DEPARTMENT OF GEOGRAPHY

PROGRAMME: M.Sc. GEOGRAPHY

COURSE CURRICULUM

(CHOICE BASED CREDIT SYSTEM)

ACADEMIC SESSION: 2017-18 and onwards

CENTRAL UNIVERSITY OF HARYANA
MAHENDERGARH-123031
# Master of Science in Geography (*Comprehensive structure*)

## 1. Core Course (CC)
(Exclusive for Geography students)

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Course code</th>
<th>Course title</th>
<th>L</th>
<th>S</th>
<th>P</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SEE GEO 1 1 01 C 4105</td>
<td>Geomorphology</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>SEE GEO 1 1 02 C 4105</td>
<td>Climatology</td>
<td>4</td>
<td>1</td>
<td>0</td>
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</tr>
<tr>
<td>3.</td>
<td>SEE GEO 1 1 03 C 4105</td>
<td>Population and Settlement Geography</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>SEE GEO 1 1 04 C 2114</td>
<td>Practical I: Practical Geography: Cartographic methods- Conventional</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
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<tr>
<td>5.</td>
<td>SEE GEO 1 2 05 C 4105</td>
<td>Geographical Thought</td>
<td>4</td>
<td>1</td>
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<tr>
<td>6.</td>
<td>SEE GEO 1 2 06 C 4105</td>
<td>Hydrology and Oceanography</td>
<td>4</td>
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<tr>
<td>7.</td>
<td>SEE GEO 1 2 07 C 4105</td>
<td>Statistical methods in Geography</td>
<td>4</td>
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<tr>
<td>8.</td>
<td>SEE GEO 1 2 08 C 2114</td>
<td>Practical II: Practical Geography: Cartographic methods- Modern</td>
<td>2</td>
<td>1</td>
<td>2</td>
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<tr>
<td>9.</td>
<td>SEE GEO 1 2 09 C 1012</td>
<td>Research methodology, Field work and Report writing (Socio-Economic aspect)</td>
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<td>10.</td>
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<td>Geography of India</td>
<td>4</td>
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<td>11.</td>
<td>SEE GEO 1 3 11 C 4105</td>
<td>Regional Development and Planning</td>
<td>4</td>
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<td>12.</td>
<td>SEE GEO 1 3 12 C 4105</td>
<td>Geography of Central Places</td>
<td>4</td>
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<td>13.</td>
<td>SEE GEO 1 3 13 C 2114</td>
<td>Geoinformatics</td>
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<td>1</td>
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<td>14.</td>
<td>SEE GEO 1 3 14 C 1012</td>
<td>Research Methodology, Field work and report writing (Physical aspect)</td>
<td>1</td>
<td>0</td>
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## 3. Discipline Centric Elective Courses (DCEC)
(Offered to the students of Geography)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Course code</th>
<th>Course title</th>
<th>L</th>
<th>S</th>
<th>P</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SEE GEO 1 2 01 DCEC 4105</td>
<td>Economic Geography</td>
<td>4</td>
<td>1</td>
<td>0</td>
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</tr>
<tr>
<td>2.</td>
<td>SEE GEO 1 2 02 DCEC 4105</td>
<td>Soil Geography</td>
<td>4</td>
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<td>0</td>
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</tr>
<tr>
<td>3.</td>
<td>SEE GEO 1 3 03 DCEC 4105</td>
<td>Environmental Geography</td>
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<td>0</td>
<td>5</td>
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<tr>
<td>4.</td>
<td>SEE GEO 1 3 04 DCEC 4105</td>
<td>Political Geography</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>5.</td>
<td>SEE GEO 1 4 05 DCEC 3104</td>
<td>Demographic Methods</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>6.</td>
<td>SEE GEO 1 4 06 DCEC 3104</td>
<td>Natural hazard and disaster management</td>
<td>3</td>
<td>1</td>
<td>0</td>
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## 2. Generic Elective Course (GEC)
(Offered to other departments)

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Course code</th>
<th>Course title</th>
<th>L</th>
<th>S</th>
<th>P</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SEE GEO 1 1 01 GE 3104</td>
<td>Population and Development</td>
<td>3</td>
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</tr>
<tr>
<td>2.</td>
<td>SEE GEO 1 1 02 GE 3104</td>
<td>Elements of Physical Geography</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
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</table>
### 4. Skill Enhancement Elective Course (Compulsory and exclusively for Geography students)

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Course code</th>
<th>Course title</th>
<th>L</th>
<th>S</th>
<th>D</th>
<th>V</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SEE GEO 1 4 01 SEEC 228416</td>
<td>Field Based Dissertation (including viva voce)</td>
<td>228416</td>
<td>2</td>
<td>8</td>
<td>4</td>
<td>16</td>
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<td>2.</td>
<td>SEE GEO 1 4 02 SEEC</td>
<td>Self-Study Course</td>
<td>-</td>
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</table>

