Choice Based Credit System (CBCS)

UNIVERSITY OF DELHI

DEPARTMENT OF GEOGRAPHY

UNDERGRADUATE PROGRAMME
(Courses effective from Academic Year 2015-16)

SYLLABUS OF COURSES TO BE OFFERED
Core Courses, Elective Courses & Ability Enhancement Courses

Disclaimer: The CBCS syllabus is uploaded as given by the Faculty concerned to the Academic Council. The same has been approved as it is by the Academic Council on 13.7.2015 and Executive Council on 14.7.2015. Any query may kindly be addressed to the concerned Faculty.

Undergraduate Programme Secretariat
Preamble

The University Grants Commission (UGC) has initiated several measures to bring equity, efficiency and excellence in the Higher Education System of the country. The important measures taken to enhance academic standards and quality in higher education include innovation and improvements in curriculum, teaching-learning process, examination and evaluation systems, besides governance and other matters.

The UGC has formulated various regulations and guidelines from time to time to improve the higher education system and maintain minimum standards and quality across the Higher Educational Institutions (HEIs) in India. The academic reforms recommended by the UGC in the recent past have led to overall improvement in the higher education system. However, due to a lot of diversity in the system of higher education, there are multiple approaches followed by universities towards examination, evaluation and grading system. While the HEIs must have the flexibility and freedom in designing the examination and evaluation methods that best fits the curriculum, syllabi and teaching-learning methods, there is a need to devise a sensible system for awarding the grades based on the performance of students. Presently the performance of the students is reported using the conventional system of marks secured in the examinations or grades or both. The conversion from marks to letter grades and the letter grades used vary widely across the HEIs in the country. This creates difficulty for the academia and the employers to understand and infer the performance of the students graduating from different universities and colleges based on grades.

The grading system is considered to be better than the conventional marks system and hence it has been followed in the top institutions in India and abroad. So it is desirable to introduce uniform grading system. This will facilitate student mobility across institutions within and across countries and also enable potential employers to assess the performance of students. To bring in the desired uniformity in grading system and method for computing the cumulative grade point average (CGPA) based on the performance of students in the examinations, the UGC has formulated these guidelines.
**CHOICE BASED CREDIT SYSTEM (CBCS):**

The CBCS provides an opportunity for the students to choose courses from the prescribed courses comprising core, elective/minor or skill based courses. The courses can be evaluated following the grading system, which is considered to be better than the conventional marks system. Therefore, it is necessary to introduce uniform grading system in the entire higher education in India. This will benefit the students to move across institutions within India to begin with and across countries. The uniform grading system will also enable potential employers in assessing the performance of the candidates. In order to bring uniformity in evaluation system and computation of the Cumulative Grade Point Average (CGPA) based on student’s performance in examinations, the UGC has formulated the guidelines to be followed.

**Outline of Choice Based Credit System:**

1. **Core Course:** A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.

2. **Elective Course:** Generally a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate’s proficiency/skill is called an Elective Course.
   
   **2.1 Discipline Specific Elective (DSE) Course:** Elective courses may be offered by the main discipline/subject of study is referred to as Discipline Specific Elective. The University/Institute may also offer discipline related Elective courses of interdisciplinary nature (to be offered by main discipline/subject of study).

   **2.2 Dissertation/Project:** An elective course designed to acquire special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher/faculty member is called dissertation/project.

   **2.3 Generic Elective (GE) Course:** An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective.

   P.S.: A core course offered in a discipline/subject may be treated as an elective by other discipline/subject and vice versa and such electives may also be referred to as Generic Elective.

3. **Ability Enhancement Courses (AEC)/Competency Improvement Courses/Skill Development Courses/Foundation Course:** The Ability Enhancement (AE) Courses may be of two kinds: AE Compulsory Course (AECC) and AE Elective Course (AEEC). “AECC” courses are the courses based upon the content that leads to Knowledge enhancement. They ((i) Environmental Science, (ii) English/MIL Communication) are mandatory for all disciplines. AEEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc.

