b> The examiner shall prepare seven questions, selecting two questions from each of the three units, with consideration given to the Course Learning Outcomes (CLOs). Among these, Question No. 1 will be a compulsory question comprising four short parts, each carrying two marks, and collectively covering the entire syllabus. The remaining questions will be descriptive in nature, each carrying 14 marks. Examinees will be required to attempt four questions: the compulsory Question No. 1 and one question from each of the three units. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           | Contact Hours |
| I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Foundations of Political Geography: Nature, scope, and significance of Political Geography. Relationship between geography, politics, and power. Evolution of political geographical thought, State: concept, origin, elements, and functions. Nation, nationalism, and nation-state, Territory and territoriality, Frontiers and boundaries: types, functions, and boundary disputes, Electoral geography: spatial patterns of voting behaviour, voting patterns, political regions, constituency delimitation, and gerrymandering. |           | 15            |

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|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| II                                                    | <b>Classical and Modern Geopolitical Theories:</b> Meaning and scope of geopolitics, Classical geopolitical theories: Ratzel's organic theory of the state, Mackinder's Heartland theory, Mahan's Sea Power theory, Spykman's Rimland theory, Cold War geopolitics and balance of power, Modern and critical geopolitics, Post-Cold War geopolitical order, Geopolitics of globalization and regional blocs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 15                                  |
| III                                                   | <b>Contemporary Geopolitical Issues and Indian Perspective:</b> Geopolitics of natural resources: water, energy, and minerals, Geopolitics of oceans, cyberspace, and climate change, Political geography of borders, conflicts, and terrorism, Geopolitics of South Asia, India's geopolitical position in the Indian Ocean region, India-China-Pakistan-Bangladesh relations, Regional organizations and global power structures, Emerging geopolitical challenges in the 21st century.                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 15                                  |
| IV                                                    | <b>Instructions for external practical examiner:</b> There will be three questions in all and candidate has to attempt two exercises.<br><br>Distribution of marks for evaluation<br><i>Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks</i><br><br><b>Exercises:</b><br>1. Preparation of maps of major geopolitical regions of Asia/World (2)<br>2. Mapping and analysis of international and disputed boundaries (India-specific examples) (2)<br>3. Delineation and analysis of geopolitical regions of the world (2)<br>4. Mapping major global and regional power blocs and strategic alliances (2)<br>5. Spatial analysis of resource-based conflicts (water, oil, minerals) (2)<br>6. Mapping conflict zones, buffer states, and strategic chokepoints (2)<br>7. Electoral mapping and analysis using constituency-level data (India) (2)<br>8. Preparation of a geopolitical case study map using GIS or secondary data (2) | 30                                  |
| Total Contact Hours                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 75                                  |
| <b>Suggested Evaluation Methods</b>                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |
| <b>Internal Assessment: 30</b>                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>End Term Examination: 70</b>     |
| <b>Theory: 20</b>                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Theory: 50<br/>Practicum: 20</b> |
| <b>Practicum: 10</b>                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |
| Class Participation                                   | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                     |
| Seminar/presentation/assignment/quiz/class test etc.: | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                     |
| Mid-Term Exam                                         | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                     |
|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |
| Class Participation                                   | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |
| Seminar/Demonstration/Viva-voce/Lab records etc.:     | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                     |
| Mid-Term Exam                                         | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |

### Part C-Learning Resources

#### Recommended Books/e-resources/LMS:

1. Glassner, M. I., & Fahrer, J. (2004). *Political Geography*. Wiley.
2. Cox. K. R., Low, M., & Robinson, J. (2008). *The SAGE Handbook of Political Geography*. Sage Publications.
3. Taylor. P. J., Flint, C., & Pain, K. (2014). *Political Geography: World-Economy, Nation-State and Locality*. Pearson.
4. Agnew, J. (2016). *Globalization and Sovereignty*. Rowman & Littlefield.
5. Dodds. K. (2010). *Geopolitics: A Very Short Introduction*. Oxford University Press.
6. Parker, G. (1998). *Geopolitics: Past, Present and Future*. Pinter.
7. Cohen, S. B. (2015). *Geopolitics: The Geography of International Relations*. Rowman & Littlefield.
8. Dikshit. R. D. (2011). *Geopolitical Studies: A Geography of Conflict and Cooperation*. Prentice Hall of India.
9. Flint, C. (2017). *Introduction to Geopolitics*. Routledge.
10. Ministry of External Affairs, Government of India. (Latest Edition). *Annual Report and Policy Documents*.