**OR**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Course code</th>
<th>Course title</th>
<th>L</th>
<th>S</th>
<th>D</th>
<th>V</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SEE GEO 1 4 01 SEEC 4212624</td>
<td>Field Based Dissertation (including viva voce)</td>
<td>4212624</td>
<td>4</td>
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- Note: L: Lecture; S: seminar; P: Practical; D: Dissertation; V: Viva Voce
- Core Course (CC)  
  (Exclusive for Geography students)
- Generic Elective Course (GEC)  
  (Offered to other departments)
- Discipline Centric Elective Courses (DCEC)  
  (Offered to the students from Geography and other departments)
- Skill Enhancement Elective Course (SEEC)  
  (Exclusively for Geography students)
# Master of Science in Geography (Semester-wise structure)

## Semester I

<table>
<thead>
<tr>
<th>S. No</th>
<th>Course code</th>
<th>Course title</th>
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<th>S</th>
<th>P</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SEE GEO 1 1 01 C 4105</td>
<td>Geomorphology</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>SEE GEO 1 1 02 C 4105</td>
<td>Climatology</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>SEE GEO 1 1 03 C 4105</td>
<td>Population and Settlement Geography</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>SEE GEO 1 1 04 C 2114</td>
<td>Practical I: Practical Geography: Cartographic methods- Conventional</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
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<tr>
<td>5.</td>
<td><strong>To be taken from other department by Geography student</strong></td>
<td></td>
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*Generic Elective Course (GEC) (offered to other departments)*

<table>
<thead>
<tr>
<th>S. No</th>
<th>Course code</th>
<th>Course title</th>
<th>L</th>
<th>S</th>
<th>P</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>6.</td>
<td>SEE GEO 1 1 01 GE 3104</td>
<td>Population and Development</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
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<tr>
<td>7.</td>
<td>SEE GEO 1 1 02 GE 3104</td>
<td>Elements of Physical Geography</td>
<td>3</td>
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<td>8.</td>
<td>SEE GEO 1 1 03 GE 3104</td>
<td>Introduction to Cartography</td>
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**Total Credits 23**

Note: Course s. no. 6, 7 and 8 are exclusively for other departments.

## Semester II

<table>
<thead>
<tr>
<th>S. No</th>
<th>Course code</th>
<th>Course title</th>
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<th>P</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>SEE GEO 1 2 05 C 4105</td>
<td>Geographical Thought</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>SEE GEO 1 2 06 C 4105</td>
<td>Hydrology and Oceanography</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>SEE GEO 1 2 07 C 4105</td>
<td>Statistical methods in Geography</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>SEE GEO 1 2 08 C 2114</td>
<td>Practical II: Practical Geography: Cartographic methods- Modern</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>SEE GEO 1 2 09 C 1012</td>
<td>Research Methodology, Field work and Report writing (Socio-Economic aspect)</td>
<td>1</td>
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<td>2</td>
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<tr>
<td>6.</td>
<td><strong>Any one of the following DCEC courses</strong></td>
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<tr>
<td></td>
<td>SEE GEO 1 2 01 DCEC 4105</td>
<td>Economic Geography</td>
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<td>0</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>SEE GEO 1 2 02 DCEC 4105</td>
<td>Soil Geography</td>
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**Total Credits 26**
## Semester III

<table>
<thead>
<tr>
<th>S.No</th>
<th>Course code</th>
<th>Course title</th>
<th>L</th>
<th>S</th>
<th>P</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SEE GEO 1 3 10 C 4105</td>
<td>Geography of India</td>
<td>4</td>
<td>1</td>
<td>0</td>
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</tr>
<tr>
<td>2.</td>
<td>SEE GEO 1 3 11 C 4105</td>
<td>Regional Development and Planning</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>SEE GEO 1 3 12 C 4105</td>
<td>Geography of Central Places</td>
<td>4</td>
<td>1</td>
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<td>5</td>
</tr>
<tr>
<td>4.</td>
<td>SEE GEO 1 3 13 C 2114</td>
<td>Geoinformatics</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>5.</td>
<td>SEE GEO 1 3 14 C 1012</td>
<td>Research Methodology, Field work and Report writing</td>
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### 6. *Any one of the following DCEC courses*

<table>
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<th>P</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEE GEO 1 3 03 DCEC 4105</td>
<td>Environmental Geography</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>SEE GEO 1 3 04 DCEC 4105</td>
<td>Political Geography</td>
<td>4</td>
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### 7. *To be taken from other department*

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course title</th>
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<th>D</th>
<th>V</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>SEE GEO 1 3 04 GE 3104</td>
<td>Fundamentals of Human Geography</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
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</tr>
<tr>
<td>SEE GEO 1 3 05 GE 3104</td>
<td>Geography of India</td>
<td>3</td>
<td>1</td>
<td>0</td>
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</tbody>
</table>

**Total Credits 30**

Note: Course s. no. 8 and 9 are exclusively for other departments.