   **3.1 AE Compulsory Course (AECC):** Environmental Science, English Communication/MIL Communication.

   **3.2 AE Elective Course (AEEC):** These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based instruction.

Project work/Dissertation is considered as a special course involving application of knowledge in solving / analyzing /exploring a real life situation / difficult problem. A Project/Dissertation work would be of 6 credits. A Project/Dissertation work may be given in lieu of a discipline specific elective paper.
### Details of courses under B.A (Honors), B.Com (Honors) & B.Sc. (Honors)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td></td>
<td>Theory+ Practical</td>
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<tr>
<td><strong>I. Core Course</strong></td>
<td></td>
</tr>
<tr>
<td>14 Papers</td>
<td>14X4= 56</td>
</tr>
<tr>
<td>Core Course Practical / Tutorial*</td>
<td></td>
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<tr>
<td>14 Papers</td>
<td>14X2=28</td>
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<tr>
<td><strong>II. Elective Course</strong></td>
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<tr>
<td>8 Papers</td>
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<tr>
<td>A.1. Discipline Specific Elective</td>
<td>4X4=16</td>
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<tr>
<td>(4 Papers)</td>
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<tr>
<td>A.2. Discipline Specific Elective Practical/ Tutorial*</td>
<td>4 X 2=8</td>
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<tr>
<td>(4 Papers)</td>
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<tr>
<td>B.1. Generic Elective/ Interdisciplinary</td>
<td>4X4=16</td>
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<tr>
<td>(4 Papers)</td>
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<tr>
<td>B.2. Generic Elective Practical/ Tutorial*</td>
<td>4 X 2=8</td>
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<tr>
<td>(4 Papers)</td>
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<tr>
<td>• Optional Dissertation or project work in place of one Discipline Specific Elective paper (6 credits) in 6th Semester</td>
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<tr>
<td><strong>III. Ability Enhancement Courses</strong></td>
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<tr>
<td>1. Ability Enhancement Compulsory</td>
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<tr>
<td>2 Papers of 2 credit each</td>
<td>2 X 2=4</td>
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<tr>
<td>Environmental Science</td>
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<tr>
<td>English/MIL Communication</td>
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<tr>
<td>2. Ability Enhancement Elective (Skill Based)</td>
<td></td>
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<tr>
<td>(Minimum 2)</td>
<td>2 X 2=4</td>
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<tr>
<td>(2 Papers of 2 credit each)</td>
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<tr>
<td><strong>Total credit</strong></td>
<td>140</td>
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</tbody>
</table>

Institute should evolve a system/policy about ECA/ General Interest/Hobby/Sports/NCC/NSS/related courses on its own.

* wherever there is a practical there will be no tutorial and vice-versa
B.A. (Honours) Geography

Note:
1. Theory paper should have 5 periods per week.
2. Tutorial group of each theory paper should have a group size of 8 students.
3. Practical papers should have 6 periods per week per group of 15 students.
4. Practical paper will not have tutorials.

Core Courses

Semester I
1. Geomorphology
2. Cartographic Techniques (Practical)

Semester II
3. Human Geography
4. Thematic Cartography (Practical)

Semester III
5. Climatology
6. Statistical Methods in Geography (Practical)
7. Geography of India

Semester IV
8. Economic Geography
9. Environmental Geography
10. Field Work and Research Methodology (Practical)

Semester V
11. Regional Planning and Development
12. Remote Sensing and GIS (Practical)

Semester VI
13. Evolution of Geographical Thought
14. Disaster Management based Project Work (Practical)

Skill Enhancement Course (any 2)

Semester III
1. Remote Sensing (Practical)
2. Advanced Spatial Statistical Techniques

Semester IV
3. Geographical Information System (Practical)
4. Research Methods (Practical)

Elective Discipline Specific (any four)

Semester V
DSE-1
1. Population Geography
2. Resource Geography
DSE-2
3. Urban Geography
4. Agricultural Geography

Semester VI
DSE-3
5. Geography of Health and Wellbeing
6. Political Geography
   DSE-4
7. Hydrology and Oceanography
8. Social Geography

Elective Generic Papers (any four)
Semester I
1. Disaster Management
2. Geography of Tourism

Semester II
3. Spatial Information Technology
4. Regional Development

Semester III
5. Climate Change: Vulnerability and Adaptation
6. Rural Development

Semester IV
7. Industrial Geography
8. Sustainable Development
B.A. (Honours) Geography

Core Papers

1. Geomorphology
   2. Earth: Interior Structure and Isostasy.
   3. Earth Movements: Plate Tectonics, Types of Folds and Faults, Earthquakes and Volcanoes.

Reading List
2. Cartographic Techniques (Practical)

2. Scales – Concept and application; Graphical Construction of Plain, Comparative and Diagonal Scales.
4. Topographical Map – Interpretation of a Mountain area with the help of Cross and Longitudinal Profiles.
5. Slope Analysis – Wentworth’s method.