| DEC-02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
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| Session: 2025-26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
| Part A - Introduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
| Name of Programme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | M.Sc. Geography                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
| Semester                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | II                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |               |
| Name of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Disasterscapes of India: Typologies and Regional Patterns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |               |
| Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 25PG GEO 208                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |           |               |
| Course Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DEC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
| Level of the course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 500-599                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |               |
| Pre-requisite for the course (if any)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | N.A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |               |
| Course Learning Outcomes (CLO)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <div>1. Understand the concepts, classification, and spatial patterns of disasters in India.</div> <div>2. Analyze the physical and socio-economic factors shaping India's disaster-prone regions.</div> <div>3. Evaluate disaster risk reduction, mitigation, and governance frameworks with regional perspectives.</div> <div>4. Apply spatial, statistical, and geospatial techniques to map and analyze disaster typologies and regional vulnerability in India.</div>                                                                                    |           |               |
| Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Theory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Practical | Total         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1         | 4             |
| Teaching Hours per week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2         | 5             |
| Internal Assessment Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10        | 30            |
| End Term Exam Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 20        | 70            |
| Max. Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 30        | 100           |
| Examination Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |               |
| Part B- Contents of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
| <p><b>Instructions for Paper- Setter:</b> The examiner shall prepare seven questions, selecting two questions from each of the three units, with consideration given to the Course Learning Outcomes (CLOs). Among these, Question No. 1 will be a compulsory question comprising four short parts, each carrying two marks, and collectively covering the entire syllabus. The remaining questions will be descriptive in nature, each carrying 14 marks. Examinees will be required to attempt four questions: the compulsory Question No. 1 and one question from each of the three units.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
| Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           | Contact Hours |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Conceptual Framework and Disaster Typologies: Concept of disaster, hazard, vulnerability, and risk, Disaster geography and disasterscapes approach, Classification of disasters: natural, anthropogenic, and biological, Geological disasters: earthquakes, volcanoes, landslides, Hydrometeorological disasters: floods, cyclones, droughts, heat waves, Coastal and marine disasters: storm surges and tsunamis, Technological and industrial disasters, Epidemics and biological hazards, Disaster cycle: preparedness, response, recovery, and mitigation |           | 15            |

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                       |     |                                     |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-----|-------------------------------------|
| II                                                    | <b>Regional Patterns of Disasters in India:</b> Seismic zones of India and earthquake-prone regions, Landslide-prone regions of Himalayas, Western Ghats, and North-East India, Flood-prone river basins of India, Drought-prone regions and arid–semi-arid zones, Cyclone-prone coastal regions of Bay of Bengal and Arabian Sea, Tsunami-affected regions of India, Heat wave and cold wave regions, Urban disasters and industrial hazard zones, Spatial clustering and regional contrasts of disasters in India.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                       |     | 15                                  |
| III                                                   | <b>Disaster Risk Reduction, Governance, and Climate Change:</b> Disaster Risk Reduction (DRR) concepts and frameworks, Disaster management institutions in India (NDMA, SDMA, DDMA), National Disaster Management Plan and policies, Community-based disaster risk management, Early warning systems and disaster preparedness, Climate change and increasing disaster risks, Resilience, adaptation, and sustainable development, Case studies of major Indian disasters and lessons learned.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                       |     | 15                                  |
| IV                                                    | <b>Instructions for external practical examiner:</b> There will be three questions in all and candidate has to attempt two exercises.<br><br>Distribution of marks for evaluation<br><i>Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks</i><br><br><b>Exercises:</b><br>1. Preparation of hazard maps showing earthquake, flood, cyclone, and drought-prone regions of India (3)<br>2. Delineation and analysis of seismic zones using BIS or NDMA data (1)<br>3. Mapping flood-prone river basins using historical flood data (2)<br>4. Spatial analysis of cyclone tracks and coastal vulnerability of India (1)<br>5. Identification and mapping of landslide-prone regions using Geospatial Data (1)<br>6. Preparation of drought vulnerability maps using rainfall variability indices (2)<br>7. GIS-based multi-hazard vulnerability analysis for a selected region (1)<br>8. Preparation of a disaster risk profile and mitigation plan for a selected Indian state or district of your choice (1) |                                                       |     | 30                                  |
|                                                       | Total Contact Hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                       |     | 75                                  |
| <b>Suggested Evaluation Methods</b>                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                       |     |                                     |
| <b>Internal Assessment: 30</b>                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                       |     | <b>End Term Examination: 70</b>     |
| <b>Theory: 20</b>                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Practicum: 10</b>                                  |     | <b>Theory: 50<br/>Practicum: 20</b> |
| Class Participation                                   | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Class Participation                                   | Nil |                                     |
| Seminar/presentation/assignment/quiz/class test etc.: | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Seminar/<br>Demonstration/Viva-voce/Lab records etc.: | 10  |                                     |
| Mid-Term Exam                                         | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Mid-Term Exam                                         | Nil |                                     |

