Syllabus for 4 Years Undergraduate Programme under National Education Policy (NEP) 2020
in
GEOGRAPHY
2025-26 Onwards

Department of Geography
Visva-Bharati
Santiniketan

Course Structure for Academic Session 2025-2026

Contents

1. Introduction

The syllabus for Geography at the undergraduate level has been framed in compliance with the model syllabus given by the University Grant Commission under the National Education Policy (NEP) 2020. The structure of the syllabus is based on proposed student-centric "Curriculum and Credit Framework for Undergraduate Programme" (CCFUP) 2022, incorporating multidisciplinary approach with multiple entry-exit options and preparing students to pursue their career path by choosing the subject/field of their interest.

The main objective of this programme is to recognize, identify, and foster each student's unique capabilities to promote her/his holistic development of the subject by giving equal balance to Physical and Human Geography. Keeping in view the changing nature of Geography, the proposed syllabus focused on the extensive use of technology in teaching and learning by using Remote Sensing (RS). Geographic Information System (GIS), Global Positioning System (GPS), Unmanned Aerial Vehicles (UAV), machine learning tools and techniques along with Indian traditional knowledge system.

The syllabus has been framed in such a way that the students can opt for multiple entry and exit options at different levels (certificate, diploma, 3-year UG degree, 4-year UG Degree (Honours), and 4-year UG Degree (Honours with Research) obtaining required skills and a general understanding of the geography necessary for the current job market. Internship/apprenticeship/work-based vocational education and skill-based training will be carried out during different semesters of study. Subjects like Quantitative Techniques and Data Processing, Computer Application, Advanced Statistical Methods in Geography, and Methods of Geographical Research will enable students to develop analytical skills and logical thinking that will help students in pursuing higher studies.

2. About the Department

The Department of Geography was established in the late sixties (1968) with only 3 years Under-Graduate (UG) Honours course. Subsequently the Two-Year Post-Graduate (PG) course in Geography was introduced in 1978. Besides, the department also conducts researches leading to Ph.D. degree since late 80's. The CBCS course in UG level was introduced in 2017 following UGC guidelines. The Curriculum and Credit Framework for Four-Year Undergraduate Programme with Research Course under National Education Policy (NEP) 2020 has been introduced from the session 2023-2024.

The vision and mission of the department is to establish industry-academic linkage concentrating on geo-informatics and urban and regional geography viewing their demand in industrial sector. The department conducting regularly conducting outreach programmes which incorporate land use and

socio-economic surveys, terrain evaluation surveys, and environmental odyssey programmes along rivers etc. Our long-term objective is to contribute advance spatial research output in the domain of applied geography using geoinformatics and the faculty members of our department are advancing their activities to achieve this goal by offering a number of specializations like Geography of Population and Gender, Geography of Tourism, Urban Geography and Sustainable Urban Development, Terrain Evolution and Fluvial Geomorphology, Advanced Climatology and Pedology and Indian Knowledge System in Geographical Studies.

3. Curriculum and Credit Framework

An academic year is divided into two semesters. The workload relating to a course is measured in terms of credit hours. A credit is a unit by which the coursework is measured. A credit is a unit by which the coursework is measured. It determines the number of hours of instruction required per week over the duration of a semester (minimum 15 weeks). Each one-hour lecture counted as one credit. For example, a three-credit lecture course in a semester means three one-hour lectures per week with each one-hour lecture counted as one credit. For theory subject one 1 Credit = 15 Hours, for practical 1 Credit = 30 Hours and for Experiential learning including relevant experience and proficiency/ professional levels acquired, 1 credit = 40-45 Hours. The Credit Distribution across Courses is as follows:

Course Type	Number of Papers	Number of Credits	
		Theory	Practical
Major Courses (MJGG)	21	56 (14 papers x 4 credits)	28 (7 papers x 4 credits)
Minor Courses (MNGG)	4	16 (4 papers x 4 credits)	
Skill Enhancement Courses (SEC)	3		9 (3 papers x 3 credits)
Summer Internship (SI)	1		1 (1 x 4 credits)
Research /Dissertation *	3		12 (1 paper x 4 credits) (2 papers x 4 credits)

* Research /Dissertation can be opted by students who get at least CGPA 75% in 3 years and desire the Research Degree. Others will have to take additional 12 units in Major field and obtain Honours Degree (= 24 Major Courses)

4. Course Objective and Course Learning Outcomes:

The prime objectives of the undergraduate course in Geography are as follows:

- To inculcate both theoretical content as well as practical exercises keeping in view with the changing nature of Geography
- To explore extensive use of techniques particularly modern techniques in Geography.
- To comprehend the contributions of Indian Knowledge System in Geographical studies.
- To develop basic skills of the subject to prepare students for employment as well as to pursue higher studies in Geography
- To focus on the practical side of their learning for enhancing their employability.

The prime general learning outcomes of the undergraduate course in Geography are as follows:

- It helps to develop a holistic understanding of the different spheres (such as lithosphere, atmosphere, biosphere, etc.) of the earth and man-environment relationship.
- Student can understand and relate Geography with other allied disciplines such as Environmental Science, Geology, Urban and Regional Planning, etc
- To apply perspectives of Indian knowledge System in Environmental conservation, modern day map making, Urban planning and governance.
- It will expose students to advanced skills, modern tools and techniques
- Students will be to find their place in job market both in academic as well as corporate sector.
- Students can select their preferred specialization and pursue higher studies and research.

5. Semester-wise Structure & Credit Framework

Course Structure for Four Year Undergraduate Programme in Geography

Semester	Paper Type	Paper Code	Paper Name	Credits		
				Theory	Practical	Total
First	Major	MJGG01	Basics of Physical Geography	4		4
	Major	MJGG02	Basics of Human Geography	4		4
	Minor	MNGG01	Introduction to Physical Geography	4		4
	SEC	SECGG01	Cartographic Techniques and Weather Data Interpretation		3	3
Second	Major	MJGG03	Environmental Geography and Disaster Management	4		4
	Major	MJGG04	Geological and Environmental Exercises		4	4
	SEC	SECGG02	Digital Data Management and Geo-spatial Analysis		3	3
Third	Major	MJGG05	Population and Settlement Geography	4		4
	Major	MJGG06	Topographical Map and Map Projection		4	4
	Minor	MNGG02	Introduction to Human Geography	4		4
	SEC	SECGG03	Cartography and Surveying Techniques		3	3
Fourth	Major	MJGG07	Climatology and Hydrology	4		4
	Major	MJGG08	Geography of India	4		4
	Major	MJGG09	Remote Sensing and GIS		4	4
	Major	MJGG10	Quantitative Techniques and Data Processing		4	4

Fifth	Major	MJGG11	Evolution of Geographical Thought	4		4
	Major	MJGG012	Historical and Political Geography	4		4
	Major	MJGG13	Advanced Statistical Methods in Geography		4	4
	Minor	MNGG03	World Geography: Regional Aspects	4		4
Sixth	Major	MJGG14	Geodynamics and Advanced Geomorphology	4		4
	Major	MJGG15	Regional Planning and Human Settlement Analysis	4		4
	Major	MJGG16	Field Work Project		4	4
Seventh	Major	MJGG17	Contemporary issues in Geography	4		4
	Major	MJGG18	Research Methods in Geography	4		4
	Major	MJGG19	Elective Paper (Theory)*	4		4
	Research /Dissertation	MJGG20	Seminar		4	4
	Minor	MNGG04	Geography of India	4		4
Eighth	Major	MJGG21	Special Paper (Theory)**	4		4
	Major	MJGG22	Special Paper (Practical)***		4	4
	Major	MJGG23	Geospatial Analysis and Geovisualization		4	4
	Research /Dissertation	MJGG24	Area Study		4	4

List of Elective Paper (Theory Paper in Semester-VII)*

A- Applied Geomorphology
B- Geography of Transport
C- Urban Planning
D- Landscape Ecology and Cultural Geography
E- Geostatistics: Spatial Analysis and Modeling
F- Indian Knowledge System in Geographical Studies

List of Special Paper (Separate Theory** and Practical*** papers in Semester-VIII)

A- Terrain Evaluation and Fluvial Geomorphology
B- Geography of Tourism
C- Urban Geography and Sustainable Urban Development
D- Geography of Population and Gender
E- Advanced Climatology and Pedology

First Year: Certificate Course in Geography

Semester	Paper Type	Paper Code	Paper Name	Credits		
				Theory	Practical	Total
First	Major	MJGG01	Basics of Physical Geography	4		4
	Major	MJGG02	Basics of Human Geography	4		4
	Minor	MNGG01	Introduction to Physical Geography	4		4
	SEC	SECGGO1	Cartographic Techniques and Weather Data Interpretation		3	3
Second	Major	MJGG03	Environmental Geography and Disaster Management	4		4
	Major	MJGG04	Geological and Environmental Exercises		4	4
	SEC	SECGG02	Digital Data Management and Geo-spatial Analysis		3	3

Total Credits: 26

Second Year: Diploma in Geography

Semester	Paper Type	Paper Code	Paper Name	Credits		
				Theory	Practical	Total
Third	Major	MJGG05	Population and Settlement Geography	4		4
	Major	MJGG06	Topographical Map and Map Projection		4	4
	Minor	MNGG02	Introduction to Human Geography	4		4
	SEC	SECGG03	Cartography and Surveying Techniques		3	3
Fourth	Major	MJGG07	Climatology and Hydrology	4		4
	Major	MJGG08	Geography of India	4		4
	Major	MJGG09	Remote Sensing and GIS		4	4
	Major	MJGG10	Quantitative Techniques and Data Processing		4	4
Total Credits: 31						

Third Year: Degree in Geography

Semester	Paper Type	Paper Code	Paper Name	Credits		
				Theory	Practical	Total
Fifth	Major	MJGG11	Evolution of Geographical Thought	4		4
	Major	MJGG012	Historical and Political Geography	4		4
	Major	MJGG13	Advanced Statistical Methods in Geography		4	4
	Minor	MNGG03	World Geography: Regional Aspects	4		4
Sixth	Major	MJGG14	Geodynamics and Advanced Geomorphology	4		4
	Major	MJGG15	Regional Planning and Human Settlement Analysis	4		4
	Major	MJGG16	Field Work Project		4	4
Total Credits: 28						

Fourth Year: Honours/Honours with Research in Geography

Semester	Paper Type	Paper Code	Paper Name	Credits		
				Theory	Practical	Total
Seventh	Major	MJGG17	Contemporary issues in Geography	4		4
	Major	MJGG18 / MJGG18 (H)	Research Methods in Geography / Soil and Biogeography	4		4
	Major	MJGG19	Elective Paper (Theory)*	4		4
	Research /Dissertation	MJGG20 / MJGG20 (H)	Seminar / Agricultural Geography		4	4
	Minor	MNGG04	Geography of India	4		4

Eighth	Major	MJGG21	Special Paper (Theory)**	4		4
	Major	MJGG22	Special Paper (Practical)***		4	4
	Major	MJGG23	Geospatial Analysis and Geovisualization		4	4
	Research /Dissertation	MJGG24 / MJGG24 (H)	Area Study / Industrial Geography		4	4
Total Credits: 36						

List of Elective Paper (Theory Paper in Semester-VII)*

A. Applied Geomorphology
B. Geography of Transport
C. Urban Planning
D. Landscape Ecology and Cultural Geography
E. Geostatistics: Spatial Analysis and Modeling
F. Indian Knowledge System in Geographical Studies

List of Special Paper (Separate Theory** and Practical*** papers in Semester-VIII)

A. Terrain Evaluation and Fluvial Geomorphology
B. Geography of Tourism
C. Urban Geography and Sustainable Urban Development
D. Geography of Population and Gender
E. Advanced Climatology and Pedology

Students who do not pursue for Research Degree in the UG Programme of NEP but continue in B.A. Semester-VII and Semester-VIII

Semester	Paper Code	Title of the Paper	Credit (Theory)	WCH
B.A. Semester-VII	MJGG18 (H)	Soil and Biogeography	4	4
B.A. Semester-VII	MJGG20 (H)	Agricultural Geography	4	4
B.A. Semester-VII	MJGG24 (H)	Industrial Geography	4	4

6. Detailed Semester-wise Courses

B.A. SEMESTER-I MAJOR

Course Code- MJGG01

Course Title: BASICS OF PHYSICAL GEOGRAPHY (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the global dynamics of the Earth
- to get familiar with geomorphic forms and processes
- to understand the dynamics of the interface of the atmosphere and the hydrosphere
- to familiarize Earth as a biospheric ecosystem and its internal organization

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to get familiar with the interrelatedness of the physical components of the Earth
- to integrate and analyze physical and biological components of the Earth
- to apply ecological concepts to environmental issues

COURSE CONTENT:

Unit 1.0: Introductory Geotectonics

1.1. Geological Time Scale; Internal Structure of the Earth

1.2. Concept of Isostasy; Continental Drift Theory; Sea Floor Spreading induced by Plate Tectonics

1.3. Geological Structures: Horizontal, Uniclinal, Fold and Fault

1.4. Earthquake; Classification and Eruption Types of the Volcanoes

Unit-2.0: Geomorphic Processes and Landforms

2.1. Geomorphic Forces; Weathering, Mass Movement, Erosion, and Deposition

2.2. Fluvial and Karst Processes with Landforms

2.3. Aeolian and Coastal Processes with Landforms

2.4. Glacial and Peri-glacial Processes with Landforms

Unit-3.0: Introduction to Climate and Ocean

3.1. Weather and Climate; Composition and Structure of the Earth's Atmosphere; Greenhouse Effect

3.2. Climate Change: Causes and Effects; Indian Knowledge System for Weather Observations and Climate Resilience, National Action Plan on Climate Change (NAPCC)

3.3. Ocean Bottom Topography and Coastal Landforms with special reference to the Indian Ocean

3.4. Ocean Water Composition; Tides and Wave; Ocean Currents

Unit-4.0: Soil and Biogeography

4.1. Factors of Soil Formation; Genetic Soil Classification: Zonal, Azonal, and Intrazonal

4.2. Plant-soil-water relationship

4.3. Concept of Ecosystem, Biosphere and Biome, Ecotone, Ecological Niche

4.4. Concept of Energy: Forms, Sources, and Movement through Trophic Level, Food Chain, and Food Web

SUGGESTED READINGS:

- General Climatology- H. J. Critchfield
- Climatology- D. S. Lal
- Geomorphology- S. Singh
- Introduction to Physical Geography- A. Strahler
- Principles of Geomorphology- W.D. Thornbury
- The Physical Basis of Geography: An Outline of Geomorphology- S.W. Wooldridge and R.S. Morgan
- Factors of Soil Formation: A System of Quantitative Pedology- H. Jenny
- The Nature and Properties of Soils- R.R. Weil and N.C. Brady
- Biogeography- S. Singh

B.A SEMESTER-I MAJOR

Course Code: MJGG02

Course Title: BASICS OF HUMAN GEOGRAPHY (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the nature of human geography
- to get familiar with the dynamics of human geography
- to understand the emergence of human settlements
- to familiarize the aspects of human habitat and society

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to appreciate the changing nature of human geography
- to get familiar with the diversification of economic activities
- to conceptualize issues related to social well-being and development

COURSE CONTENT:

Unit-1.0: Nature and Development of Human Geography

1.1 Components and progress of Human Geography

1.2 Indian Knowledge System and Nature-Society Interface; Determinism, Possibilism, and Neo-determinism

1.3 Divisions of Mankind: Racial and Ethnic; Concept of class, caste, and clan in Indian society

1.4 Human Resource Regions of the World

Unit-2.0: Dynamics of Human Geography

2.1 Indigenous People and Human Migration

2.2 Food Gathering and Hunting Economies

2.3 Evolving human activities: Pastoral economy, Shifting cultivation, and Subsistence farming with special reference to India

2.4 Industrial Revolution and diversification of economic activities with urbanisation

Unit-3.0: Introduction to Economic Geography

3.1. Definition, nature, scope, and recent trends of Economic Geography

3.2. Definition and Classification of Resources; Energy resources: Renewable and Non-renewable

3.3. Sectors of Economy: Primary, Secondary, Tertiary, and Quaternary

3.4. Concept of Industrial Region and Industrial Corridor

Unit-4.0: Concepts and Practices in Economic Geography

4.1. Agricultural land use: von Thunen's Model and its applicability; Innovations in Agricultural Practices

4.2. Industrial Location Theories: Weber and Losch

4.3. Role of World Trade Organization (WTO) in global trade; Concept of Special Economic Zone (SEZ) and Exclusive Economic Zone (EEZ)

4.4. ICT and Globalization: Impact on Indian economy; Knowledge-based economy and India

SUGGESTED READINGS:

- The Dictionary of Human Geography- R. J. Johnston
- A Dictionary of Human Geography- A. Rogers, N. Castree, & R. Kitchin
- Human geography: people, place, and culture- E. H. Fouberg, A. B. Murphy, & H. J. De Blij
- Spatial structures: Introducing the study of spatial systems in human geography- R. Johnston
- The spaces of postmodernity: readings in human geography- M. Dear, & S. Flusty
- Human geography- The basics- A. Jones
- Key texts in human geography- P. Hubbard, R. Kitchin, & G. Valentine
- Conducting research in human geography: theory, methodology and practice- R. Kitchin, & N. Tate.
- Philosophy and human geography: an introduction to contemporary approaches- R. Johnston
- Practising Human Geography- P. Cloke.
- Human geography: society, space and social science- D. Gregory, R. Martin, & G. Smith.
- Human geography- W. Norton, & M. Mercier
- Practicing Human Geography - P. Cloke, I. Cook, P. Crang, M. Goodwin, J. Painter.
- Techniques in Human Geography- J. Lindsay
- Researching human geography- K. Hoggart
- Qualitative research methods in Human Geography- I. Hay.
- Introduction to Settlement Geography-, S. Ghosh.
- Human Geography- M. Husain
- Geography of Population- R. C. Chandna
- Human and Economic Geography- G. C. Morgan, C. L. Goh
- The Human Mosaic: A Cultural Approach to Human Geography- P. L. Price, M. Domosh,, R. P. Neumann

B.A. SEMESTER-I SKILL ENHANCEMENT COURSE

Course Code: SECGG01

Course Title: CARTOGRAPHIC TECHNIQUES AND WEATHER DATA INTERPRETATION (Practical)

Time: 3 Hours *Full Marks-75 (External-60Marks, Internal-15 Marks)*
(3 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to get familiar with elementary cartography
- to understand the graphical interpretation of geographical data
- to educate on mapping techniques
- to analyze weather map and synoptic data

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to understand basic elements of mapping
- to represent cartographic data by following standard procedures
- to interpret different weather conditions

COURSE CONTENT:

Unit 1.0: Concept of Scale and Diagrammatic Representations

1.1 Linear, Comparative, and Diagonal Scale

1.2 Vernier Scale

1.3 Proportional circles and Pie diagrams

1.4 Bar, Line graph, and Square diagrams

Unit 2.0 Introductions to Mapping Techniques

2.1 Chorochromatic and Choroschematic maps

2.2 Choropleth and Isopleth maps

2.3 Dot and Sphere maps

2.4 Flow maps

Unit 3.0 Interpretations of Weather Data

3.1 Exposure visit to a Meteorological Centre: Seasonal rhythm in India as per Meteorological Department: Pre-Monsoon, Monsoon, Post-Monsoon, and Winter

3.2 Interpretation of Weather maps representing Pre-Monsoon, Monsoon, Post-Monsoon, and Winter seasons

3.3 Importance of weather-related satellite data

3.4 Synoptic Chart and Station Model

SUGGESTED READINGS:

- Map Use: Reading, Analysis, Interpretation- A.J. Kimerling, A.R. Buckley, P.C. Muehrcke
- Maps and Diagrams: Their Compilation and Construction- F.J. Monkhouse, H.R. Wilkinson
- Elements of Cartography- A.H. Robinson, J.L. Morrison, C.M. Phillip, A.J. Kimerling, S.C. Guptill
- Practical Geography: A Systematic Approach- A. Sarkar
- Elements of Practical Geography- R.L. Singh, R.P.B. Singh
- Applied Climatology: Principles and Practice- R. D. Thompson, and P. Allen

- India Meteorological Department (IMD): https://mausam.imd.gov.in/
- Indian National Cartographic Association: www.incaindia.org
- Indian Naval Hydrographic Department: www.hydrobharat.nic.in
- WMO: Guide to Meteorological Instruments and Methods of Observation

B.A. SEMESTER-II MAJOR

Course Code: MJGG03

Course Title: ENVIRONMENTAL GEOGRAPHY AND DISASTER MANAGEMENT (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to get familiar with the concept of ecology and the environment
- to understand introductory soil geography
- to improve understanding of environmental issues
- to get accustomed to disaster and its management

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to become aware about sustainability and environmental concerns
- to apply the knowledge of soil study
- to acquire basic knowledge of disaster management in relation to Indian Knowledge System

COURSE CONTENT:

Unit-1.0: Introduction to Environment and Ecology

1.1. Earth and its Environment: Gaia Hypothesis; Indian Knowledge System on Ecology and Environment

1.2. Laws of Thermodynamics; Concept of Landscape Ecology and Spaceship Earth

1.3. Biodiversity and Its Conservation; Significance of Biodiversity; Hotspot and Ecological Succession

1.4. Global Environmental Issues—UN Earth Summits and Protocols and the role of India

Unit-2.0: Pedology and Soil Geography

2.1. Physical Properties of Soil **-** texture, structure, porosity and moisture holding capacity

2.2. Chemical Properties of Soil **–** pH, organic matter, base exchange

2.3. Soil Forming Processes; Development of Zonal Soil Profiles: Podzol, Laterite and Chernozem

2.4. Soil Degradation with special reference to India; Soil Conservation through Indian Knowledge System

Unit-3.0: Environmental Issues and Concerns: Indian Case Studies

3.1. Environment vs Development: Silent Valley, Chipko, and Narmada related movements

3.2. Sacred groves and Bishnoi; Protected Area Management: Concepts and Emerging Issues

3.3. Soil Conservation, Wasteland Reclamation, ~~and~~ Wetland Management – Implications of Ramsar Sites

3.4. Environmental Awareness: Concept of Ecological Footprint; Brown vs Green Technology; Role of Mass Media

Unit-4.0: Disaster Management

4.1. Hazard and Disaster: Definition, Concept, and Classification; Risk and Vulnerability

4.2. Natural and Human-induced Hazards: Causes and Consequences, Adaptation and Mitigation

4.3.Response and Preparedness to Disasters; Do's and Don'ts in pre-hazard, during, and post-hazard/disaster situations

4.4. NDMA, NIDM, and SDMA; Community-based Disaster Management

SUGGESTED READINGS:

- Natural Disasters- D. Alexander
- Environmental Geography-R. C. Chandna
- Principles of Environmental Science: Inquiry and Applications- W. P. Cunninghum, and M. A. Cunninghum
- Disaster Management- M. Dhunna
- The Nature of the Environment- A. Goudie
- Environmental Science: Working with the Earth- G. T. Miller
- National Environmental Policy-2006, Ministry of Environment and Forests, Government of India, New Delhi
- NIDM Annual Report-2021-22
- (2013): Disaster Management- S. Singh, and J. Singh
- Global Environment Outlook: GEO4: Environment for Development, United Nations Environment Programme
- Environmental Geology- K. S. Valdiya
- Ahmad, E. (1973). *Soil Erosion in India*. Asia Publishing House, Bombay.
- Murthy, S.R.N. (1997). *Vedic View of The Earth: A Geological Insight in the Vedas*. D.K. Print World, New Delhi
- Factors of Soil Formation: A System of Quantitative Pedology- H. Jenny
- The Nature and Properties of Soils- R.R. Weil and N.C. Brady

B.A. SEMESTER-II MAJOR

Course Code: MJGG04

Course Title: GEOLOGICAL AND ENVIRONMENTAL EXERCISES (Practical)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand geological structures and mapping techniques
- to identify minerals, rocks, and soil samples
- to detect and find pollution level and pollutants
- to understand vulnerability and its impact

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to apply geological knowledge to understand geomorphology
- to interpret the processes of pollution and impact
- to refer to the impact of environmental disaster and preparedness

COURSE CONTENT:

Unit-1.0: Geological Exercises

1.1. Introduction to different Geological Structures and Lithology

1.2. Elementary Properties of Geological Maps and Drawing Techniques

1.3. Horizontal and Uniclinal Structures: Cross-profile Drawing and Interpretation

1.4. Folded and Faulted Structures: Cross-profile Drawing and Interpretation

Unit-2.0: Laboratory Works on Rocks, Minerals, and Soil Samples

2.1. Moho's Hardness Scale and Identification of Minerals

2.2. Megascopic Identification of Rocks

2.3. Estimation of Pore Space and Moisture Holding Capacity of Soil Samples

2.4. Determination of Soil pH

Unit-3.0: Laboratory Works on Pollution and Mapping

3.1. Air Pollution and Interpretation of Air Quality Data

3.2. Water Contamination and Interpretation of Water Quality Data

3.3. Soil Contamination: Data Analysis and Interpretation

3.4. Noise Pollution: Data Analysis and Interpretation

Unit-4.0: Exercises on Assessing Environmental Impacts

4.1. Perception Survey on Environmental Issues and Hazards/Disaster Preparedness

4.2. Vulnerability Index: Concepts and Methods

4.3. Analysis and Mapping of Reservoir Sedimentation Data

4.4. Environmental Impact Assessment: Introduction to Check-list Method and Leopold Matrix

SUGGESTED READINGS:

- The Illustrated Guide to Rocks & Minerals- J. Farndon.
- Modern Concept in Geomorphology- P.K. McCullough
- Smithsonian Handbooks: Rocks & Minerals C. Pillent
- Practical Geography: A Systematic Approach-A. Sarkar
- Elements of Practical Geography- R.L., Singh, R.P.B. Singh
- Environmental Geography- R. C. Chandna
- Principles of Environmental Science: Inquiry and Applications- W. P. Cunninghum, and M. A. Cunninghum
- The Nature of the Environment -A. Goudie
- Environmental Science: Working with the Earth- G. T. Miller
- National Environmental Policy-2006, Ministry of Environment and Forests, Government of India, New Delhi
- Global Environment Outlook: GEO4: Environment For Development, United Nations Environment Programme
- Introduction to Environmental Studies- J. Turk

- Geological Survey of India: www.gsi.gov.in
- India Meteorological Department (IMD): https://mausam.imd.gov.in/
- Indian Naval Hydrographic Department: www.hydrobharat.nic.in
- National Bureau of Soil Survey and Land Use planning: www.nbsslup.in
- Survey of India: www.surveyofindia.gov.in
- WMO: Guide to Meteorological Instruments and Methods of Observation
- Central Pollution Control Board: https://cpcb.nic.in/

B.A. SEMESTER-II SKILL ENHANCEMENT COURSE

Course Code: SECGG02

Course Title: DIGITAL DATA MANAGEMENT AND GEOSPATIAL ANALYSIS (Practical)

Time: 3 Hours *Full Marks-75 (External-60 Marks, Internal-15 Marks)*
(3 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to develop proficiency in data management using MS Excel, including data cleaning, structuring, analysis, and visualization techniques.
- to gain foundational skills in GIS and GPS technologies, focusing on spatial data handling, thematic mapping, and digital map creation.
- to explore and ethically utilize web-based geographic data sources, applying them in real-world spatial analysis within the framework of current geospatial policies.