Practical Record: A Project File in pencil, comprising one exercise each, on scale, map projection, interpretation of topographic sheet and slope analysis.

Reading List
3. Human Geography

1. Introduction: Defining Human Geography; Major Themes; Contemporary Relevance
2. Space and Society: Cultural Regions; Race; Religion and Language
3. Population: Population Growth and Distribution; Population Composition; Demographic Transition Theory
4. Settlements: Types of Rural Settlements; Classification of Urban Settlements; Trends and Patterns of World Urbanization
5. Population-Resource Relationship

Reading List
4. Thematic Cartography (Practical)

1. Maps – Classification and Types; Principles of Map Design.
3. Thematic Mapping Techniques – Properties, Uses and Limitations; Areal Data -- Choropleth, Dot, Proportional Circles; Point Data – Isopleths.
5. Thematic Maps – Preparation and Interpretation.

Practical Record: A Thematic Atlas should be prepared on a specific theme with five plates of any state in India.

Reading List
1. Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books
5. Climatology

1. Atmospheric Composition and Structure – Variation with Altitude, Latitude and Season.
4. Atmospheric Moisture – Evaporation, Humidity, Condensation, Fog and Clouds, Precipitation Types, Stability and Instability; Climatic Regions (Koppen)

Reading List
6. Statistical Methods in Geography (Practical)

1. Use of Data in Geography: Geographical Data Matrix, Significance of Statistical Methods in Geography; Sources of Data, Scales of Measurement (Nominal, Ordinal, Interval, Ratio).
2. Tabulation and Descriptive Statistics: Frequencies (Deciles, Quartiles), Cross Tabulation, Central Tendency (Mean, Median and Mode, Centro-graphic Techniques, Dispersion (Standard Deviation, Variance and Coefficient of Variation).
5. Association and Correlation: Rank Correlation, Product Moment Correlation, and Simple Regression, Residuals from regression

Class Record: Each student will submit a record containing five exercises:
1. Construct a data matrix of about (10 x 10) with each row representing an areal unit (districts or villages or towns) and about 10 columns of relevant attributes of the areal units.
2. Based on the above table, a frequency table, measures of central tendency and dispersion would be computed and interpreted for any two attributes.
3. Histograms and frequency curve would be prepared on the entire data set and attempt to fit a normal curve and interpreted for one or two variables.
4. From the data matrix a sample set (20 Percent) would be drawn using, random - systematic and stratified methods of sampling and locate the samples on a map with a short note on methods used.
5. Based on of the sample set and using two relevant attributes, a scatter and regression line would be plotted and residual from regression would be mapped with a short interpretation.

Reading List
7. Geography of India

1. Physical: Physiographic Divisions, soil and vegetation, climate (characteristics and classification)
2. Population: Distribution and growth, Structure
3. Economic: Mineral and power resources distribution and utilisation of iron ore, coal, petroleum, gas; agricultural production and distribution of rice and wheat, industrial development: automobile and Information technology
4. Social: Distribution of population by race, caste, religion, language, tribes and their correlates
5. Regionalisation of India: Physiographic (R. L. Singh), Socio – cultural (Sopher), Economic (Sengupta)

Reading List

8. Economic Geography

1. Introduction: Concept and classification of economic activity
2. Factors Affecting location of Economic Activity with special reference to Agriculture (Von Thunen theory), Industry (Weber’s theory).
3. Primary Activities: Subsistence and Commercial agriculture, forestry, fishing and mining.
4. Secondary Activities: Manufacturing (Cotton Textile, Iron and Steel), Concept of Manufacturing Regions, Special Economic Zones and Technology Parks.

Reading List

9. Environmental Geography

1. Environmental Geography – Concept and Scope
2. Human-Environment Relationships – Historical Progression, Adaptation in different Biomes.
3. Ecosystem – Concept, Structure and Functions
4. Environmental Problems in Tropical, Temperate and Polar Ecosystems
5. Environmental Programmes and Policies – Global, National and Local levels

Reading List

10. Field Work and Research Methodology (Practical)

1. Field Work In Geographical Studies – Role, Value, Data and Ethics of Field-Work
2. Defining the Field and Identifying the Case Study – Rural / Urban / Physical / Human / Environmental.
3. Field Techniques – Merits, Demerits and Selection of the Appropriate Technique; Observation (Participant / Non Participant), Questionnaires (Open/ Closed / Structured / Non-Structured); Interview with Special Focus on Focused Group Discussions; Space Survey (Transects and Quadrants, Constructing a Sketch)
4. Use of Field Tools – Collection of Material for Physical and Socio-Economic Surveys.
5. Designing the Field Report – Aims and Objectives, Methodology, Analysis, Interpretation and Writing the Report.