### Part C-Learning Resources

#### Recommended Books/e-resources/LMS:

1. Cutter, S. L. (2006). *Hazards, Vulnerability and Environmental Justice*. Earthscan.
2. Smith, K. (2013). *Environmental Hazards: Assessing Risk and Reducing Disaster*. Routledge.
3. Alexander, D. (2013). *Natural Disasters*. Springer.
4. Dikshit, A. (Ed.). (2019). *Disaster Risk Reduction in India*. Springer.
5. NDMA. (2019). *National Disaster Management Plan*. Government of India.
6. Sharma, E., & Choudhury, D. (2017). *Disaster Management in India*. Oxford University Press.
7. UNDRR. (2015). *Sendai Framework for Disaster Risk Reduction*. United Nations.
8. ISRO. (2018). *Disaster Management Support Programme*. Government of India.
9. Ministry of Home Affairs. (Latest Edition). *Annual Report on Disaster Management*. Government of India.
10. Census of India. (2011). *Primary Census Abstract*. Registrar General of India.

| DEC-02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------|
| Session: 2025-26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
| Part A - Introduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
| Name of Programme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | M.Sc. Geography                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
| Semester                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | II                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |               |
| Name of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Regional Planning and Policy in India                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |               |
| Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 25PG GEO 209                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |               |
| Course Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DEC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |               |
| Level of the course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 500-599                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |               |
| Pre-requisite for the course (if any)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | N.A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Course Learning Outcomes (CLO)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <ol style="list-style-type: none"><li>1. Understand the concepts, approaches, and evolution of regional planning in India.</li><li>2. Analyze regional disparities, planning regions, and development strategies using spatial perspectives.</li><li>3. Evaluate regional development policies, institutions, and planning frameworks in India.</li><li>4. Apply regional planning tools, data analysis, and GIS techniques to assess regional development and policy outcomes.</li></ol> |           |               |
| Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Theory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Practical | Total         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1         | 4             |
| Teaching Hours per week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2         | 5             |
| Internal Assessment Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 10        | 30            |
| End Term Exam Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 20        | 70            |
| Max. Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 30        | 100           |
| Examination Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |               |
| Part B- Contents of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
| <b>Instructions for Paper- Setter:</b> The examiner shall prepare seven questions, selecting two questions from each of the three units, with consideration given to the Course Learning Outcomes (CLOs). Among these, Question No. 1 will be a compulsory question comprising four short parts, each carrying two marks, and collectively covering the entire syllabus. The remaining questions will be descriptive in nature, each carrying 14 marks. Examinees will be required to attempt four questions: the compulsory Question No. 1 and one question from each of the three units. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
| Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           | Contact Hours |
| I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Conceptual Foundations of Regional Planning: Concept, scope, and objectives of regional planning, Region and regionalization, Approaches to regional planning: comprehensive, sectoral, and integrated planning, Growth pole theory and cumulative causation in planning context, Regional imbalance and spatial inequality, Indicators of regional development, Role of infrastructure and resource base in regional planning, Relevance of regional planning in India.                  |           | 15            |