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to effectively manage and analyze data using MS Excel, including performing operations, creating pivot tables, and visualizing data.
- to apply GIS and GPS tools for spatial data collection, editing, mapping, and thematic analysis.
- to access, evaluate, and ethically use web-based geographic data sources for practical applications, in line with geospatial policies.

COURSE CONTENT:

Unit-1.0: Introduction to Data Management using MS Excel

1.1. Data structuring, cleaning, and presentation of tabular data

1.2. Basic operations: Arithmetic and logical operations; Multilevel sorting, XLOOKUP

1.3. Data visualization

1.4. Pivot table

Unit-2.0: Introduction to GIS software and GPS

2.1 Fundamentals of GIS and data structures

2.2 Data input, editing, and attribute management

2.3 Thematic mapping using raster and vector dataset

2.4 GPS-based data collection and digital map updating

Unit 3.0: Introduction to Web-Based Geographical Data Mining

3.1 Types and sources of web-based geographic data: web maps, thematic databases

3.2 Accessing and retrieving geographic data: census, NFHS, SOI, GSI, Bhuvan, IMD

3.3 Ethical use of web resources: National Geospatial Policy 2022

3.4 Application of geographic web resources

SUGGESTED READINGS:

- Dikshit, R.D. (2003) – Geographical Thought: A Contextual History of Ideas – Rawat Publications
- Nag, P. (2008) – Geographical Information System: Concepts and Techniques – Concept Publishing Company
- Sarkar, A. (2015) – Practical Geography: A Systematic Approach – Orient BlackSwan
- Longley, P.A., Goodchild, M.F., Maguire, D.J., & Rhind, D.W. (2015) – Geographic Information Systems and Science (4th Edition) – Wiley
- Burrough, P.A., & McDonnell, R.A. (1998) – Principles of Geographical Information Systems – Oxford University Press
- Tomlinson, R. (2013) – Thinking About GIS: Geographic Information System Planning for Managers – Esri Press
- Mitchell, A. (2012) – The ESRI Guide to GIS Analysis, Volume 1: Geographic Patterns and Relationships – Esri Press
- Walkenbach, J. (2015) – Excel 2016 Bible – Wiley
- Winston, W.L. (2019) – Microsoft Excel Data Analysis and Business Modeling (6th Edition) – Microsoft Press
- National Geospatial Policy 2022 – Government of India

B.A. SEMESTER-III MAJOR

Course Code: MJGG05

Course Title: POPULATION AND SETTLEMENT GEOGRAPHY

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*

(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to impart an understanding of the various dimensions of the geography of Population
- to impart an understanding of population and its dynamics
- to be aware of the emerging issues of population
- to understand human settlements and society

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to comprehend about nature of Population Geography
- to learn the concepts of population dynamics
- to learn about emerging issues related to population
- to understand the society and human settlements

COURSE CONTENT:

Unit-1.0: Basics of Population Geography

1.1 Nature, Scope, and Content of Population Geography

1.2 Introduction to Population data: World and India

1.3 Concept of Overpopulation, Under population and Optimum population

1.4 Population composition and characteristics: Age and sex pyramids of selected developed countries and India

Unit-2.0: Population Growth and Dynamics

2.1 Theories and models of Population – Malthus and Demographic transition

2.2 Concepts of Fecundity and Fertility

2.3 Concepts of Morbidity and Mortality

2.4 Concepts of Mobility and Migration

Unit 3- Population and Emerging Issues

3.1 Population in the context contemporary social and environmental issues

3.2 Population planning/ Policies: World scenario

3.3 Population policies of India

3.4 Emerging issues: Sex ratio and Child marriage with reference to India

Unit-4.0: Human Settlement and Society

4.1 Site and situation of Human Settlements: Types and patterns of Settlements

4.2 Morphology of Settlements with Special Reference to Indian Villages; Segregation of Rural Settlements

4.3 Social stratification and occupation with focus on Indian Society

4.4 Concept of Social Well-being; Geography of Hunger and Crime

SUGGESTED READINGS:

- The dictionary of human geography. In The dictionary of human geography- R. J. Johnston..
- A dictionary of human geography- A Rogers,., N., Castree, & R. Kitchin,
- Human geography: people, place, and culture - E. H., Fouberg, A. B., Murphy, & H. J.. De Blij,
- Spatial structures: Introducing the study of spatial systems in human geography- R. J. Johnston
- The spaces of postmodernity: readings in human geography- S. Flusty, M. Dear.
- Human geography: The basics- A. Jones
- Conducting research in human geography: theory, methodology and practice- R., Kitchin, & N. Tate
- Practising Human Geography. India- P. Cloke
- Human geography: society, space and social science- D., Gregory, R., Martin, & G. Smith,
- Exploring Human Geography: A Reader. (2014). United Kingdom: Taylor & Francis.
- Human geography- W., Norton, & M. Mercier
- Practising human geography- P. Cloke, I. Cook, P. Crang,., M. Goodwin
- Techniques in human geography- J. Lindsay
- Researching human geography- K. Hoggart
- Theories of Development: Contentions, Arguments, Alternatives- R.Peet, E. Hartwick
- A question of place: Exploring the practice of human geography. In A question of place: exploring the practice of human geography- R. J. Johnston
- Qualitative research methods in human geography- I. Hay.
- Geography Matters: A Reader- Massey, Doreen and John Allen
- Feminism and Geography: The Limits of Geographical Knowledge- Gillian Rose
- Gendered Spaces -Daphne Spain

B.A. SEMESTER-III MAJOR

Course Code: MJGG06

Course Title: TOPOGRAPHICAL MAP AND MAP PROJECTION (Practical)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to familiarize oneself with topographical map and map elements
- to understand the concepts and science of map-making
- to become accustomed to map projection
- to prepare of maps using various projection techniques

COURSE LEARNING OUTCOMES:

Upon completion, students would be able:

- to be aware of topographical map and its use
- to produce customized maps for academic and professional use
- to refer to map projections in digital map making

COURSE CONTENT:

Unit-1.0: Toposheet and its Interpretation

1.1 Toposheet numbering system of the Survey of India and Open Series Maps (OSM)

1.2 Relief and drainage through plan overlays

1.3 Relation between relief and natural vegetation through plan overlays

1.4 Relation between relief and settlements through plan overlays

Unit-2.0: Drainage Basin Morphometry

2.1 Delineation of drainage basin; Stream Ordering and Bifurcation Ratio – Strahler's method

2.2 Drainage frequency and Drainage density

2.3 Relative Relief and Dissection Index

2.4 Form Factor, Elongation Ratio, and Circularity Ratio

Unit-3.0: Elements and Properties of Map Projection

3.1 Concept of Developable Surface, Reduced Earth, Parallels of Latitudes, Meridians of Longitudes, the Great Circle, and Rhumb Line

3.2 Classification of Map Projection based on location of Source of Light: Gnomonic, Stereographic, and Orthographic

3.3 Equal Area Projections: Properties and Application

3.4 Orthomorphic Projections: Properties and Applications

Unit-4.0: Drawing of the Graticules for Map Projection

4.1 Cylindrical Equal Area and Mercator Projections

4.2 Polar Zenithal Stereographic Projection

4.3 Simple Conical with One Standard Parallel and Bonnes Projection

4.4 Polyconic and Sinusoidal Projection

SUGGESTED READINGS:

- Understanding Map Projections- M. Kennedy, S. Kopp
- Map Use: Reading, Analysis, Interpretation -A.J. Kimerling, A.R. Buckley, P.C. Muehrcke, J.O. Muehrcke
- Maps and Diagrams: Their Compilation and Construction F.J. Monkhouse,, H.R. Wilkinson
- Map Projections: Theory and Applications- F. Pearson II
- Elements of Cartography- A.H., Robinson, J.L., Morrison, C.M., Phillip, A.J., Kimerling, S.C. Guptill
- Practical Geography: A Systematic Approach- A. Sarkar
- Elements of Practical Geography R.L. Singh, R.P.B. Singh
- Landforms of India from Topomaps and Images -R. Vaidyanadhan, K.V. Subbarao,

B.A. SEMESTER-III SKILL ENHANCEMENT COURSE

Course Code: SECGG03

Course Title: CARTOGRAPHY AND SURVEYING TECHNIQUES (Practical)

Time: 3 Hours *Full Marks-75 (External-60 Marks, Internal-15 Marks)*
(3 credits, one credit per unit)

COURSE OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to explore the evolution and contributions of Indian cartographic traditions, including indigenous methods and colonial-era surveys within the Indian Knowledge System framework.
- to understand and apply fundamental principles of surveying, including traversing and angular measurements.
- to develop practical skills in terrain analysis, including slope, height, and distance measurement through hands-on use of field instruments like the clinometer, Abney level, theodolite, and dumpy level.

COURSE OUTCOMES:

Upon completion, students would be able:

- to critically analyze the historical and cultural development of cartography in India, including traditional and colonial mapping practices.
- To apply the principles and techniques of surveying using plane table, prismatic compass, and theodolite.
- to measure and interpret terrain features such as slopes, contours, and elevations using field instruments.

COURSE CONTENT:

Unit-1.0: Cartography in the Indian Knowledge System

1.1 India in the global imagination – cross-cultural cartographies

1.2 Cartographic developments in medieval and early modern India

1.3 The Great Trigonometrical Survey, World Geodetic Survey, and colonial projects

1.4 Traditional surveying and analog mapping tools

Unit-2.0: Introduction to Surveying, Traversing, and Angular Measurements

2.1 Principles of surveying and types of surveys: Fundamental Concepts

2.2 Plane table survey

2.3 Prismatic compass survey: Open and Closed traverse

2.4 Traversing by Transit Theodolite

Unit-3.0: Slope, Height and Distance Measurements

3.1 Slope measurement using Clinometer

3.2 Use of Abney level in slope survey

3.3 Contouring and Levelling using Dumpy Level

3.4 Height and Distance measurement using Theodolite

SUGGESTED READING:

- R.L. Singh & R.P.B. Singh (2009) – Elements of Practical Geography – Kalyani Publishers
- Sarkar (2015) – Practical Geography: A Systematic Approach – Orient BlackSwan
- P. Nag (2008) – Cartography – Concept Publishing Company
- A.H. Robinson et al. (1995) – Elements of Cartography (6th Edition) – Wiley
- S.K. Duggal (2013) – Surveying: Vol. I & II – McGraw Hill Education
- R. Subramanian (2010) – Surveying and Levelling – Oxford University Press
- Matthew H. Edney (1997) – Mapping an Empire: The Geographical Construction of British India, 1765–1843 – University of Chicago Press
- University of Michigan Library– "Mapping India: Colonial Cartography and the Construction of Space": https://apps.lib.umich.edu/online-exhibits/exhibits/show/india-maps

B.A. SEMESTER-IV MAJOR

Course Code: MJGG07

Course Title: CLIMATOLOGY AND HYDROLOGY (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the intricacies of climatic processes
- to get familiar with the dynamics of the Tropical climate
- to understand theories and techniques of hydrology

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to comprehend atmospheric mechanisms
- to interpret the atmospheric processes and their variability in the Tropics
- to refer basic concept of hydrological processes and to relate with Indian Knowledge System

COURSE CONTENT:

Unit 1.0: Physical Climatology

1.1 Atmospheric Temperature: Processes of Heat Energy Transfer, Vertical and Horizontal Distribution, Seasonal Variation, Temperature Inversions

1.2. Atmospheric Pressure: Vertical and Horizontal Distribution, Global Pressure Belts, Seasonal Variation

1.3. Atmospheric Moisture: Humidity, Condensation – Fogs and Clouds

1.4. Atmospheric Moisture: Precipitation – Forms and Processes

Unit 2.0: Dynamic Climatology

2.1. Atmospheric Equilibrium: Stability and Instability

2.2. Atmospheric Circulation: Forces influencing horizontal air movement; Local Winds

2.3. Atmospheric Circulation: Planetary Winds; Jet Stream

2.3. Air Mass and Air Fronts; Cyclones and Anticyclones

Unit-3.0: Regional Climatology with special reference to Tropical Climate

3.1. Classification of World Climates: Köppen and Thornthwaite

3.2. Tropical Monsoon: Mechanism and Variability; El Nino and Southern Oscillation (ENSO); Indian Ocean Dipole (IOD)

3.3. Tropical Thunderstorm and Twister

3.4. Tropical Cloud Cluster; Tropical Disturbances: Types, Extension, and Mechanism

Unit-4.0: Elementary Hydrology

4.1. Hydrological Cycle: Components and Processes

4.2. Surface Hydrology: Runoff, Runoff Cycle; Concept of Hydrograph

4.3. Groundwater Hydrology; Types of Springs and Aquifers; Darcy's Law

4.4. Floods and Droughts; Stormwater control in Tropical Cities; Rainwater Harvesting; and Watershed Management; Traditional methods of water conservation and management in India.