Practical Record
1. Each student will prepare an individual report based on primary and secondary data collected during field work.
2. The duration of the field work should not exceed 10 days.
3. The word count of the report should be about 8000 to 12,000 excluding figures, tables, photographs, maps, references and appendices.
4. One copy of the report on A 4 size paper should be submitted in soft binding.

Reading List
11. Regional Planning and Development

1. Definition of Region, Evolution and Types of Regional planning: Formal, Functional, and Planning Regions and Regional Planning; Need for Regional Planning; Types of regional Planning.
2. Choice of a Region for Planning: Characteristics of an Ideal Planning Region; Delineation of Planning Region; Regionalization of India for Planning (Agro Ecological Zones)
3. Theories and Models for Regional Planning: Growth Pole Model of Perroux; Growth Centre Model in Indian Context; Myrdal, Hirschman, Rostow and Friedmann; Village Cluster
4. Changing Concept of Development, Concept of underdevelopment; Efficiency-Equity Debate
5. Measuring development: Indicators (Economic, Social and Environmental); Human development.

Reading List
12. Remote Sensing and GIS (Practical)

1. Remote Sensing and GIS: Definition and Components, Development, Platforms and Types,
2. Aerial Photography and Satellite Remote Sensing: Principles, Types and Geometry of Aerial Photograph; Principles of Remote Sensing, EMR Interaction with Atmosphere and Earth Surface; Satellites (Landsat and IRS) and Sensors.
3. GIS Data Structures: Types (spatial and Non-spatial), Raster and Vector Data Structure
4. Image Processing (Digital and Manual) and Data Analysis: Pre-processing (Radiometric and Geometric Correction), Enhancement (Filtering); Classification (Supervised and Un-supervised), Geo-Referencing; Editing and Output; Overlays
5. Interpretation and Application of Remote Sensing and GIS: Land use/ Land Cover, Urban Sprawl Analysis; Forests Monitoring

Practical Record: A project file consisting of two exercises will be done from aerial photos and satellite images (scale, orientation and interpretation) and 3 exercises on using any GIS Software on above mentioned themes.

Reading List
13. Evolution of Geographical Thought

1. Paradigms in Geography

Reading List
14. Disaster Management based Project Work (Practical)
The Project Report based on any two field based case studies among following disasters and one disaster preparedness plan of respective college or locality:

1. Flood
2. Drought
3. Cyclone and Hailstorms
4. Earthquake
5. Landslides
6. Human Induced Disasters: Fire Hazards, Chemical, Industrial accidents

Reading List
Skill Enhancement Course (Any 2)

1. Remote Sensing (Practical)

1. Remote Sensing: Definition and Development; Platforms and Types; Photogrammetry.
2. Satellite Remote Sensing: Principles, EMR Interaction with Atmosphere and Earth Surface; Satellites (Landsat and IRS); Sensors
3. Image Processing (Digital and Manual): Pre-processing (Radiometric and Geometric Correction); Enhancement (Filtering); Classification (Supervised and Un-supervised)
4. Satellite Image Interpretation.

Practical Record: A project file consisting of 5 exercises on using any method on above mentioned themes.

Reading List

2. Advanced Spatial Statistical Techniques

1. Statistics and Statistical Data: Spatial and non-spatial; indices of inequality and disparity.
2. Probability theory, probability density functions with respect to Normal, Binomial and Poisson distributions and their geographical applications.
3. Sampling: Sampling plans for spatial and non-spatial data, sampling distributions; sampling estimates for large and small samples tests involving means and proportions.
4. Correlation and Regression Analysis: Rank order correlation and product moment correlation; linear regression, residuals from regression, and simple curvilinear regression; Introduction to multi-variate analysis.
5. Time Series Analysis: Time Series processes; Smoothing time series; Time series components.

Note: Any Statistical Software Package (SPSS, MS Excel, R, etc.) may be used for practice.

Reading List

3. Geographical Information System (Practical)

2. Global Positioning System (GPS) – Principles and Uses; DGPS.
3. GIS Data Structures: Types (spatial and Non-spatial), Raster and Vector Data Structure.
4. GIS Data Analysis: Input; Geo-Referencing; Editing, Output and Query; Overlays.

Practical Record: A project file consisting of 5 exercises on using any GIS Software on above mentioned themes.