## Semester IV

### Skill Enhancement Elective Course (Compulsory and exclusively for Geography students)

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Course code</th>
<th>Course title</th>
<th>L</th>
<th>S</th>
<th>D</th>
<th>V</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SEE GEO 1 4 01 SEEC 228416</td>
<td>Field Based Dissertation (including viva voce)</td>
<td>2</td>
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<td>4</td>
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<tr>
<td>2.</td>
<td>SEE GEO 1 4 02 SEEC</td>
<td>Self-Study Course</td>
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### Two of the DCEC courses

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<tr>
<th>Course code</th>
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<th>P</th>
<th>Credit</th>
</tr>
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<tbody>
<tr>
<td>SEE GEO 1 4 05 DCEC 3104</td>
<td>Demographic Methods</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>SEE GEO 1 4 06 DCEC 3104</td>
<td>Natural hazard and disaster management</td>
<td>3</td>
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**Total Credit 24**

OR

<table>
<thead>
<tr>
<th>S. No.</th>
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<th>D</th>
<th>V</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SEE GEO 1 4 01 SEEC 4212624</td>
<td>Field Based Dissertation (including viva voce)</td>
<td>4</td>
<td>2</td>
<td>12</td>
<td>6</td>
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</table>

**Total Credits of M.Sc. Geography Programme: 23+26+30+24 = 103**
M.Sc. Geography, Semester-I
Course Title- Geomorphology
Course Code- SEE GEO 1101 C 4105

Credit – 5

Course Outline

Unit I

Unit II
Internal structure of earth, Origin of Continent and ocean- Tetrahedral Hypothesis, Continental drift hypothesis, Continental drift theory, Plate Tectonic and Sea floor Spreading, Concept of Isostasy, Geosyncline, Rocks

Unit III
Endogenetic forces and Exogenetic forces: Fold, Fault Weathering, Cycle of Erosion and Mass Movements, Dynamics of fluvial, glacial, aeolian, marine, and karst processes; Landforms: Climatic, Tectonic, Erosional and depositional Landforms

Unit IV
Theories of Hill slope evolution, Regional Geomorphology: Study of any two region of India, Applied Geomorphology: nature and objectives, geomorphic hazards and mitigation measures, Application of geomorphological knowledge in mining, constructions and other human activities

Recommended Readings:

**M.Sc. Geography Semester - I**

**Course Title- Climatology**

**Course Code- SEE GEO 1 1 02 C 4105**

**Credit – 5**

**Course Outline**

**Unit I**
Nature and Scope of Climatology, Climatic elements – atmospheric structure, temperature, pressure, moisture: forms of condensation and precipitation, general atmospheric circulations and processes, jet stream.

**Unit II**
Weather system and disturbances – Concept of atmospheric stability, Air mass, fronts, Cyclones, Tornados; Ocean atmospheric interaction- El Nino, ENSO, Monsoon winds (case study of India).

**Unit III**
Global climate system – Approaches to climatic classification; Classification of Koppen, and Thornthwaite, Major climates of the world – tropical, Temperate and polar. Study of micro and macro climatic region (with special reference to India).

**Unit IV**
Climatic changes – evidences, causes, global warming and its Impact, Oozon depletion and its impact, Acid rain and its impact, Sea level change and its impact, Concept of Heat Island, Indian Expedition to Arctic and Antarctica- their study and its effect on Indian Climate, Study of climate in relation to Agriculture, Industry, Housing, Transport, Health and Forest (with special reference to India)

**Recommended Readings:**

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**M.Sc. Geography Semester - I**

**Course Title– Population and Settlement Geography**

**Course Code- SEE GEO 1 1 03 C 4105**

**Credit – 5**

**Course Outline**

**Unit I**
Concepts, scope and methodology of population geography; Sources of population data with particular reference to India; Population Profile of World and India: Population Distribution and Characteristic, Population policy: developed and developing countries, India’s population policy; Concept of Human Development

**Unit II**

**Unit III**
Unit IV

Settlement Structure: Physical characteristics of internal structure and external form, theories explaining internal morphological structure of cities; empirical and theoretical models explaining the functional classification of towns & villages; functional classification of urban centres, functional typology of villages, functional landscape, functional structure of towns in India. Land use (principles and theories of land use) in urban and rural setting: house types and building materials, environmental, socio-economic/cultural factors influencing the dynamics of settlement structure.