SUGGESTED READINGS:

- Meteorology Today -C. D. Ahrens, and R. Henson
- Atmosphere, Weather and Climate- R. G. Barry, and R. J. Chorley
- Synoptic Climatology: Methods and Applications- Barry, R. G. and A. H. Perry
- Handbook of Applied Hydrology: A Compendium of Water Resources Technology -V. T. Chow
- General Climatology- H. J. Critchfield
- Climatology-D. S. Lal
- Atmosphere: An Intro to Meteorology-F. K. Lutgens, E. Tarbuck, and D. Tasa
- Hydrology: Principles, Analysis, Design- H.M. Raghunath
- Engineering Hydrology K. Subramanya
- Introduction to Climate- G. T. Trewartha, and L. H. Horn
- Atmospheric Science: An Introductory Survey- J. M. Wallace, and P. V. Hobbs

B.A SEMESTER-IV MAJOR

Course code: MJGG08

Course Title: GEOGRAPHY OF INDIA (Theory)

Time: 3 Hours *Full Marks-100 (External-80 Marks, Internal-20marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the variations in the physical and biotic aspects
- to get familiar with the economic bases for a self-reliant India
- to get familiar with global geopolitics and its recent trends
- to understand the man-environment relationship in the post-COVID world

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to appreciate geographical knowledge of environment and their relevance
- to concern contemporary issues of geo-political national interests
- to appreciate Visva-Bharati as the first living heritage university

COURSE CONTENT:

Unit-1.0: Physical Aspects

1.1. Geology: Indian Rock System and Structure with reference to Geological Time Scale

1.2. Physiographic Divisions of India; Indian River System, Interlinking of Rivers: Merits and Demerits

1.3. Climate Classification of India: Trewartha, S.P. Chatterjee, and R.L. Singh

1.4. Soils and Natural Vegetation of India: Classification and Distribution

Unit-2.0: Economic Aspects

2.1. Indian Knowledge System in Agricultural Practices

2.2. Agricultural Regionalization of India: Agro-climatic, Agro-ecological, and Crop Combination Regions

2.3. Agricultural Revolutions in India: Green, White, Blue, and Pink

2.4. Industrialization in India: Planning and changing policies; Industrial Regions and Complexes of India

Unit-3.0: Society and Cultural Heritage

3.1. Social stratification in India: Understanding of caste, class, and clans

3.2. Indian Knowledge System and philosophy compounded by Raja Rammohan Roy, M. K. Gandhi and Rabindranath Tagore on modern Indian society

3.3. Heritage and society; Visva-Bharati as the first living heritage university in the UNESCO list

3.4. Subaltern cultures: Tribal and Folk heritages

Unit-4.0: Regionalization, Planning and Development

4.1. Basics of regionalization in India: Physico-economic and Planning Regions

4.2. Regional Disparities in India; Social purpose of planning, Planning Commission to NITI-Aayog- Transformation from Mahalanobis Model

4.3. Regional Development in India: Strategies, Problems and Prospects

4.4. Rural development policies and planning in India

SUGGESTED READINGS:

- Geography of India- M. Husain
- India A Comprehensive Geography- D. R. Khullar. Kalyani Publication, New Delhi.
- Geography of India- R. C. Tiwari
- Political Geography of India: A Contemporary Perspective- S. Adhikari
- India: A Regional Geography- R. L. Singh
- India and Pakistan- Land, People and Economy- O. H. K. Spate, and A. T. A. Learmonth
- Environmental Geography- S. Singh
- Geology of India- D. N. Wadia
- Soil Genesis, Classification Survey and Evaluation, Vol. II- A. K. Kolay

B.A. SEMESTER-IV MAJOR

Course Code: MJGG09

Course Title: REMOTE SENSING AND GIS (Practical)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the fundamentals of Remote Sensing
- to get familiarized with image interpretation keys
- to get familiarized with digital image processing
- to understand georeferencing and geospatial data analysis

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to use remote sensing tools and techniques in geographical studies
- to perform digital image processing
- to use digital cartographic methods in geographical research

COURSE CONTENT:

Unit-1.0: Fundamentals of Remote Sensing

1.1 Definition and stages, Electromagnetic spectrum and EMR, Optical, Hyper-spectral, Thermal and Microwave Remote Sensing

1.2 Spectral signatures, Resolutions, Platforms and Sensors

1.3 Aerial photography: Principles, Types and Determination of photo scale

1.4 Photogrammetry and related concepts; Construction of photo frame, overlap, flight line and match line; identification of objects from aerial photographs

Unit-2.0: Visual Image Interpretation and Geospatial Data Management

2.1 Image interpretation keys; Identification of various physical and cultural features from hardcopy images

2.2 Land Use / Land Cover and Hydro-geomorphological mapping

2.3 Development of Natural Resources Data Management System (NRDMS) and National Spatial Data Infrastructure (NSDI) in India.

2.4 Application of Remote Sensing in Geographical Studies

Unit-3.0: Digital Image Processing

3.1 Definition; steps in digital image processing and analysis

3.2 Image Extraction and Mosaic

3.3 Image enhancement; Normalized Difference Vegetation Index (NDVI) and Normalized Difference Built-up Index (NDBI)

3.4 Unsupervised and Supervised Classification

Unit-4.0: Introduction to Digital Cartography in GIS domain

4.1 Geo-referencing and Digital Data Analysis in Geographical Information System (GIS);GIS, Computer Aided Design (CAD) and Digital Cartography;

4.2 Triangular Irregular Networks (TIN) and Digital Elevation Model (DEM); Generation of Relief Map

4.3 Basics of Global Positioning System (GPS) and Global Navigation Satellite System(GNSS); GPS error sources

4.4 Differential Global Positioning Systems (DGPSs), Location-Based Services (LBS) and Electronic Total Station (ETS)

SUGGESTED READINGS:

- Remote sensing and image interpretation. John Wiley & Sons- Lillesand, T., Kiefer, R. W., & Chipman, J.
- Remote Sensing For The Beginner-P.K. Guha
- An introduction to geographical information systems.- Ian, H.Ian.
- Elements of Photogrammetry with Applications in GIS -, P. R. Wolf, B. A. Dewitt, &, B. E. Wilkinson.
- Remote Sensing and Geographical Information System - A. M. Chandra,S.K. Ghosh,
- Remote Sensing Basics-S.Fazal,
- Remote Sensing Principles, Interpretation, and Applications- Floyd F. Sabins, Jr., James M. Ellis.
- Introductory Digital Image Processing: A Remote Sensing Perspective- J. R. Jensen.
- Fundamentals of Remote Sensing - G. Joseph
- Digital Remote Sensing - P.Nag and M.Kundra
- Physical Principles of Remote Sensing - W. G. Rees

B.A. SEMESTER-IV MAJOR

Course Code: MJGG10

Course Title: QUANTITATIVE TECHNIQUES AND DATA PROCESSING (Practical)

Time: 3 Hours *Full Marks-100 (External- 80 Marks, Internal- 20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to introduce fundamental methods of data collection, classification, and representation.
- to develop proficiency in descriptive statistical techniques, including central tendency, dispersion, correlation, regression, and data distribution analysis.
- to familiarize students with the basic principles of geostatistics, including spatial data analysis, spatial autocorrelation, variograms, and interpolation methods.

COURSE LEARNING OUTCOMES:

Upon completion, students would be able:

- to collect, classify, and tabulate various types of data, and represent them using appropriate graphical and diagrammatic methods.
- to apply descriptive and inferential statistical techniques, including measures of central tendency, dispersion, correlation, and regression, to analyze datasets effectively.
- to perform elementary geostatistical analysis, including spatial data exploration, spatial autocorrelation, variogram modeling, and interpolation techniques for geographic datasets

COURSE CONTENT:

Unit-1.0: Collection of Data, Classification and Tabulation

1.1 Types of data

1.2 Statistical Enquiry; Level of Measurements

1.3 Classification and Tabulation

1.4 Diagrammatic and Graphical Representation of Data

Unit-2.0: Descriptive Statistics

2.1 Frequency Distribution— Graphical Description; Cross Tabulation

2.2 Central Tendency: Mean, Median and Mode, Quartiles, Deciles, Percentiles and Quintiles

2.3 Dispersion: Quartile Deviation, Mean Deviation, Variance, Standard Deviation, Coefficient of Variation and Z-score

2.4 Description of Shape: Skewness, Kurtosis and Moments

Unit-3.0: Correlation and Regression

3.1 Product Moment Correlation, Rank Correlation

3.2 Linear Regression

3.3 Simple Curvilinear Regression

3.4 Introduction to Multivariate Analysis

Unit-4.0: Introduction to Elementary Geostatistics

4.1 Foundations of Geostatistics: types of spatial data, spatial autocorrelation, Tobler's first law of Geography

4.2 Descriptive and exploratory spatial data analysis

4.3 Variograms and spatial structures

4.4 Spatial interpolation techniques

SUGGESTED READINGS:

- S. Mishra (2010) – A Handbook of Statistical Analysis in Geography – Kalyani Publishers
- Majid Husain (2008) – Statistics in Geography – Rawat Publications
- Peter Rogerson (2019) – Statistical Methods for Geography: A Student's Guide (4th Edition) – Sage Publications
- Ronald E. Walpole et al. (2017) – Probability and Statistics for Engineers and Scientists (9th Edition)– Pearson
- Paul A. Longley et al. (2015) – Geographic Information Science and Systems (4th Edition) – Wiley
- Michael de Smith, Michael Goodchild & Paul Longley (2021) – Geospatial Analysis: A Comprehensive Guide (6th Edition) – The Winchelsea Press
- Saroj K Pal. (1998). Statistics for Geoscientists: Techniques and Applications. Concept Publishing Company Pvt. Ltd.– Springer

B.A. SEMESTER- V MAJOR

Course Code: MJGG11

Course Title: EVOLUTION OF GEOGRAPHICAL THOUGHT (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the contributions of Greeks, Romans, and Indian scholars
- to appreciate geography as a spatial science
- to get familiar with the emergence of modern geography, postmodernism and beyond
- to understand the Indian Knowledge System behind the evolution of Indian Feminism

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able to:

- appreciate the importance of Indian Knowledge System in geographical studies
- understand the concepts and philosophies that emerged in Geography
- understand the modern and postmodern thoughts in Geography

COURSE CONTENT:

Unit-1.0: The Foundations: Classical Thoughts

1.1 Indian Knowledge System and its contribution to geographical thought

1.2 Contributions of Greco-Roman scholars; Dark Age and Contributions of Arab Scholars

1.3 The Age of Exploration: The impact of discoveries; Placing Geography in the Classification of Sciences: The Contribution of Immanuel Kant

1.4 Emergence of Modern Geography: Contribution of Alexander Von Humboldt and Carl Ritter

Unit-2.0: Emergence of Scientific Ideas in Geography

2.1 The Crisis of Identity in Geography;

2.2 New Trends in Geography: Germany, France, Great Britain, and Developing Countries

2.3 Human-Environment Relationship: Determinism, Possibilism, and Neo-Determinism

2.4 Rise of dualism, dichotomy and integration; Darwin and his impact on Geography;

Unit-3.0: Post-World War Paradigm Shift in Geography till 1960s

3.1 The Hartshorne-Schaefer Debate: From Regional Exceptionalism to Generalization and Theorization

3.2 Influence of Positivism, Quantitative Revolution, and Development of Geography as Spatial Science

3.3 Physical Geography: Changing Methodologies

3.4 Quantification and Human Geography

Unit-4.0: New Horizons in Geography since 1960s

4.1 Development of Behavioural and Time-Oriented Geography; Humanistic Geography

4.2 Geography of Inequality; Development of Radical and Critical Geography

4.3 Geography of Gender; Roots to Indian Feminism with special focus on Dalit Feminism

4.4 Postmodernism and beyond: Focus on Geography of Sexuality; LGBTQs

SUGGESTED READINGS:

- Geographical Thought: An Introduction to Ideas in Human Geography- A. Nayak & A. Jeffrey Geographical thought: a contextual history of ideas-R. D. DIndian Knowledge Systemhit
- Spaces of Geographical Thought: Deconstructing Human Geography′ s Binaries- P. Cloke, &R. Johnston
- All possible worlds: A history of geographical ideas- G. J. Martin
- Themes in Geographic Thought- M.Harvey, & Holly
- Place: an introduction -T. Cresswell
- Makers of Modern Geography-R. E. Dickinson
- Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century- C. J. Glacken
- Space and Time in Geography: Essays Dedicated to Torsten Hägerstrand T. Hägerstrand The Art And Science Of Geography: Integrated Readings R. D. DIndian Knowledge Systemhit.
- An Introduction to Welfare Geography. South Africa- D. M. Smith
- Feminism and Geography: The Limits of Geographical Knowledge- G. Rose
- Geography and Gender: An Introduction to Feminist Geography -Hutchinson
- The Nature of Geography: A Critical Survey of Current Thought in the Light of the Past- R. Hartshorne
- Modern Geographical Thought- R. Peet
- Integrated Models in Geography -R. J., Chorley, & P. Haggett
- Modelling in geography: a mathematical approach- R. W. Thomas, & R. J. Huggett
- Geography of Puranas: S.M. Ali

B.A. SEMESTER- V MAJOR

Course Code: MJGG12

Course Title: HISTORICAL AND POLITICAL GEOGRAPHY (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand historiography and schools of historicism
- to get familiar with the approaches to the study of Political Geography
- to appreciate Historical Geography in a regional context
- to understand the development of Electoral Geography

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to appreciate political geography and its relevance
- to evaluate the geopolitics of South Asia and Indian Ocean Realm
- to refer to methods and tools of electoral geography for social benefits

COURSE CONTENT:

Unit-1.0: Fundamentals of Historical Geography

1.1. Development of Historical Geography as a branch of Geography

1.2. Relation with Puranic Geography and Archaeological Geography

1.3. Historiography and schools of Historicism

1.4. Applied aspects of Historical Geography

Unit-2.0: Historical Geography in Regional Context

2.1. Data Sources in Historical Geography

2.2. Landscape studies in Historical Geography

2.3. Geography of Urbanization in ancient India: *Janapadas*, Capital City, Trade Centres and Ports

2.4. Historical Geography of Ancient, Medieval and Colonial Bengal

Unit-3.0: Fundamentals of Political Geography

3.1. Political Geography and its Relevance; Approaches to the study of Political Geography

3.2. Geopolitics and global strategic views: Heartland and Rimland Theories

3.3. Concept of State, Nation and Nation-State; Core and Periphery; Frontiers and Boundaries

3.4. Development of Electoral Geography

Unit-4.0: Political Geography in Regional Context

4.1. Supra-state, Intra-state and Inter-state regionalism: Case studies from Indian Sub-continent

4.2. Geopolitics of South Asia and Indian Ocean Realm; One-Belt One Road Policy of China and its Geopolitical implications; Petroleum centric Geopolitics of the Middle East Courntries

4.3. Boundary conflicts between India and its neighbours; Cross-border Terrorism

4.4. India's Role in World Affairs; India in Various Strategic, Regional and Economic Alliances

SUGGESTED READINGS:

- Key concepts in Historical Geography- J.Morrisay
- Studies in Historical Geography of Ancient India- O.P.Bharadwaj
- Survey of Historical Geography of Ancient India- Indian Council of Historical Research
- Historical GIS: Technologies, Methodologies and Scholarship- I.Gregory and P.Ell
- Sage handbook of Political Geography- R.K.Cox
- Politics, Geography and Political Geography- J.Painter
- Political Geography- P.J.Taylor
- Political Geography- S.Adhikary
- Political Geography: A contemporary perspective- - K.R.Dikshit
- Geography and the State: An essay in Political Geography - R.J.Johnston

B.A. SEMESTER-V MAJOR

Course Code: MJGG13

Course Title: ADVANCED STATISTICAL METHODS IN GEOGRAPHY (Practical)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand probability and sampling
- to get familiar with statistical tests and their importance
- to understand advanced statistical tools
- to become accustomed to statistical software

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to apply statistical techniques in data analysis
- to comprehend knowledge of advanced statistics
- to apply statistical knowledge in research

COURSE CONTENT:

Unit-1.0: Probability and Sampling

1.1.Probability Rules and Types

1.2.Standard Error

1.3.Types and Methods of Sampling

1.4.Sampling Distribution

Unit 2.0: Estimation and Test of Significance

2.1. Point Estimation: Criteria and Methods

2.2. Small sample Tests and Large Sample tests

2.3. Chi-square Test

2.4. Test of Correlation Coefficient

Unit-3.0: Analysis of Variance and Time Series

3.1. Different Sources of Variation

3.2. One-way ANOVA

3.3. Two-way ANOVA

3.4.Time Series Analysis: Processes and Components

Unit-4.0: Application of Statistical Software

4.1.Work on Microsoft Excel/SPSS/R: Data Entry and Tabulation

4.2. Data analysis: Central Tendencies, Regression, Time Series Plotting

4.3. Computation of Variance

4.4. Principal Component Analysis (PCA)

SUGGESTED READINGS:

- Statistical Methods in Geographical Studies -A. Mahmood
- Statistics for Geoscientists: Techniques and applications- S. K. Pal
- Practical Geography: A Systematic Approach- A. Sarkar
- Theory and Problems of Statistics- M. R. Spiegel, and L. J. Stephens

B.A. SEMESTER-VI MAJOR

Course Code: MJGG14

Course Title: GEODYNAMICS AND ADVANCED GEOMORPHOLOGY (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to appreciate global tectonics and geo-dynamics
- to understand geostructural features and landscape evolution
- to improve theoretical background of geomorphology
- to get familiar with climatic and palaeo-geomorphology

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to understand the mechanism of the physical earth system
- to appreciate geotectonics and resulting landforms
- to accustomed to recent trends of geomorphology

COURSE CONTENT:

Unit-1.0: Introduction to Geodynamics

1.1. Earth's Tectonic and Structural Evolution with reference to Geological Time Scale

1.2. Earth's Interior with Special Reference to Seismology—PREM Model

1.3. Gravity Anomaly; Isostasy: Pratt-Hayford Model and Airy-Heiskanen Model

1.4. Plate Tectonics and Palaeomagnetism; Geodynamics of the Indian Plate

Unit-2.0: Geostructure and Landscape

2.1. Earth movement and forces; Basics of Stratigraphy and Lithology

2.2. Landscape evolution of orogenic belts: Theories and Evidence

2.3. Plate margin structures and associated landforms

2.4. Climate change and landscape evolution

Unit-3.0: Theoretical Geomorphology

3.1. Fundamental Concepts of Geomorphology; Uniformitarianism and Ergodicity

3.2. Cyclic and Non-cyclic Evolution of Landforms: Davis, Penck, King, and Hack; Erosion Surfaces

3.3. Theories of Slope Evolution: Davis, Penck, King, and Young

3.4. System Approach: Types of System, Threshold, Feedback and Equilibrium; Time and Space in Geomorphology

Unit-4.0: Recent Trends in Geomorphology

4.1. Climatic Geomorphology: Morphogenetic and Morphoclimatic Regions

4.2. Palaeo-geomorphology and Morpho-chronology; Dating Techniques and Dating of Landscape and Landforms

4.3. Mega-geomorphology; Neotectonics and Late Quaternary Geomorphology

4.4. Field Work in Geomorphology; Recent Trends in Geomorphology

SUGGESTED READINGS:

- Geomorphology- E.Ahmed
- Geomorphology: A Systematic Analysis of Late Cenozoic Landforms- A. L. Bloom,
- World Geomorphology- E. M., Bridges
- Geosystems: An Introduction to Physical Geography- Robert W., Christopherson
- Geomorphology- R. J. Chorley, S. A. Schumm, and D. E. Sugden
- Encyclopedia of Geomorphology- A. S. Goudie
- Holmes Principles of Physical Geology -A. Holmes
- Introduction to Geomorphology- V. S. Kale and A. Gupta
- Fluvial Forms and Processes- A. D. Knighton
- Fundamentals of Geophysics- W. Lowrie
- Tectonics and Landforms- C. D. Ollier
- Earth's Changing Surface- M.J. Selby
- The Dynamic Earth: An Introduction to Physical Geology- Brian J. Skinner, and C. Porter Stephen
- The study of landforms: a textbook of geomorphology- R. J. Samll
- Geomorphology- B. W. Sparks
- Global Geomorphology: An Introduction to the Study of landforms- M.J. Summerfield □An Introduction to Theoretical Geomorphology -C. E. Thorn.
- Principles of Geomorphology W. D. Thornbury

B.A. SEMESTER-VI MAJOR

MAJOR Course Code: MJGG15

Course Title: REGIONAL PLANNING AND HUMAN SETTLEMENT ANALYSIS (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to appreciate the rationale for planning at the regional level
- to understand theories and techniques of regional analysis
- to explain the functions of institutional mechanisms at the regional level in India
- to educate on the basic elements of human settlement analysis

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to identify the region from the given characteristics
- to apply different techniques of regional analysis
- to refer to the role of statutory institutional mechanisms in regional planning

COURSE CONTENT:

Unit 1.0: Concepts of Region and Regionalization

1.1 Definition of a Region; Typology of Regions, Approaches to Regional Studies

1.2 Problem region and regional problems; Rationale behind regional planning and its objectives

1.3 Delineation of Regions and Regionalization; Planning Region

1.4 Regional disparity vis-à-vis regional diversity; Concept of Regionalism

Unit 2.0: Regional Theories of Development and Their Critical Appreciation

2.1 Regional Planning and Development Theories: Growth Pole, Central Place, Circular Cumulative Causation, and Unbalanced Growth

2.2 Regional Competitiveness, Shift Share Analysis, Shanon's Entropy, Relative Income Potential Models, and Spatial Interaction Models

2.3 Index of Spatial inequality, Gini's Coefficient, and Lorenz curve

2.4 Input-output analysis, Gravity model, and Regional Multiplier Analysis

Unit 3.0: Institutional Mechanism of Regional Planning in India

3.1 73rd Constitutional Amendment Act

3.2 District Planning in India, Functions of District Planning Committee

3.3 Metropolitan Planning in India, Functions of Metropolitan Planning Committee Differences in urban governance: Municipalities, Corporations and Metropolitan authorities

3.4 Regional Planning Authorities in India and their Functions

Unit 4.0: Human Settlements: Elements and Patterns

4.1 Evolution and Spatial Pattern of Human Settlements

4.2 Basic elements of the city; Concepts of space, time, and scale of cities; Types of city form

4.3 City as a living and spatial entity; Concepts of landmark, axis, and orientation

4.4 Contribution of Lewis Mumford, Patrick Geddes, and Peter Hall in city planning

SUGGESTED READINGS:

- City and Region: R.E. Dickinson
- Regional Policy - Readings in Theory and Applications- J. Friedmann and W. Alonso
- An Introduction to regional planning- Glasson John, concepts, Theory and Practice
- Regions in Question: Space, Development Theory and Regional Policy- C. G. Gore, Methuen, London
- Questioning Development; Essays on the Theory, Policies and Practice of Development Intervention- C. G Gore., G., Köhler U-P. Reich and T., Ziesemer, MetropolisVerlag,
- Urban and Regional Planning- Hall, P. Marburg
- The Organization of Space in Developing Countries- E. A. J. Johnson
- Geographic Perspectives on Urban Systems- B.J.L Berry and F.F. Horton
- Regional Planning In India -L.S. Bhat
- Geography: Regions and Concepts- H. Blij□Regional planning In India M Chand, and V.K. Puri □An Introduction to Regional Geography-P.LClaval.
- Indian Economy since Independence- U, Kapila
- Urban and Regional Planning in India: A handbook for Professional Practioners- S.K Kulshetra
- Urban Development Urban Research in India- A. Kundu
- Regional Development Planning in India -R.P Misra, K.V Sundaram, VLS Prakash Rao □Regional Planning: Concepts, techniques, Policies and Case Studies- R.P. Misra

B.A. SEMESTER-VI MAJOR

Course Code: MJGG16

Course Title: FIELD WORK PROJECT (Practical)

Time: 4 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

- This course will strengthen students' observation abilities through field survey, efficiency of data collection, paucity of data, analysis utilizing various technologies, and advanced techniques.
- Their expertise will be developed in selecting and delineating a study area, formulating methodology, analysis of quantitative and qualitative data and drawing conclusions out of the executed- all of which are crucial in geographical research.