Reading List
4. Research Methods (Practical)

1. Geographic Enquiry: Definition and Ethics; Framing Research Questions, Objectives and Hypothesis; Literature Review; Preparing Sample Questionnaire
2. Data Collection: Type and Sources of Data; Methods of Collection; Input and Editing
3. Data Analysis: Qualitative Data Analysis; Quantitative Data Analysis; Data Representation Techniques
4. Structure of a Research Report: Preliminaries; Text; References, Bibliography and Citations; Abstract
5. Preperation of Research Report

Reading List

Elective Discipline Specific (any four)

1. Population Geography
   1. Defining the Field – Nature and Scope; Sources of Data with special reference to India (Census, Vital Statistics and NSS).
   4. Population Composition and Characteristics – Age-Sex Composition; Rural and Urban Composition; Literacy.
   5. Contemporary Issues – Ageing of Population; Declining Sex Ratio; HIV/AIDS.

Reading List
2. Resource Geography

1. Natural Resource: Concept, Classification and Techniques
2. Distribution, Utilisation, Problems and Management of Land Resources and Water Resources
3. Distribution, Utilisation, Problems and Management of Forests and Energy Resources
4. Appraisal and Conservation of Natural Resources
5. Sustainable Resource Development

Reading List
3. Urban Geography

1. Urban geography: Introduction, nature and scope
2. Patterns of Urbanisation in developed and developing countries
3. Functional classification of cities: Quantitative and Qualitative Methods
4. Urban Issues: problems of housing, slums, civic amenities (water and transport)
5. Case studies of Delhi, Mumbai, Kolkata, Chennai and Chandigarh with reference to Land use and Urban Issues

Reading List
4. Agricultural Geography

1. Defining the Field: Introduction, nature and scope; Land use/land cover definition and classification.
2. Determinants of Agriculture: Physical, Technological and Institutional
3. Agricultural Regions of India: Agro-climatic, Agro-ecological & Crop Combination Regions.
4. Agricultural Systems of the World (Whittlesey’s classification) and Agricultural Land use model (Von Thunen, modification and relevance).
5. Agricultural Revolutions in India: Green, White, Blue, Pink

Reading List

5. Geography of Health and Wellbeing

1. Perspectives on Health: Definition; linkages with environment, development and health; driving forces in health and environmental trends - population dynamics, urbanization, poverty and inequality.
2. Pressure on Environmental Quality and Health: Human activities and environmental pressure land use and agricultural development; industrialisation; transport and energy.
3. Exposure and Health Risks: Air pollution; household wastes; water; housing; workplace.
4. Health and Disease Pattern in Environmental Context with special reference to India, Types of Diseases and their regional pattern (Communicable and Lifestyle related diseases).
5. Climate Change and Human Health: Changes in climate system – heat and cold; Biological disease agents; food production and nutrition.

Reading List:
6. Political Geography

2. State, Nation and Nation State – Concept of Nation and State, Attributes of State – Frontiers, Boundaries, Shape, Size, Territory and Sovereignty, Concept of Nation State; Geopolitics; Theories (Heartland and Rimland)
3. Electoral Geography – Geography of Voting, Geographic Influences on Voting pattern, Geography of Representation, Gerrymandering.
5. Politics of Displacement: Issues of relief, compensation and rehabilitation: with reference to Dams and Special Economic Zones

Reading List
7. Hydrology and Oceanography

1. Hydrological Cycle: Systems approach in hydrology, human impact on the hydrological cycle; Precipitation, interception, evaporation, evapo-transpiration, infiltration, ground-water, run off and over land flow; Hydrological input and output.
2. River Basin and Problems of Regional Hydrology: Characteristics of river basins, basin surface run-off, measurement of river discharge; floods and droughts.
3. Ocean Floor Topography and Oceanic Movements – Waves, Currents and Tides.
5. Coral Reefs and Marine Deposits and Ocean Resources: Types and Theories of Origin; Biotic, Mineral.

Reading List
8. Social Geography

2. Peopling Process of India: Technology and Occupational Change; Migration.
3. Social Categories: Caste, Class, Religion, Race and Gender and their Spatial distribution
4. Geographies of Welfare and Well being: Concept and Components – Healthcare, Housing and Education.
5. Social Geographies of Inclusion and Exclusion, Slums, Gated Communities, Communal Conflicts and Crime.