Recommended Readings for population:

Suggested Reading for settlement
3. Census of India (1961): *House types and Settlement Patterns of Villages in India*, GOI, New Delhi

**M.Sc. Geography Semester - I**

**Course Title: Practical I: Practical Geography: Cartographic methods- Conventional**

**Course code- SEE GEO 1 1 04 C 2114**

**Credit - 4**

**Course Outline**

**Unit I**
Toposheet Interpretation: Basic information on Topographical sheets, Preliminary information, Conventional Signs, Interpretation of Relief, Drainage, Settlements, Land-use, Vegetation and Transport network on Toposheets.

**Unit II**
Map Projections: general principles, classification. Drawing graticules on the following projections by graphical and mathematical methods: Cylindrical projection- Simple and Equal Area Projection, Mercator Projection, Conical Projection with one and two standard parallel, Gnomonic Projection and Orthographic Projection

Mapping: Quantitative, Qualitative-print, line, area and volume-size, location and direction of symbols-selection of class intervals and choropleth and isopleths maps.
Unit III

Morphometric Analysis of Drainage basin- its geographical significance; Basin morphometry of fluvially originated drainage basin
Linear Aspects: Stream ordering based on Horton and Strahler, Bifurcation ratio
Areal Aspects: Geometry of basin shape, Basin Perimeter, Length and Area, Stream frequency and Drainage density.

Unit IV

Relief Aspects: Hypsometric analysis- Hypsometric curve and Integral Hypsometric curve, Clinographic analysis, Altimetric analysis,
Slope Analysis- Average Slope (Wentworth's method), Relative Relief (Smith's method), Dissection Index,
Profile Analysis - Longitudinal profile

Recommended Readings:

**M.Sc. Geography Semester I**

**Course Title- Population and Development**

**Course code- SEE GEO 1 1 01 GE 3104**

Credit - 4

**Course Outline**

**Unit I**
Conceptual Frame: Population as resource; Population and development: a debate; Population and ecosystem; Demographic transition.

**Unit II**
Historical Background and Characteristics: History of human population; Relationship between population, food and energy; Debate on The Limits to Growth; Population characteristics: developed and developing countries (case study of India).

**Unit III**
Problems and Policies: Optimum population; Family welfare and planning; Population policies in developed and developing countries (case study of India).

**Unit IV**
Population-Development Conflict: Concepts of rich and poor worlds and their global perspectives; Neo-Malthusian theory; Future perspectives: Growth scenario and relationship with development.

**Recommended Readings:**

M.Sc. Geography Semester I
Course Title– Elements of Physical Geography
Course code- SEE GEO 1 1 02 GE 3104
Credit - 4

Course Outline

Unit I
The nature and scope of physical geography; Inter-relationship of physical Geography with other branches of earth sciences, Geological Time scale, Earth interior, Isostasy, Wegner’s theory of continental drift; plate tectonic

Unit II
Earthquake, Volcano, weathering, cycle of erosion, Land forms (erosional and depositional)- Fluvial, Arid, Glacial and Karst

Unit III
Composition and structure of the atmosphere, Heat budget, planetary winds, Types of precipitation and rainfall pattern, Front, Cyclone- tropical and temperate

Unit IV
Surface configuration of ocean floor-continental shelf, slope, abyssal plain, ridge and trenches, Relief of Atlantic, Pacific and Indian Ocean, Salinity, Currents, Coral reefs
Recommended Readings:

**Physical Geography**

**Climatology**

**Oceanography**
   House, Allahabad  
   Publishing Co.  
   New York, 1976

**M.Sc. Geography Semester I**  
**Course Title – Introduction to Cartography**  
**Course code- SEE GEO 1 1 03 GE 2114**  
Credit - 4

**Course Outline**

**Unit I**  
The nature and scope of cartography; Scale: Types of Scale; Map - types of maps. Methods  
of showing relief; Representation of different landforms by contours; Representation of  
temperature, pressure and rainfall data.

**Unit II**  
Study of Survey of India topographical maps- classification and scale: Interpretation of S0I  
topo-sheets of a hilly and a plain area of India in respect of relief, drainage, settlement and  
communication pattern; Field work: Select any area near the Institution; collect topo-  
sheets of the area-1: 50,000 scale; Visit the area and identify the landforms, settlements,  
land use features and compare the same with the topo-sheets. Draw sketches and maps of  
the selected area.

**Unit III**  
Map Projections: general principles, classification. Drawing graticules on the following  
projections by graphical and mathematical methods: Simple Cylindrical projection,  
Cylindrical Equal Area Projection, Mercator Projection, Conical Projection with one  
standard parallel, Conical projection with two standard parallels, Gnomonic Projection and  
Orthographic Projection

**Unit IV**  
Types of cartographic symbols and their uses: Points (dots, proportional circles and  
spheres), Line, (isopleths and flow lines), Areas (Choropleth); Use of line and bargraphs for  
representing population, agriculture, industry and transport data; Representation of  
population (distribution, density, growth etc.)
Recommended Readings:

M.Sc. Geography Semester II
Course Title- Geographical Thought
Course code- SEE GEO 1205 C4105

Credit - 5

Course Outline

Unit I
Evolution of Geographic Thought: Changing paradigms – Environmentalism, Possibilism, areal differentiation, spatial organisation

Unit II
Theory in Geography: structure, nature, type and applications in geography; human-environment interactions. Philosophical debates in Contemporary Geography: Critical understanding of positivism, behaviourism, Marxism, Structuralism, post-structuralism and post-modernism.