COURSE LEARNING OUTCOMES:

- Students will be able to visualize spatial data utilizing a variety of cartographic and mapping techniques as well.
- A hands-on practical training is undertaken through rigorous involvement in all levels of pre-field, field, and post-field activities.

GUIDELINES ON EXECUTION:

a) The work is to be based mainly on processing of primary data collected from field with the help of appropriate schedules for physical and socio-economic survey, emphasizing any contemporary issue.

b) The following are to be taken as base maps, subject to availability: (a) cadastral maps, (b) toposheets and (c) Satellite imageries and/or data.

c) Interrelations between different aspects of the study should be the focus of the Report.

d) Text of the Report should ideally be divided into the following sections: Introduction, Statement of problem(s) and Objectives, Materials and methods, Results and Discussions, Conclusion, References / Bibliography and Appendices (if any).

e) The textual subject matter along with Maps, diagrams and sketches, excluding photographs, should not exceed 50 pages of A4 size paper; Font size will be 12 with 1.5 spacing

f) Report duly endorsed by the Supervisor(s) is to be produced and submitted individually by the students.

B.A. SEMESTER-VII MAJOR

Course Code: MJGG17

Course Title: CONTEMPORARY ISSUES IN GEOGRAPHY (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to appreciate the rationale of sustainable development practices
- to educate the global environmental agenda
- to understand the contemporary socio-political concerns
- to get familiar with contemporary missions, schemes and policies in India

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to refer to the sustainable development approaches and tools in geographical practices
- to select the relevant clause of global and national agenda related to climate change
- to list the steps in scheme mapping and programme implementation

COURSE CONTENT:

Unit 1.0: Sustainable Development

1.1 Sustainable Development: Concepts, Targets, Strategies, and Measurement

1.2 Sustainable Utilization of Resources: Land, Water, and Energy

1.3 Challenges for Sustainable Development: Land Management, Fresh Water Crisis, Energy Crisis, Food Security, Poverty and Inequality; Universal Basic Education and Health Care

1.4 India's Commitment to SDGs, SDG India Index and State Ranking, Localising SDGs

Unit 2.0: Environment and Climate Change Issues

2.1 Environmental Degradation, Disaster Risk Management, UN-SPIDER

2.2 Urban Bio-diversity Index, Wetland Conservation, Blue and Green Infrastructure

2.3 Paris Agreement, UN Climate Change Conference in Glasgow (COP26) and India's Commitment, IPCC-Assessment Report: AR-6, SDG-13 "Climate Action"

2.4 Climate Action Plans and Policies; National Green Tribunal, MoEFCC and Environmental Clearance

Unit 3.0: Socio-political and Governance Issues

3.1 Gender Inequality, Poverty and Homelessness, Divided City, Safe City

3.2 Geographical basis of federalism in India

3.3 Issues of Feminist Geography in the Indian context; Geography of Health and Welfare Geography

3.4 Land Governance, Citizens' Participation in Governance; Indian Knowledge System in Governance: Contributions of Chanakya

Unit 4.0: Contemporary Missions, Schemes, and Policies

4.1 Urban Missions: JNNURM, AMRUT, Smart Cities, HRIDAY, Housing for All

4.2 Rural Missions: MGNREGA, PMGSY, PURA, GPDP, SVAMITVA Scheme

4.3 *Swachh Bharat* Mission, Ganga Action Plan and *Namami Gange* Programme, Urban Poverty Alleviation Programme, Rooftop Solar Programme and Social Medicine

4.4 National Urban Transport Policy, National Urban Policy Framework, 2018

SUGGESTED READINGS:

- Contemporary Urban Planning- John M. Levy, Pearson, 2013
- Just Sustainabilities: Development in an Unequal World- J., Agyeman, R.D., Bullard
- Sustainable Development- S. Baker
- Understanding Sustainable Development- J. Blewitt
- Sustainable Development Goals and UN Goal-Setting -S. Browne
- Satellite Towns in Neo-metropolitan Development in India A. Chatterjee, and R. N. Chattopadhyay
- Contemporary Issues and Techniques in Geography-Suranjan Das edited by Ranjan Basu, Sukla Bhaduri
- An Introduction to Sustainable Development- J. Elliott
- Contemporary Issues in Regional Planning- J. Glasson
- The Dictionary of Human Geography -D. Gregory, R. Johnston G. Pratt,
- Understanding Development: Theory and Practice in the Third World- J. Rapley
- Political Ecology: A Critical Introduction- P. Robbins
- An Introduction to Sustainable Development, P. Rogers, K.F. Jalal, J.A. Boyd
- The Age of Sustainable Development- J.D. Sachs
- Sustainable Development- O.F. Williams
- BBC – Science & Environment: www.bbc.com/news/science_and_environment
- Central Pollution Control Board: www.wbpcb.gov.in
- Centre for Science and Environment: www.cseindia.org
- Ministry of Environment, Forest and Climate Change: www.envfor.nic.in
- The Energy and Resources Institute: www.teriin.org
- The World Bank – Environment: www.worldbank.org/en/topic/environment
- United Nations Environment Programme: www.unenvironment.org
- West Bengal Pollution Control Board: www. cpcb.nic.in

B.A. SEMESTER-VII

MAJOR Course Code: MJGG18

Course Title: RESEARCH METHODS IN GEOGRAPHY (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the different research dynamics in geographical studies
- to familiarize with qualitative and quantitative research techniques
- to the research proposal preparation methods
- to understand the importance of theoretical and applied research

COURSE LEARNING OUTCOMES:

Upon completion, students would be able:

- to appreciate geographical research methods and approaches
- to analyze contemporary issues of geographical research
- to apply spatial research methods and techniques

COURSE CONTENT:

Unit-1.0: Theoretical Understanding on Research

1.1 Understanding research, Epistemology and Ontology; Methods and Techniques; Inductive and Deductive Approaches

1.2 Concepts, Variables, Formulation of Hypotheses, Theory, Scientific Laws and Principles

1.3 Purposes of Research: Exploration with Interpretation, Explanation, and Recommendation

1.4 Introduction to various data sources; Sampling Design: Technique and Size

Unit-2.0: Geographical Research: Concerns and Approaches

2.1 Geographical concerns: Space, Place, Time, Physical and Human Environment

2.2 Philosophical Approaches to Geographical Research

2.3 Types of Geographic Research: Human, Physical, Nature and Society Interface

2.4 Concept of Models in Geographical Research with Critiques.

Unit-3.0: Methods and Techniques in Geographical Research

3.1 Quantitative methods: Data types, Measurements, Production, Analysis, Interpretation, and Drawing of Inferences through Deduction

3.2 Qualitative methods: Data types, Forms of Interaction, Production, Analysis, and Interpretation, followed by Subtraction or Generalisation

3.3 Combining Quantitative and Qualitative Methods: Spatial Analysis and Change Detection, Evolving Techniques

3.4 Term Paper, Dissertation, Thesis, and Project Report

Unit-4: Preparation of Research Proposal

4.1 Selecting research area and Topic: Review of Literature for finding out Research Gaps; Writing of Preface, Abstract and Summary; Chapterisation

4.2 Statement of the problem, Setting objectives, Raising Research Questions, Extraction of Findings, Hypothesis Testing in Geography, Art of Drawing Conclusion

4.3 Ethnographic Survey: Preparation of Survey Schedule and designing Questionnaire targeting concerned sections of the Stakeholders of the local populace

4.4 Research Funding, Resources, Referencing and Research Ethics.

SUGGESTED READINGS:

- Research Methodology: Methods and Techniques- C. R. Kothari, & G. Garg
- Introducing Research Methodology- U. Flick
- Methods in Human Geography: A guide to students Doing a Research Projects- R. Flowerdew, & D. Martin
- Qualitative Research Methods in Human Geography -I. Hay
- Conducting Research in Human Gegraphy: Theory, Methodology and Practice- R. Kitchin, & N. Tate.
- Research Methods R. Ahuja
- Quantitative Social Research Methods -K. Singh
- Social Research Methods: Qualitative and Quantitative Approaches- W. L. Neuman

B.A. SEMESTER-VII MAJOR

Course Code: MJGG19 (A) ELECTIVE PAPER

Course Title: APPLIED GEOMORPHOLOGY (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to identify potential geomorphic units in planning and development
- to combine knowledge of geo-hazards and environmental concerns
- to familiarize with tools and techniques used in geomorphology
- to appreciate the concept of geoheritage and geo-tourism

COURSE LEARNING OUTCOMES:

Upon the completion, students would be able to:

- apply knowledge to understand earth surface processes and geo-hazards
- appreciate recent geomorphic issues and concerns
- accustomed with recent techniques of field geomorphology

COURSE CONTENT:

Unit-1.0: Introduction to Applied Geomorphology

1.1. Applied Geomorphology: Nature, Concepts and Applications

1.2. Geomorphological Hazards: Types, Factors, Vulnerability and their Consequences; Sand-Stone-Gravel Quarrying and their impact

1.3. Watershed characterization, prioritization and management with reference to India

1.4. Landform Protection and Management: Concept of Geoheritage, Geosites and Geomorphosites; Geoglyphs; Ancient Art of the Landscape

Unit-2.0: Geomorphology and Environmental Management

2.1. Classification of Geomorphic Units and Geomorphological Mapping

2.2. Geomorphic Approaches in Feasibility Assessment of Engineering Projects: Construction of Dams, Barrages, and Embankments

2.3. Urban Geomorphology and Urban Hydrology in the Tropics

2.4. Apprehension of Climate Change: Cloud Burst leading to Flash Flood, Glacial Lake Outburst Flood (GLOF)

Unit 3.0: Flood Geomorphology in the Tropics

3.1. Anthropogenic Alteration of Geomorphic Processes in Tropics Unit Hydrograph and Flood Routing; Rating Curve; Flood frequency analysis

3.2. Palaeo-flood; Anthropogenic intervention to flood events in Tropics

3.3. Coastal and Estuarine floods in Tropics: Impact on livelihood

3.4. Flood zonation and mapping: Application of remote sensing and GIS

Unit-4.0: Tools in Fluvial Geomorphology

4.1. Natural vegetation as a tool in the Interpretation of Geomorphic Processes and Landforms: Implications of NDVI

4.2. Remote sensing and GIS as Tools for the Analysis of Fluvial Systems

4.3. Sampling Techniques for Channel Bed Sediment Analysis; Modeling Fluvial Morphodynamics and Sediment Transport

4.4. Study of Sedimentary Structure--Miall's Lithocodes; Introduction to SedLog Software

SUGGESTED READINGS:

- Applied Geomorphology: Theory and Practice- R. J. Allison
- Flood Geomorphology- V. R., Baker, R. C. Kochel,. and P. C. Patton
- Geomorphology in Environmental Management -R. U. Cooke, and J. C. Doornkamp
- Tropical Geomorphology- A. Gupta
- Large Rivers: Geomorphology and Management- A. Gupta
- Encyclopedia of Geomorphology- A. S. Goudie
- Tools in Fluvial Geomorphology- M. G. Kondolf, and H. Piégay

B.A. SEMESTER-VII MAJOR

Course Code: MJGG19 (B) ELECTIVE PAPER

Course Title: GEOGRAPHY OF TRANSPORT (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to appreciate the cardinal principles of transport geography
- to combine knowledge of land use and transport interactions
- to understand the concept of logistics management
- to familiarize with the growing importance of ports on national and foreign trade

COURSE LEARNING OUTCOMES:

Upon the completion, students would be able to:

- apply knowledge of network analysis tools and techniques
- appreciate transit-oriented development
- accustomed with location choice criteria of logistics parks

COURSE CONTENT:

Unit 1.0: Transport Geography: Concept and Hierarchy

1.1 Transport Geography: Concept, Need, and Socio-economic Significance

1.2 Cardinal Principles of Transport Geography: Economy, Efficiency, Connectivity, Accessibility, Environmental Sustainability

1.3 Network Analysis, Shortest path, Transport Modes and Comparative Cost

1.4 Urban and Rural Road Classification

Unit 2.0: Mobility and Travel Behaviour

2.1 Movement vs Access, Accessibility: Concept; Land Use and Transport Interaction

2.2 Traffic and Transport as a Service: Public vs Private Transport, Para-transit, Rapid Mass Transit; Various Approaches to Parking