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| II                                                    | <b>Regional Planning Framework and Policies in India:</b> Evolution of regional planning in India, Planning regions and regionalization by Planning Commission and NITI Aayog, Five-Year Plans and regional development strategies, Backward region development programmes, Area-based planning: tribal, hill, desert, coastal, and border area planning, Special Economic Zones (SEZs) and industrial corridors, Urban and rural regional planning linkages, Role of decentralization and local governance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 15                                  |
| III                                                   | <b>Contemporary Regional Policy Issues and Sustainable Development:</b> Regional disparities and inter-state inequalities, Regional policy reforms in post-liberalization India, Infrastructure-led development and regional connectivity, Environmental considerations in regional planning, Climate change and regional resilience planning, Inclusive and participatory planning, Sustainable Development Goals (SDGs) and regional planning, Case studies of selected regional development programmes in India.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 15                                  |
| IV                                                    | <b>Instructions for external practical examiner:</b> There will be three questions in all and candidate has to attempt two exercises.<br><br>Distribution of marks for evaluation<br><i>Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks</i><br><br><b>Exercises:</b><br>1. Delineation of planning regions using physical and socio-economic indicators (2)<br>2. Mapping regional disparities using development indicators (income, literacy, infrastructure) (2)<br>3. Analysis of agricultural, industrial, or infrastructure-based planning regions (3)<br>4. Identification and mapping of backward and problem regions of India (2)<br>5. Evaluation of area-based development programmes using secondary data (2)<br>6. GIS-based analysis of regional connectivity and transport corridors (1)<br>7. Preparation of a regional development profile of a selected Indian state or region (1)<br>8. Policy evaluation exercise of a regional development programme (case study based) (1) | 30                                  |
| Total Contact Hours                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 75                                  |
| <b>Suggested Evaluation Methods</b>                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |
| <b>Internal Assessment: 30</b>                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>End Term Examination: 70</b>     |
| <b>Theory: 20</b>                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Theory: 50<br/>Practicum: 20</b> |
| Class Participation                                   | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                     |
| Seminar/presentation/assignment/quiz/class test etc.: | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                     |
| Mid-Term Exam                                         | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                     |
| <b>Practicum: 10</b>                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |
| Class Participation                                   | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                     |
| Seminar/Demonstration/Viva-voce/Lab records etc.:     | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                     |
| Mid-Term Exam                                         | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                     |

### Part C-Learning Resources

#### Recommended Books/e-resources/LMS:

1. Friedman, J. (2005). *Regional Development Policy: A Case Study of Venezuela*. MIT Press.
2. Glasson, J., Chadwick, A., & Kincaid, D. (2005). *Urban and Regional Planning*. Routledge.
3. Misra, R. P., Sundaram, K. V., & Rao, V. L. S. P. (1978). *Regional Development Planning in India*. Vikas Publishing House.
4. Sundaram, K. V. (1987). *Regional Planning in India*. Concept Publishing Company.
5. NITI Aayog. (2020). *Strategy for New India @75*. Government of India.
6. Planning Commission of India. (2014). *Twelfth Five Year Plan*. Government of India.
7. Singh, R. L. (Ed.). (2009). *Regional Development Planning in India*. National Geographical Society of India.
8. Datta, A. (2006). *Regional Planning in India*. Serials Publications.
9. Government of India. (Latest Edition). *Economic Survey*. Ministry of Finance.
10. Census of India. (2011). *Primary Census Abstract*. Registrar General of India.

| DEC-02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------|
| Session: 2025-26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
| Part A - Introduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
| Name of Programme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | M.Sc. Geography                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
| Semester                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | II                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |               |
| Name of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Remote Sensing: Principles and Applications                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |               |
| Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 25PG GEO 210                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |           |               |
| Course Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DEC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |               |
| Level of the course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 500-599                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |               |
| Pre-requisite for the course (if any)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | N.A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |               |
| Course Learning Outcomes (CLO)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <div><div>1. Understand the physical principles, platforms, and sensors used in remote sensing.</div><div>2. Interpret satellite data and imagery characteristics for geographical analysis.</div><div>3. Evaluate applications of remote sensing in natural resource management and environmental studies.</div><div>4. Apply digital image processing and interpretation techniques to solve real-world geographical problems.</div></div>                                                  |           |               |
| Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Theory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Practical | Total         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1         | 4             |
| Teaching Hours per week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2         | 5             |
| Internal Assessment Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10        | 30            |
| End Term Exam Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 20        | 70            |
| Max. Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 70                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 30        | 100           |
| Examination Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |               |
| Part B- Contents of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
| <b>Instructions for Paper- Setter:</b> The examiner shall prepare seven questions, selecting two questions from each of the three units, with consideration given to the Course Learning Outcomes (CLOs). Among these, Question No. 1 will be a compulsory question comprising four short parts, each carrying two marks, and collectively covering the entire syllabus. The remaining questions will be descriptive in nature, each carrying 14 marks. Examinees will be required to attempt four questions: the compulsory Question No. 1 and one question from each of the three units. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
| Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           | Contact Hours |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Fundamentals of Remote Sensing: Nature, scope, and significance of remote sensing in Geography and Earth System Science, Electromagnetic radiation and its interaction with atmosphere and Earth surface, Spectral characteristics of vegetation, soil, and water, Remote sensing platforms: ground-based, airborne, and space-borne systems, Types of sensors: passive and active sensors, Spatial, spectral, radiometric, and temporal resolution, Data products and image characteristics. |           | 15            |