Unit III
Methods in Geographical Analysis: Epistemology of geography, critical assessment and debates on quantitative, qualitative, field and cartographic methods in geography

Unit IV
Future of Geography: changing nature, concepts, approaches and methodologies of geography in a Globalising World, Progress and Contributions in Indian Geography

Recommended Readings:
M.Sc. Geography Semester - II
Course Title- Hydrology and Oceanography
Course code- SEE GEO 1 2 06 C 4105

Course Outline

Unit I
Bases of Hydrology: Meaning, scope, approach; Hydrological cycle; Man's influence on the hydrological cycle; Precipitation: types, characteristics and measurements; Interception; Evaporation: factors affecting evaporation from free water surface and soil; Evapotranspiration: estimation and its control, Water and Its Disposition. Soil moisture and its zones; Infiltration; Groundwater: occurrence, storage, recharge and discharge;

Unit II

Unit III
Introduction: Nature and scope of oceanography; Plate Tectonics and Ocean, Major topographic features of ocean basins: continental shelf, slope, ridge and deeps, abyssal plains; submarine canyons; configuration of ocean floors of Indian Ocean and Atlantic Ocean, Marine Sediments; Salinity, Physical and chemical properties of ocean water.

Unit IV
Oceanic processes: Interlink between atmospheric and ocean; Upper and Deep ocean circulation; currents, waves, tides and tsunami, Oceanic life and Resources: types of Organisms; coral reefs - origin and distribution, Major Marine Environments: Coastal: estuaries, deltas; Deep sea environment; Marine Resources: Food, Mineral and Energy

Recommended Readings:

For Hydrology

**Recommended Readings:**

**For Oceanography**

**M.Sc. Geography Semester II**

**Course Title – Statistical Methods in Geography**

**Course code- SEE GEO 1 2 07 C 4105**

**Credit – 5**

**Course Outline**

**Unit I**
Geography and Statistics; Significance of Statistics in geographical studies; Types of Data; levels of data measurement. Sampling: basic concepts, sample units and design, sampling frame and procedures, standard error and sample size, testing the adequacy of samples.

**Unit II**
Measures of Central Tendency and their significance; Centrographic techniques: mean centre, median centre and standard distance. Measures of dispersion and concentration: Range, quartile deviation, mean deviation, standard deviation; coefficient of variation, Lorenz Curve and Gini’s Coefficient; location Quotient.

**Unit III**
Bivariate Analysis: Forms of relation and measuring the strength of association and relation-construction and meanings of scatter diagram; Spearman’s Rank Difference and Karl Pearson’s Product Moment Correlation Coefficients

**Unit IV**
Regression analysis: regression equations, construction of regression line-interpolation, prediction, explanation; residual-statistical tests of significance of the estimates; computation of residuals and mapping.
Hypothesis Testing: Needs and types of hypotheses-goodness of fit and significance and confidence levels-parametric and non-parametric procedures: contingency tables, Chi-square test, t-test, Mann-Whitney U test, Analysis of Variance (ANOVA)
Basic principles and elements of Factor Analysis and principal component analysis

Recommended Readings:

M.Sc. Geography Semester II
Course Title– Practical II: Practical Geography: Cartographic Methods-Modern
Course code- SEE GEO 1 2 08 C 2114)
Credit – 4

Course Outline

Unit I
Introduction to computer: Components of Computer - Hardware and Software); Use of Computers in Geography. Introduction to MS-Excel : Drawing of line graph, Bar Diagram, Pie diagram, Scatter diagram, (changes from colour to different shade patterns, placement of Legend, different weight to X and Y coordinates, Placement of Headings and Sub-headings, Font Size, Style, Bold and Italics.
Unit-II
Morphometric Analysis of Drainage basin-Computer based (with the help of any software)

Unit-III
Thematic Cartography: Physical and Socio-economic; Creation of spatial database and application using GIS, Remote sensing and Computer cartography.

Unit IV
Regional Synthesis and characterization of the observed spatial patterns for predictive purposes, Preparation of spatial models; cartography for environmental education and planning

Recommended Readings:


For data analysis

M.Sc. Geography Semester II
Course Title– Research Methodology, Field work and Report writing (Socio-Economic aspect)
Course code- SEE GEO 1 2 09 C 1012

Course Outline

Unit I
Introduction to research in Geography: Concept and significance of research in geography; Philosophy and methods; Naturalism and anti-naturalism; realism and idealism; Scientific Research; Inductive and deductive approaches.