2.3 Concept of Passenger Car Unit (PCU) and Level of Service; Capacity of Rural and Urban Roads

2.4 Stages of Transport Planning, Transit-Oriented Development; Intelligent Transportation System

Unit 3.0: Transport and Trade

3.1 Trade: Concept, Types and Modes

3.2 Patterns of World Trade; Global War on tariff

3.3 Trade and Transportation Costs: Advantages, Transport Costs in International Trade

3.4 Growing Importance of Ports in National and Foreign Trade

Unit 4.0: Logistics

4.1 Logistics Management: Concept, Evolution, and Importance

4.2 Logistics Planning: Various Actions and their contribution – Formation of Cold Chain

4.3 Logistics Parks/Hubs: locational choice; Warehousing and their linkage

4.4 Traditional Logistics vs. E-logistics, Benefits and Challenges of E-logistics

SUGGESTED READINGS:

- Transportation Engineering and Planning- C. S Papacostas
- Transportation Systems Engineering: Theory and Methods-Ennio Cascetta
- Metropolitan Transportation Planning- John W. Dickey
- Traffic Engineering and Transport Planning-L.R. Kadiyali
- Transportation Planning-Shiftan Y and Glos Edward
- Transportation Engineering: An Introduction- C. Jotin Khisty and B. Kent Lall , Phi Learning
- Urban Transport: Planning and Management- A K Jain
- Principles of Urban Transport Systems Planning- B.G. Hutchinson
- Managing Urban Mobility Systems-Rosário Macário
- Logistics Operations and Management - R.Z.Farahani, S. Rezapour, L. Kardar
- Logistics - An Introduction to supply chain Management, Donald Waters
- Urban Transportation and Logistics- Health, Safety and Security Concerns-CRC Press, Taylor & Francis Group,2014
- The Handbook of Logistics and Distribution Management-A. Rushton, P.Chroucher,, P. Beker

B.A. SEMESTER-VII MAJOR

Course Code: MJGG19 (C) ELECTIVE PAPER

Course Title: URBAN PLANNING (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- understand the approaches to study urban geography and its recent trends
- appreciate urban hierarchies and mobility concerns
- understand theories and techniques of urban analysis
- familiarize with urban policies in India

COURSE LEARNING OUTCOMES:

Upon completion, students would be able:

- to familiarize with the concept of land use and Development Control norms
- to apply social justice and different environmental techniques of urban analysis
- to refer to the role of statutory institutional mechanisms in urban India

COURSE CONTENT:

Unit-1.0: Concept and Approaches

1.1 Urban Planning: Definition, Scope, and Necessity

1.2 Approaches to land regularization and management; Greenfield development; Brownfield development; Inclusive Urban Planning

1.3 Compact City Development; Inner City Development; Fringe and Peri-urban Development

1.4 Participatory Process and Partnerships; New Urban Forms and New Urbanism

Unit-2.0: Planning for Sustainable City

2.1 Types of Urban Development Plans in India: Development Plan, Zonal Plan, Structural Plan, City Development Plan, Local Area Plan

2.2 Land Management for Planning: Land Acquisition and Land Pooling Model, Transferable Development Rights (TDR), Floor Space Index (FSI),Floor Area Ratio (FAR)

2.3 Sustainable Neighbourhoods, Healthy Urban Communities; Walkability

2.4 Cities' Future: New Town, Smart City, Green City, Sustainable City, Urban Agriculture and Resilient City

Unit-3.0: Metropolitan Planning and Future Cities

3.1 Metropolitan Planning: Concept of City Region and its Delineation Techniques

3.2 Metropolitan Problems and Issues: Environment, Transport, Land, Water, and Infrastructure

3.3 Megacities in India, Peri-urbanization, Metropolitan Decentralization, Sprawl, Case Studies of The National Capital Region (NCR), Mumbai Metropolitan Region (MMR), and Kolkata Metropolitan Region (KMR)

3.4 New Urban Agenda, National Urban Policy Framework

Unit-4.0: Technology and Urban Social Landscape

4.1 Concept and Need for Big Data, Spatial Analytics, and Machine Learning in Geography and Planning

4.2 Big Data: Opportunities, Challenges and Risks; Artificial Intelligence, Intelligent Cities, Intelligent Transport Systems

4.3 Application of Big Data, Spatial Analytics, and Machine Learning in Geography and Planning

4.4 Social Area Analysis, Urban Mosaic, Urban Social Space, Social Segregation, and Gentrification

SUGGESTED READINGS:

- Contemporary Urban Planning- John M. Levy
- The Oxford Handbook of Urban Planning- Randall Crane and Rachel Weber
- Contemporary Urban Planning- John M. Levy
- Urban Planning : Theory and Practice- M.P. Rao
- Urban Planning Methods: Research and Policy Analysis-Ian Bracken
- Making Strategic Spatial Plans: Innovation in Europe- Patsy Healey
- Understanding Cities-A.R. Cuthbert
- Smart Cities- A. Picon
- Creating Smart-er Cities-Mark Deakin
- Urban Development Debates in the New Millennium (Vol. 1 & 2)- K.R. Gupta
- Urban Planning and the Development Process- David Adams
- Urbanisation, Urban Sustainability and Future of Cities- B. Bhattacharya
- Spatial Planning: Strategies, Developments and Management- Elia Ciccotelli (Ed
- Urban Planning-Anthony J. Catanese and James C. Snyder,
- Urban Planning in the 21st Century, Daniel S. Graber and Kenneth Birmingham
- Town Planning Scheme Mechanisms in India- Shirley Ballaney, Environmental Collaborative, Ahmedabad, 2010
- State Led Innovative Mechanisms to Access Serviced Land in India, Rejeet Mathews and Others, The World Resources Institute, India, 2016

B.A. SEMESTER-VII MAJOR

Course Code: MJGG19 (D) ELECTIVE PAPER

Course Title: LANDSCAPE ECOLOGY AND CULTURAL GEOGRAPHY (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- understand the concept and dimensions of landscape ecology
- appreciate the development of new cultural geographies
- understand the relationship between landscape and sacred geography
- familiarize with characteristics of places of pilgrimage

COURSE LEARNING OUTCOMES:

Upon completion, students would be able:

- to familiarize themselves with the contemporary issues of landscape and human ecology
- to apply the concept of sacred complex
- to refer to green pilgrimage initiatives

COURSE CONTENT:

Unit-1.0: Landscape Ecology and Human Ecology

1.1 Emergence, Issues, and Perspective of Landscape Ecology

1.2 Key concepts and theories of Landscape Ecology

1.3 Heritage and Landscape; Human Ecology and Resource Utilisation

1.4 Landscape and Human Ecology with reference to Indian Knowledge System

Unit-2.0: Fundamentals of Cultural Geography

2.1. Concepts and Attributes of Culture; Cultural Landscape; Cultural Hearth and Realm

2.2. Cultural Diversity; Spatial Diffusion of Culture: Contagious, Hierarchical, Stimulus and Relocation Diffusion

2.3. Concept of Acculturation and Transculturation; Cultural Regeneration and Globalization in India

2.4. Dialects and Languages in India; Programmes in Cultural Studies and Cultural Sustainability

Unit-3.0: Development of Sacred Geography

3.1. Cultural metaphors of Landscape and Sacred Geography; Sacred Geometry and Cultural Astronomy in the context of Indian Knowledge System

3.2. Concept of Sacrality; Sacred complex: Centers, Clusters, Segments and Zones

3.3. Sacred and Cultural Performances: Different religious traditions and regions in India

3.4. Ecology of Place and Faithscape in India and cross-cultural link with Asia

Unit-4.0: Pilgrimage as a Complex Cultural-Spatial Process

4.1. Pilgrimages and their Typologies

4.2. Theories of Pilgrimage: Application in the Indian Context

4.3. Characteristics of the Places of Pilgrimage; Reciprocity between Locality and Universality

4.4. Green Pilgrimage Initiatives: Role in Development Strategy and Cultural Sustainability

SUGGESTED READINGS:

- The Morphology of Landscape-C.O.Sauer
- Human Geography: Culture, Society and Space- H.J.de.Blij and A.B.Murphy
- The cultural landscape: An introduction to Human Geography- J.M.Rubinstein
- Pillgrimagecentres: Concentric and Excentric- E.Kohen
- Interesting journeys: The Anthropology of Pilgrimage and Tourism- E.Badone and S.R.Roseman
- Guest is God: Pilgrimage, Tourism and Making Paradise in India- D.Thomases
- Hindu places of pilgrimage in India: A study in Cultural Geogaphy- S.M.Bharadwaj
- Hindu tradition of pilgrimage : Sacred space and system-R.P.B.Singh
- Holy places and pilgrimage: Essays on India- R.P.B.Singh
- Cultural Astronomy and Cosmic Order - Rana P.B.Singh
- Himalayan pilgrimage and the new tourism- J.Kaur

B.A. SEMESTER-VII MAJOR

Course Code: MJGG19 (E) ELECTIVE PAPER

COURSE TITLE: GEOSTATISTICS: SPATIAL ANALYSIS AND MODELLING (Theory)

Time: 3 Hours *Full Marks- 100 (External- 80Marks, Internal- 20Marks)*
(4 credits, one credit per unit)

COURSE OBJECTIVES

This course aims:

- to develop proficiency in statistical techniques tailored for spatial data.
- to enable critical interpretation of spatial patterns and dependencies.
- to introduce spatial interpolation and modeling techniques for various geographic phenomena.
- to integrate software-based practical application of geostatistical methods.

COURSE OUTCOMES

After successful completion, students will be able:

- to apply and interpret descriptive and inferential statistics for geospatial datasets.
- to analyze spatial patterns and distributions using statistical methods.
- to perform interpolation and spatial regression techniques for predictive spatial modeling.
- to use software (GeoDa and QGIS) for hands-on spatial data analysis.

COURSE CONTENT

Unit-1.0: Fundamentals of Geostatistics and Exploratory Spatial Data Analysis (ESDA)

1.1. Nature of Spatial Data: Spatial dependence, spatial heterogeneity, stationarity
1.2. Introduction to ESDA: Global and Local statistical summaries, Histogram, Box Plot, Scatter Plot Matrix
1.3. Spatial Data Structures and Sampling Designs Coordinate Systems and Georeferencing for Statistical Analysis

Unit-2.0: Point Pattern and Surface Analysis

2.1. Measures of Central Tendency and Dispersion in Spatial Context

2.2. Point Pattern Analysis: Nearest Neighbor Analysis (NNA), Quadrat Analysis, Kernel Density Estimation (KDE)

2.3. Surface Analysis: Trend Surface Modeling, Terrain Interpolation from Points

2.4. Surface generation using spline/trend surface in GIS tools

Unit-3.0: Spatial Autocorrelation and Spatial Interpolation

3.1. Concepts of Spatial Autocorrelation: Moran's I, Geary's C, Getis-Ord G*

3.2. Spatial Weights Matrices: Contiguity, Distance-based

3.3. Spatial Interpolation Techniques: Deterministic: IDW, Spline

3.4. Spatial Interpolation Techniques: Geostatistical: Variogram analysis, Ordinary Kriging, Universal Kriging

Unit-4.0: Spatial Regression and Predictive Modelling

4.1. Ordinary Least Squares (OLS) Regression: Assumptions and Limitations in Spatial Context

4.2. Spatial Regression Models: Spatial Lag Model (SLM), Spatial Error Model (SEM)

4.3. Geographically Weighted Regression (GWR)

4.4. Case Studies: Land Use Change, Environmental Risk, Urban Accessibility

SUGGESTED READINGS:

- An Introduction ro Applied Geostatistics – E. H. Isaaks and R. M. Srivastava
- Geostatistics: Modeling Spatial Uncertainty – Jean-Paul Chiles and Pierre Delfiner
- Geostatistics for Environmental Scientists – R. Webster and M. A. Oliver

B.A. SEMESTER-VII MAJOR

Course Code: MJGG19 (F) ELECTIVE PAPER

Course Title: INDIAN KNOWLEDGE SYSTEM IN GEOGRAPHICAL STUDIES (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 matks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the concepts of the Indian Knowledge System
- to learn about the indigenous Indian practices of environmental conservation
- to comprehend the contributions of the Indian Knowledge System to Cartography
- to learn about the application of Indian Knowledge System in town planning and governance

COURSE LEARNING OUTCOME:

Upon completion of the course, students would be able:

- to comprehend the significance of Indian Knowledge System in geographical studies
- to apply indigenous Indian knowledge in environmental conservation
- to analyze the applicability of Indian Knowledge System in modern day map making
- to evaluate the applicability of Indian Knowledge System in urban planning and governance

COURSE CONTENT:

Unit 1.0: Indian Knowledge System: Concepts and Practices

1.1. Indian Knowledge System: Ancient India and its culture

1.2. Evolution of the Indian Knowledge System in Medieval India; Preparation of non-rusting iron (Qutub Minar)

1.3. Indian Knowledge System as an intangible cultural heritage of humanity

1.4. Application of Indian Knowledge System in Modern India

Unit-2.0: Indian Knowledge System and Environmental Issues

2.1. *Vedic* and *Vedantic* Views of the Environment

2.2. Contributions of Khana in weather prediction; Traditional Practices of Soil and Water Resource Management

2.3. Indigenous Practices of Plant and Wildlife Protection

2.4. Adaptation and Mitigation of Hazards through the Indian Knowledge System

Unit-3.0: Indian Knowledge System and Cartography

3.1. Development of Astronomy in India: Concept of location by Pole star; Contributions of Aryabhatta, Concept of Zero; Jantar Mantar for calculation of time

3.2. Indian Knowledge System and the Rise of Scientific Cartography

3.3. Traditional practices of surveying and spatial recording; The Great Trigonometrical Survey and its geopolitical motives

3.4. Mapping efforts incorporating the Indian Knowledge System by government and non-government organizations in Independent India

Unit-4.0: Indian Knowledge System in Town Planning and Governance

4.1. Evolution of Town Planning in India since the Ancient and Medieval Periods

4.2. Socio-cultural Expression of Spatial Planning

4.3. Geopolitics and Economy since Ancient India

4.4. Ancient and Medieval Towns in contrast with present Planning practices

B.A. SEMESTER-VII MAJOR

RESEARCH/DISSERTATION

Course Code: MJGG20

Course Title: SEMINAR (Practical)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

The seminar shall largely be devoted to a wide range of contemporary and emerging areas in Geography. The objective of the course is to initiate the process of literature review related to frontiers of research in geography and acquire report-writing skills. The subject content includes the following broad steps:

- Identification of Research Domain
- Literature Review
- Establish different Arguments and outcomes of other research works in the selected area of work
- Identify the Research Gaps
- Research Design
- Presentation of Seminar Paper

Upon completion, the student will be able to seek out literature on a research topic, engage in logical dialogues and discourses based on past research, write and present a seminar paper that describes the literature review, research design adopted, and highlight new arguments.