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                       |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| II                                                    | <b>Satellite Systems and Data Interpretation:</b> Earth observation satellite systems: polar orbiting and geostationary satellites, Indian Remote Sensing (IRS) satellite programme and sensors. International satellite systems (Landsat, Sentinel, MODIS). Image interpretation elements: tone, texture, shape, pattern, size, association, Visual and digital image interpretation. Pre-processing of satellite data: geometric and radiometric corrections, Introduction to image classification techniques.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 15                                                    |
| III                                                   | <b>Applications of Remote Sensing:</b> Applications in land use and land cover mapping, Agricultural resource monitoring and crop assessment, Forest and biodiversity studies, Water resource assessment and watershed management, Urban and regional planning, Disaster monitoring and management, Climate and environmental change studies, Integration of remote sensing with GIS for spatial decision-making.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 15                                                    |
| IV                                                    | <p><b>Instructions for external practical examiner:</b> There will be three questions in all and candidate has to attempt two exercises.</p> <p>Distribution of marks for evaluation<br/><i>Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks</i></p> <p><b>Exercises:</b></p> <ol style="list-style-type: none"><li>1. Identification of satellite platforms, sensors, and data products (2)</li><li>2. Visual interpretation of satellite images using standard interpretation keys (2)</li><li>3. Digital image enhancement techniques (contrast stretching, filtering) (2)</li><li>4. Calculation of vegetation indices (e.g., NDVI, NDWI) (2)</li><li>5. Supervised and unsupervised image classification (2)</li><li>6. Preparation of land use / land cover maps using satellite imagery (2)</li><li>7. Change detection analysis using multi-temporal satellite data (1)</li><li>8. Preparation of an application-based remote sensing project using Indian datasets (1)</li></ol> | 30                                                    |
| Total Contact Hours                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 75                                                    |
| Suggested Evaluation Methods                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                       |
| Internal Assessment: 30                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | End Term Examination: 70                              |
| Theory: 20                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Practicum: 10                                         |
| Class Participation                                   | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Class Participation Nil                               |
| Seminar/presentation/assignment/quiz/class test etc.: | 05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Seminar/ Demonstration/Viva-voce/Lab records etc.: 10 |
| Mid-Term Exam                                         | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Mid-Term Exam Nil                                     |
|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Theory: 50<br>Practicum: 20                           |

### Part C-Learning Resources

#### Recommended Books/e-resources/LMS:

1. Lillesand, T. M., Kiefer, R. W., & Chipman, J. (2015). *Remote Sensing and Image Interpretation*. Wiley.
2. Jensen, J. R. (2016). *Introductory Digital Image Processing: A Remote Sensing Perspective*. Pearson.
3. Campbell, J. B., & Wynne, R. H. (2011). *Introduction to Remote Sensing*. Guilford Press.
4. Sabins, F. F. (2007). *Remote Sensing: Principles and Interpretation*. Waveland Press.
5. Chuvieco, E. (2016). *Fundamentals of Satellite Remote Sensing*. CRC Press.
6. Joseph, G. (2018). *Fundamentals of Remote Sensing*. Universities Press.
7. Narayan, L. R. A. (2015). *Remote Sensing and Its Applications*. Universities Press.
8. ISRO. (2019). *Remote Sensing Applications*. Indian Space Research Organisation.
9. Mather, P. M., & Koch, M. (2011). *Computer Processing of Remotely-Sensed Images*. Wiley.
10. Congalton, R. G., & Green, K. (2019). *Assessing the Accuracy of Remotely Sensed Data*. CRC