Unit II
Research design; Formulation of research problem; Development and testing of hypothesis; Techniques of data collection; Sampling and field survey. Qualitative research: Qualitative research design; Case study; Ethnography; Phenomenology and participatory research. Ethics in scientific research.

Unit III
Data Processing: Students are required to learn data analysis using any software preferably SPSS (Statistical Package for Social Sciences). They are expected to learn statistical methods and techniques through computer. SPSS: Introduction, managing Data, frequencies and cross tabulation, Graphs, Central Tendencies, Measures of Distribution, Measures of Asymmetry, Estimation and Hypothesis Testing, Statistical Dependence, Correlation and Regression, Data Analysis and Interpretation.
Unit IV

Field survey and report writing: Procure a topographic map of 1:50,000 or 1:25,000 scale to study the settlements selected in its regional setting; Collect demographic, social & economic data of the village/town from Census Reports to study the temporal changes in the profile of such characteristics. Procure a cadastral map of the village/town for field mapping of the features of land-use and land quality. Procure/prepare the settlement-site map through rapid survey to map the residential, commercial, recreational (parks, playgrounds), educational, religious and other prominent features. Conduct a socio-economic survey of the households with a structured questionnaire/schedule. Supplement the information by personal observations and perceptions. Based on results of the land-use and socio-economic enquiry of the households, prepare a critical field-survey report. Photographs and sketches, in addition to maps and diagrams, may supplement the report.

Recommended Readings:
For Research Methodology


**For Data Processing**

**M.Sc. Geography Semester II**
**Course Title– Economic Geography**
**Course code-** SEE GEO 1 2 01 DCEC 4105

**Credit – 5**

**Course Outline**

**Unit I**
Scope, content and recent trends in economic geography, relation of economic geography with economics and other branches of social sciences, Location of economic activities and spatial organization of economics, Classification of economies; sectors of economy (primary, secondary and tertiary).

**Unit - II**
Factors of location of economic activities: physical, social, economic and cultural; Concept and techniques of delimitation of agricultural regions, crop combination and diversification, Von Thunen’s model and its modifications.
Models of Natural Resources Process: Zimmermann’s Primitive and Advance Models of natural resource process, Kirk’s Decision Model, Brookfield System Model.

Unit - III
Classification of industries; Resource based and footloose industries, Theories of industrial location-Weber, Losch and Isard; Case studies of selected industries Iron and Steel, Aluminum, Chemical, Oil refining and Petrochemical, Engineering, Textile etc.

Unit - IV
Modes of transportation and transport cost; accessibility and connectivity: international, inter and intraregional; comparative cost advantages. Typology of markets, market network in rural societies, market system in urban economy, role of market in the development of trade and commerce, Economic development of India

Recommended Readings:

M.Sc. Geography Semester II
Course Title – Soil Geography
Course code- SEE GEO 1 2 02 DCEC 4105

Credit – 5
Course Outline

Unit I
Introduction to soil geography and pedology, factors and Processes of soil formation and development; Soil Profile; Soil catena, podzolization, laterisation, calcification and gleezation and salinization

Unit II
Soil organisms, Physical and Chemical properties of soils

Unit III
Genetic and Taxonomic classification of soils, their characteristics and world patterns. Land capability classification, Evaluation of land and soil: Parametric and non-parametric systems, soil survey

Unit IV
Soil problems and management: Soil erosion and degradation. integrated soil and water management; Methods of Soil reclamation, quality enhancement and management

Recommended Readings:
Course Outline

Unit I
Introduction: Geological structure and Physiographic Regions, Drainage Systems, Climatic Characteristics, Natural Vegetation and Soil

Unit II
Agriculture: nature, problems and prospects; Infrastructure: irrigation, power, fertiliser, HYV seeds and farm technology; Green revolution and its socio-economic and ecological implications; Recent trends in agriculture
Industry: New industrial policy: Globalisation and liberalisation; Industrial complexes and industrial regions

Unit III
Growth, distribution and density of population; Population characteristics and composition (Literacy, Sex, Age, work structure, etc.); Population problems and policies

Unit IV
Contemporary Issues: Environmental Pollution and degradation, Regional Disparities in regional Development, globalization and Indian Economy, Development of transport and Information technology and its impact on society and economy

Recommended Books:
M.Sc. Geography Semester - III  
Course Title - Regional Development and Planning  
Course code- SEE GEO 13 11 C 4105  

Credit – 5

Course Outline

Unit I  
Fundamentals: Concept, nature and scope of Regional Planning; Different approaches to regional planning; Planning regions: concept and types; Planning regions of India; Regional policies in India