Reading List

Elective Generic Papers

1. Disaster Management

1. Disasters: Definition and Concepts: Hazards, Disasters; Risk and Vulnerability; Classification
2. Disasters in India: (a) Flood: Causes, Impact, Distribution and Mapping; Landslide: Causes, Impact, Distribution and Mapping; Drought: Causes, Impact, Distribution and Mapping
4. Manmade disasters: Causes, Impact, Distribution and Mapping
5. Response and Mitigation to Disasters: Mitigation and Preparedness, NDMA and NIDM; Indigenous Knowledge and Community-Based Disaster Management; Do’s and Don’ts During and Post Disasters

Reading List

2. Geography of Tourism

1. Scope and Nature: Concepts and Issues, Tourism, Recreation and Leisure Inter-Relations; Geographical Parameters of Tourism by Robinson.
2. Type of Tourism: Nature Tourism, Cultural Tourism, Medical Tourism, Pilgrimage
3. Recent Trends of Tourism: International and Regional; Domestic (India); Eco-Tourism, Sustainable Tourism, Meetings Incentives Conventions and Exhibitions (MICE)
4. Impact of Tourism: Economy; Environment; Society
5. Tourism in India: Tourism Infrastructure; Case Studies of Himalaya, Desert and Coastal Areas; National Tourism Policy

Reading List
6. Tourism Recreation and Research Journal, Center for Tourism Research and Development, Lucknow
3. Spatial Information Technology

1. Introduction: Definitions, Concept and Historical Development
2. Spatial Information/Data: Web data sources; Registration and projection; Data structures; Data interpolation and modeling.
3. Working of spatial information system
4. Functions of Spatial information system: Information retrieval; Topological modeling; Networks; Overlay; Data output.
5. Application of Spatial Information Technology

Reading List

4. Regional Development

1. Definition of Region, Evolution, Types and Need of Regional planning: Formal, Functional, and Planning Regions and Regional Development.
2. Regional Imbalances and Problems of Functional Regions.
3. Choice of a Region for Planning: Characteristics of an Ideal Planning Region; Delineation of Planning Region; Regionalization of India for Planning (Agro Ecological Zones)
4. Strategies/Models for Regional Planning: Growth Pole Model of Perroux; Growth Centre Model in Indian Context; Village Cluster
5. Problem Regions and Regional Planning: Backward Regions and Regional Plans- Special Area Development Plans in India; DVC-The Success Story and the Failures.

Reading List

5. Climate Change: Vulnerability and Adaptation

1. Science of Climate Change: Understanding Climate Change; Green House Gases and Global Warming; Global Climatic Assessment- IPCC
2. Climate Change and Vulnerability: Physical Vulnerability; Economic Vulnerability; Social Vulnerability
3. Impact of Climate Change: Agriculture and Water; Flora and Fauna; Human Health
5. National Action Plan on Climate Change; Local Institutions (Urban Local Bodies, Panchayats)

Further Readings
6. Rural Development
2. Rural Economic Base: Panchayatiraj System, Agriculture and Allied Sectors, Seasonality and Need for Expanding Non-Farm Activities, Co-operatives, PURA.
3. Area Based Approach to Rural Development: Drought Prone Area Programmes, PMGSY.
4. Target Group Approach to Rural Development: SJSY, MNREGA, Jan Dhan Yojana and Rural Connectivity.
5. Provision of Services – Physical and Socio-Economic Access to Elementary Education and Primary Health Care and Micro credit

Reading List
7. Industrial Geography

1. Nature and Scope of Industrial Geography
3. Mega Industrial Complexes: National Capital Region, Mumbai-Pune Industrial Region, Bengaluru-Chennai Industrial Region and Chota Nagpur Industrial Region
4. Impact of Industrialisation in India: Environmental; Social and Economic
5. Industrial Policy of India

Reading List

5. Gunnar Alexandersson (1967). "Geography of Manufacturing, Prentice Hall, New Jersey
8. Sustainable Development

1. Sustainable Development: Definition, Components, Limitations and Historical Background.
2. The Millennium Development Goals: National Strategies and International Experiences
3. Sustainable Regional Development: Need and examples from different Ecosystems.
4. Inclusive Development: Education, Health; Climate Change: The role of higher education in sustainable development; The human right to health; Poverty and disease; The Challenges of Universal Health Coverage; Policies and Global Cooperation for Climate Change
5. Sustainable Development Policies and Programmes: The proposal for SDGs at Rio+20; Illustrative SDGs; Goal-Based Development; Financing for Sustainable Development; Principles of Good Governance; National Environmental Policy, CDM.

Reading List