| VAC-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------|
| Session: 2025-26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |               |
| Part A - Introduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |               |
| Name of Programme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | M.Sc. Geography                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |               |
| Semester                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | II                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |               |
| Name of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Sacred Geography                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |               |
| Course Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 25 PG GEO 212                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |               |
| Course Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | CC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |               |
| Level of the course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 500-599                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |               |
| Pre-requisite for the course (if any)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | N.A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |               |
| Course Learning Outcomes (CLO)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <div>1. Explain the concept, philosophy, and significance of sacred geography in Indian Knowledge Systems.</div> <div>2. Interpret sacred landscapes, rivers, mountains, and pilgrimage networks as cultural-spiritual spaces.</div> <div>3. Analyze the role of sacred geography in environmental ethics, sustainability, and cultural continuity.</div> <div>4. Understand India's sacred spatial traditions as living heritage contributing to national identity and well-being.</div>                                                                                                                                                                                                          |           |               |
| Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Theory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Practical | Total         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | -         | 2             |
| Teaching Hours per week                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | -         | 2             |
| Internal Assessment Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | -         | 15            |
| End Term Exam Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | -         | 35            |
| Max. Marks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | -         | 50            |
| Examination Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |               |
| Part B- Contents of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |               |
| <b>Instructions for Paper- Setter:</b> The examiner shall prepare five questions, selecting two questions from each of the two units, with consideration given to the Course Learning Outcomes (CLOs). Among these, Question No. 1 will be a compulsory question comprising seven sub-parts, each carrying one marks, and collectively covering the entire syllabus. The remaining questions will be descriptive in nature, each carrying 14 marks. Examinees will be required to attempt three questions: the compulsory Question No. 1 and one question from each of the two units. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |               |
| Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           | Contact Hours |
| I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Conceptual Foundations of Sacred Geography:</b> Meaning and scope of sacred geography, Geography in Indian philosophical traditions, Cosmological understanding of space (Desha), time (Kala), and direction (Dik), Concept of sacred space in Vedic, Puranic, and Itihasic literature, Panchabhuta and landscape symbolism, Sacred cosmograms: Mandala and Yantra, Tirtha concept and spatial sanctity, Relationship between nature, divinity, and human settlements in Indian thought, Interface between religion and science in sacred spaces: temple architecture aligned with solar and lunar movements (e.g., Sun temples), geomantic principles, ritual practices, and cultural customs. |           | 15            |

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| II                                                                                                                       | <b>Sacred Landscapes, Pilgrimage and Cultural Ecology of India:</b> Sacred rivers of India:, Sacred mountains, forests and groves, Pilgrimage geography: Char Dham, Jyotirlingas, Shakti Peethas, and Pancha Bhoota temples, Sacred cities and cultural landscapes: Kashi, Ayodhya, Mathura, Ujjain, Puri, and Madurai, Festivals and ritual landscapes, Sacred geography and environmental conservation, Contemporary relevance of sacred geography in culture and sustainability. | 15                              |
| <b>Total Contact Hours</b>                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>30</b>                       |
| <b>Suggested Evaluation Methods</b>                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| <b>Internal Assessment: 15</b>                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>End Term Examination: 35</b> |
| Class Participation                                                                                                      | 04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Theory: 35</b>               |
| Seminar/presentation/assignment/quiz/class test etc.:                                                                    | 04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                 |
| Mid-Term Exam                                                                                                            | 07                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                 |
| <b>Part C-Learning Resources</b>                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| <b>Recommended Books/e-resources/LMS:</b>                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| 1. Eck, D. L. (2012). <i>India: A Sacred Geography</i> . Harmony Books.                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| 2. Kramrisch, S. (1976). <i>The Hindu Temple</i> . Motilal Banarsidass.                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| 3. Goswami, B. N., & Bajpai, S. (2011). <i>Sacred Geography of India</i> . National Book Trust.                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| 4. Singh, R. P. B. (2013). <i>Sacred Geography of India</i> . Cambridge Scholars Publishing.                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| 5. Michell, G. (1994). <i>The Hindu Temple: An Introduction to Its Meaning and Forms</i> . University of Chicago Press.  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| 6. Nair, C. K. G. (2011). <i>Environmental Ethics in Indian Tradition</i> . Indira Gandhi National Centre for the Arts.  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| 7. IGNCA. (2010). <i>Sacred Landscapes of India</i> . Indira Gandhi National Centre for the Arts.                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| 8. Kinsley, D. (1998). <i>Hinduism and Ecology</i> . Motilal Banarsidass.                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| 9. Bhattacharyya, N. N. (1997). <i>Indian Religious Historiography</i> . Munshiram Manoharlal.                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| 10. Ministry of Education, Government of India. (2022). <i>Indian Knowledge Systems Framework</i> . Government of India. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |
| 11. Ali, S. M. (1966). <i>Geography of the Puranas</i> . People's Publishing House.                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                 |