Unit II  
Conceptual Outlook: Regional planning and national development; Economic development and regional development; Regional economic complexes; Inter-regional and intra-regional functional interactions; Regional disparities in India

Unit III  
Approaches: Approaches to integrated regional planning at different levels: local, regional and national; Multi-level planning in India: State, District and Block level planning; Planning for tribal, agricultural, industrial and urban (metropolitan) regions

Unit IV  
Development Perspective: Service and market centres planning; Growth centre and regional development with reference to India and France; Decentralised planning: themes and issues; Regional Planning: Development Strategies in the 21st century

Recommended Readings:

M.Sc. Geography Semester - III
Course Title- Geography of Central Places
Course code- SEE GEO 1 3 12 C 4105
Credit – 5

Course Outline

Unit I
Genesis: Concept of Central Places, attributes; and principles of central places, process of formation of central places. Geographical foundations of Central Places: Locational arrangement of nodes, spacing, dispersion and localisation, clustering and competition, Economies of agglomeration.

Unit - II
Central Place Functions: Nature of central functions, locational pattern of functions within a central place region; hierarchy of nodal centres based on functions and size.

Unit - III
Measurement of Centrality and Hierarchy: The scale of functional hierarchy; Methods of measurement of centrality and hierarchy (like central score, central tendency, population threshold, and graph theoretical techniques); hierarchy of settlements based on hierarchy of functions.
Unit - IV
Central Place and Region: Factors affecting delimitation of central place region (like commutation, communication, flow of goods and services etc.), forms of interaction and analysis of gradient. 
Central Place theories and central place system; Basic concepts classical and modern; central place theory viz a viz other location theories; Central place system: case studies of metropolitan cities.

Recommended Readings:

13. Qazi, Ahmad (1965): Indian Cities, Characteristics and Correlates, University of Chicago, U.S.A.
M.Sc. Geography Semester - III  
Course Title– Geoinformatics  
Course code- SEE GEO 1 3 13 C 2114  
Credit – 4

Course Outline

Unit I  
Fundamentals: Remote sensing: definition and scope; Electro-magnetic radiation, Remote sensing regions and bands; Spectral signature; Types of remote sensing

Unit II  
Aerial Photographs and Satellite Imagery.: Aerial photos: types, scale, resolution; Geometric properties of aerial photos; Stereoscopy; Stereoscopic parallax; Relief displacement, General orbital characteristics of remote sensing satellites; General characteristics of remote sensing sensors; Characteristics of MSS, HRV, LISS; Characteristics of raw remote sensing data

Unit III  
Interpretation and Application: Elements of image interpretation; Image processing techniques: Visual and digital; Remote sensing data: pre-processing operations, enhancements and classifications; Application of Remote Sensing

Unit IV  
GIS: Definition, and Components, Geographical data: types and characteristics; Spherical and plane coordinate systems in GIS; geo-referencing, Digital representation of geographic data: Data structure, spatial data model, raster and vector models; GIS data standards: concepts and components; Integration of Remote sensing and GIS; GIS project design and planning methodologies; GIS data base management systems; Applications of GIS

Recommended Readings:
12. ESRI (1993): Understanding GIS. Redlands, USA
M.Sc. Geography Semester - III
Course Title– Research Methodology, Field work and report writing
(Physical aspect)
Course code- SEE GEO 1 3 14 C 1012
Credit – 2

Course Outline

Unit I
Trace the prominent features of the area to be surveyed. Identify salient landform features of the selected area on a topographical sheet.

Unit - II
Identify the landforms on the surface, while in the field. Also note the agents of erosion, transportation and deposition associated with the landforms.

Unit - III
Identify and classify the biodiversity in the area (Flora & Fauna).

Unit - IV
Observe the relationship of various landforms, flora and fauna with land-use, settlement structure and life style of people. Based on observations of the above characteristics,
prepare a field survey report. The report need to be supplemented with maps, sketches, photographs etc.

**Recommended Readings:**

Course Outline

Unit I
The Environment: Meaning of environment; Structure and types of environment, Components of environment, Geography and environment, Man and nature, Environment and resources.

Unit II
Man – Environment Relationships: Approaches to the study – environmental deterministic approach, teleological approach, possibilistic approach, economic deterministic approach, ecological approach; Environment and man; Man's interaction with the environment Biogeochemical cycles - the hydrological cycle, the carbon cycle, the oxygen cycle, the nitrogen cycle, the phosphorous cycle and the sediment cycle.

Unit III
Ecological systems: Ecological concepts (meaning and definitions). Ecosystem concepts and Components; Ecosystem – form and functions, food chain, food web, trophic level; ecological niche

Unit IV
Zoogeography and Zoogeographical realms, Palaeo-botanical and Palaeo-climatological records of environmental change in India, National Forest Policy of India; Conservation of Biotic Resources.

Recommended Readings:


**M.Sc. Geography Semester - III**  
**Course Title – Political Geography**  
**Course code- SEE GEO 1 3 04 DCEC 4105**  
Credit – 5

**Course Outline**

**Unit I**  
Meaning, Scope and Methodology of Political Geography: Definition, Nature and Scope of Political Geography; Functional Approach and Unified Field Theory; Space, Territory and State; Elements of State, Laws of spatial growth of State.

**Unit II**  
Frontiers and Boundaries: Concepts and Classifications, Continental and Maritime Boundaries, Case studies of South Asia, Europe and Africa; Nation and State; Meaning, Definition and Nation building process of India; Political and administrative framework and its hierarchical relationship to unitary and federal forms of governance.

**Unit III**  
Geopolitics and Geostrategy: Principal Components and Exponents, Global Geopolitical and Geostrategic Pattern, Changing Perspectives and perceptions of a World Order.

**Unit IV**  
Political geography of contemporary India with special reference to: The changing political map of India, centripetal & centrifugal forces; stability & instability; Interstate issues (like water disputes & riparian claims) and conflict resolutions insurgency in border states; Emergence of New States; Federal India: Unity in Diversity.

**Recommended Readings:**

**M.Sc. Geography Semester - III**

**Course Title– Fundamentals of Human Geography**

**Course code- SEE GEO 1 3 04 GE 3104**

**Credit – 4**

**Course Outline**

**Unit I**

Nature and scope of human geography, Branches of human geography, Concepts of man-environment relationship- determinism, possibilism and probabilism; dichotomy in Physical and Human Geography; primitive life-style of mankind and subsequent migration
Unit – II
Division of Mankind: spatial distribution, physical and social profile of racial groups, ethnic groups, tribal groups and religious groups in the world and in India; early economic activities of mankind: food gathering, hunting, fishing, and vegetation, shifting cultivation.

Unit – III
Human Adaptation to the environment: (i) cold region—Eskimo; (ii) hot region Bushman, Beduin; (iii) Plateau—Gonds, Masai, (iv) Mountain — Gujjars, nomads, (v) regions of recurrent floods, droughts and other natural hazards; Adaptation in modern society- agricultural, urban and metropolitan;

Unit - IV
Distribution of population; world distribution pattern - physical, economic and social factors influencing spatial distribution; concepts of over population, under population and optimum population, Zero population growth, Migration—internal and international, Population conflicts and conflict resolution in developed and developing world. Population theories: Classical and Modern

Recommended Readings:

M.Sc. Geography Semester - III
Course Title– Geography of India
Course code- SEE GEO 1 3 05 GE 3104
Credit – 4

Course Outline

Unit I
Introduction: Geological structure and Physiographic Regions, Drainage Systems, Climatic Characteristics, Natural Vegetation and Soil

Unit II
Agriculture: nature, problems and prospects; Infrastructure: irrigation, power, fertilizer; Green revolution and its socio-economic and ecological implications; Recent trends in agriculture
Industry: Industrial complexes and industrial regions, New industrial policy

Unit III
Population: Growth, distribution and composition (Literacy, Sex, Age, work structure, etc.); Population problems and policies

Unit IV
Development of transport and Information technology, Contemporary Issues: Environmental Pollution and degradation, Regional Disparities in regional Development, globalization and Indian Economy

Recommended Books:
M.Sc. Geography Semester - IV
Course Title– Demographic Methods
Course code- SEE GEO 1 4 05 DCEC 3104

Credit – 4

Course Outline

Unit I
Definition and scope of demography; Basic concepts and measures: universe and variables, rates and ratios; Demographic data sources: Census, Vital, Sample and United Nation

Unit II
Quality of Data; Basic measures of Fertility and Mortality

Unit III
Standardization of Rates and Ratios; Nuptiality analysis; Population projection

Unit IV
Demographic models and Model life tables; Evaluation of Programmes

Recommended Readings:
Course Outline

Unit I
Concept of Hazards, Risk, Vulnerability and Disaster. Types of Hazards: Natural (Tectonic Hazards – Earthquakes and Volcanoes; Hydrological Hazards – Floods and Droughts.

Unit II
Regional Dimension of Natural Hazards: Occurrence and Trends. (Tectonic Hazards – Earthquakes and Volcanoes; Hydrological Hazards – Floods and Droughts.

Unit III
Disaster Losses and Impact – Displacements, Livelihood. Economy and Infrastructure, and Health.

Unit IV
Mitigation and Management: Plans and Policies. Role of Remote Sensing, GIS and GPS in Disaster Management

Recommended Readings:

Dr. Kheraj
Convener, Board of Studies
Teacher In Charge
Department of Geography
Central University of Haryana
Mahendergarh-123031

Mobile: 9968914075