B.A. SEMESTER-VIII MAJOR

Course Code: MJGG21 (A) SPECIAL PAPER

Course Title: TERRAIN EVALUATION AND FLUVIAL GEOMORPHOLOGY (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the concept of terrain evaluation
- to appreciate contemporary trends in terrain morphology
- to improve knowledge on river basin analysis
- to familiarize oneself with advanced fluvial theories and techniques

COURSE LEARNING OUTCOMES:

Upon completion, students would be able:

- to understand processes of river basin morphology
- to refer to channel geometry to analyze river forms
- to get accustomed to recent trends in fluvial geomorphology

COURSE CONTENT:

Unit-1.0: Introduction to Terrain Evaluation

1.1. Terrain Characteristics and Elements; Data Collection and Processing

1.2. Terrain Classification: CSIRO, Oxford MEXE, and Facet Method

1.3. Drainage Basin as a Geomorphological Unit; Laws of Drainage Basin Composition

1.4. Morphometric Analysis of Terrain: Linear, Aerial, and Relief Aspects

Unit-2.0: Terrain Morphology and Contemporary Trends

2.1. Morpho-tectonic Parameters of Terrain Analysis

2.2. River Types and Drainage Patterns; Neo-tectonic Imprints on Terrain

2.3. Slope Forms and Analysis—Association with Soil Catena

2.4. Fractal Analysis and its application on Terrain Morphology

Unit-3.0: Advanced Fluvial Geomorphology

3.1. Fluvial System and Flow Regime: System Response to Change

3.2. Open Channel Hydraulics: Types of Flow, Stream Power

3.3. Processes of Erosion, Transport and Deposition

3.4. Hydraulic Geometry: Form and Behaviour of Alluvial and Bedrock Channels; Channel Bathymetry

Unit-4.0: Recent Trends in Fluvial Geomorphology

4.1. Sediment Sources and Grain Size; Sediment Transport: Suspended and Bedload

4.2. River Bank Erosion, Meandering and Avulsion; Confluence Geomorphology and In-channel Processes

4.3. Alluvial Facies and Architecture—River Terraces and Floodplain Analysis

4.4. Palaeo-channels; River Metamorphosis and Quaternary Fluvial Systems

SUGGESTED READINGS:

- Flood Geomorphology- V. R Baker, R. C. Kochel, and P. C Patton Fundamentals of Fluvial Geomorphology- R. Charlton. Routledge.
- Tropical Geomorphology- A. Gupta. Cambridge University Press
- Large Rivers: Geomorphology and Management- A. Gupta
- Fluvial Forms and Processes- A. D. Knighton
- Tools in Fluvial Geomorphology- M. G. Kondolf, and H. Piégay
- Fluvial Processes in Geomorphology- L. B. Leopold, M. G. Wolman, and J. P. Miller
- Streams: Their dynamics and Morphology- M. Morisawa. McGraw-Hill Inc.,US
- Rivers: Forms and Processes M. Morisawa
- River Confluences, Tributaries and the Fluvial Network- S.P. Rice, A. G. Roy, and B.L. Rhoads

B.A. SEMESTER- VIII MAJOR

Course Code: MJGG21 (B) SPECIAL PAPER

Course Title: GEOGRAPHY OF TOURISM (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand tourism as a subject of multidisciplinary research
- to appreciate models and tools in tourism studies
- to understand the concept of tourism carrying capacity
- to familiarize oneself with tourism circuits

COURSE LEARNING OUTCOMES:

Upon completion, students would be able:

- to get accustomed to techniques of tourism planning and management
- to refer knowledge of green tourism for planning
- to apply indicators of sustainable tourism

COURSE CONTENT:

Unit-1.0: Basics of Tourism Geography

1.1. Definition and Concept of Tourism- Tourism as a subject of multidisciplinary research

1.2. Nature, Scope, and Development of Geography of Tourism- Tourism Geography as distinct from Tourism Management

1.3. Evolving Tourism Typologies: Nature tourism, Adventure tourism, Agri-tourism, Wildlife tourism, Educative tourism, Heritage tourism, Ethno-tourism, Religious tourism, Medical tourism

1.4. International tourism in the context of Globalization; Tourism as a System with Hotel industry, Transport Industry, Tour Operators, and Travel Agents

Unit-2.0: Tourism and Development

2.1. Tourism as an Instrument for Backward Area Development and Poverty Alleviation

2.2. Community Involvement in Tourism Planning

2.3. Tourism and Rural Development: Case studies from India; Tourism Policies of India

2.4. Models in Tourism Studies – Irradex and Life Cycle Model

Unit-3.0: Tourism and Environment

3.1. Impact of tourism on habitat, economy, and society

3.2. Indian Knowledge System in Tourism; Mass Tourism vs Ecotourism

3.3. Tourism carrying capacity; Indicators of Sustainable Tourism

3.4. Concept of Destination Planning and Techniques of Visitor Management under Green Tourism

Unit-4.0 : Tourism Marketing and Management

4.1. Role of hard and soft infrastructure in the development of tourism; Dynamics of Tourism Marketing

4.2. Tourism Circuits: Concept, Demand and Development in the context of Management

4.3. Event Tourism: Concepts and Practices of Festive Tourism Management

4.4. Issues of Modern Tourism and Product Development: Regenerative Tourism and Experiential Tourism

SUGGESTED READINGS:

- Critical Issues in Tourism: A geographical perspective- G.Shaw and A.M.Williams.
- Tourism System: An introductory Text- R.C.Mill and A.M.Morrision
- The Business of Tourism- J.C.Holloway
- Tourism and Development in the third world- J.Lea
- Hosts and Guests: The Anthropology of Tourism-V.L.Smith
- Cultural Tourism- H.D.Cros
- Issues in cultural tourism studies- M.K.Smith
- Tourism and religion: Issues and implications- R.Butler and W.Suntikul
- Pro-poverty Tourism- R.K.Pruthi
- Climate change and Tourism: From policy to practices- S.Becken and J.E.Hay

B.A. SEMESTER-VIII MAJOR

Course Code: MJGG21 (C) SPECIAL PAPER

Course Title: URBAN GEOGRAPHY AND SUSTAINABLE URBAN DEVELOPMENT (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the approaches to studying urban geography and its recent trends
- to appreciate urban hierarchies and mobility concerns
- to understand theories and techniques of urban analysis
- to familiarize oneself with urban policies in India

COURSE LEARNING OUTCOMES:

Upon completion, students would be able:

- to familiarize oneself with the concept of land use and Development Control norms
- to apply social justice and different environmental techniques of urban analysis
- to refer to the role of statutory institutional mechanisms in urban India

COURSE CONTENT:

Unit-1.0: Concept and Approaches

1.1 Urban Geography- Definition, Scope and Contents

1.2 Approaches to the Study of Urban Geography and its Recent Trends

1.3 Origin and Growth of Urban Settlements–Ancient, Medieval, Renaissance, Modern and Postmodern

1.4 Global concepts of urbanization and Urban Changes, Problems of Urbanization

Unit-2.0: Urban System

2.1 Concept of Urbanism: Urban Ecology and Environment

2.2 Conurbation, Metropolis, Megalopolis, Ecumenopolis and Necropolis

2.3 Urban Transportation, Residential Mobility, and Neighborhood Change

2.4 Land Use in the City, Development Control Regulation

Unit-3.0: Urbanization and Urban Development

3.1 Environment and Urbanization; Cities in the Global South: Issues related to sustainability

3.2 Primate city, Rank size rule, Urban Morphology: Concept and Classical model, Land use and land value theory Ebenezer Howard's Garden City Concept

3.3 Recent Theoretical Development: Ordinary City, Planetary Urbanization, and Informal Urbanization

3.4 Cities and Social Justice in Contemporary India: The relevance of registered slums and shanties (*Jhopri*) in Indian cities; Slum Development Policies in India

Unit-4.0: Spatial Interaction and Urban Policies in India

4.1 City-region: Concept and Structure; City Region in India

4.2 Peri-urban interface: characteristics and processes; Sinclair's model

4.3 74th Constitutional Amendment Act, Urban Local Self-government and Functions

4.4 Concepts, Classifications of Indian Cities; Urban Policies in India

SUGGESTED READINGS:

- Urbanisation in India spatial dimensions- Prakasa Rao, V. L. S., & V. K. Tewari,
- An introduction to urban geography- J. R. Short
- Urban politics and public policy-R. L. Lineberry, & I. Sharkansky,
- Urbanization and urban systems in India: R. Ramachandran
- Urban geography- D. H., Kaplan, S. R., Holloway, & J. O. Wheeler
- S. Ghosh, -Introduction to Settlement Geography
- Land utilization: Theory and practice- R. B. Mandal
- Urban Geography Reader- N. R. Fyfe and J. T. Kenny
- Splintering Urbanism: Networked Infrastructures, Technological Mobility and the Urban Condition- S. Graham and S. Marvin
- Urban Geography-T. Hall
- Urban Geography- D. H. Kaplan., J. O. Wheeler. and S. R. Holloway
- Urbanization: An Introduction to Urban Geography- P. L. Knox and L. McCarthy
- Urban Social Geography: An Introduction P. L. Knox and S. Pinch
- Urban Governance in India, emerging challenges in Liberalised Era- O.M.,Mahala
- Urban Geography: A Global Perspective- M. Pacione
- Understanding Sustainable Development- J. Blewitt
- Sustainable Development Goals and UN Goal-Setting- S. Browne
- Satellite Towns in Neo-metropolitan Development in India- A. Chatterjee, and R. N. Chattopadhyay
- Contemporary Issues and Techniques in Geography -Suranjan Das edited by Ranjan Basu, Sukla Bhaduri
- An Introduction to Sustainable Development- J. Elliott
- Contemporary Issues in Regional Planning- J. Glasson
- The Dictionary of Human Geography- D. Gregory, R., Johnston G. Pratt, S. Whatmore
- Understanding Development: Theory and Practice in the Third World- J. Rapley,

B.A. SEMESTER-VIII MAJOR

Course Code: MJGG21 (D) SPECIAL PAPER

Course Title: GEOGRAPHY OF POPULATION, GENDER AND DEVELOPMENT (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- The course aims to impart an understanding of the various dimensions of Geography of Population, Gender and emerging issues.
- It focuses on the relationship between dynamics of population geography and development with contemporary issues in the space-time continuum.
- It deals with the dynamics of gender and emerging issues.

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able to:

- to know various concepts and issues related to population and gender geography.
- to familiarize of handling various qualitative and quantitative data.
- To understand about field survey in population and Gender research.

Unit 1.0: Understanding the Nature of Population Geography

1.1 Population Geography: History and recent development

1.2 Sources of Population Data and their applicability: Census of India and National Sample Survey Organisation, and National Family Health Surveys

1.3 Population composition and characteristics: Workforce participation, Social Composition

1.4 Debates on population and development: Malthus, Neo-Malthus, Boserup, and Julian Simon

Unit 2.0: Dynamics of Population Change and Population Policies

2.1 Measures of Fertility and Reproductive health

2.2 Measures of Mortality with special reference to MMR, IMR, CMR and Life Expectancy at birth

2.3 Theories of migration

2.4 Issues of refugee migration: Middle East, Mexico and Africa along with Indian Sub-continent

Unit 3.0: Geography of Gender

3.1 Concepts of Sex and Gender, Patriarchal and Matrilineal Societies
3.2 Tracing the genealogy of research on Gender Geography

3.3 Gender and Work; Gender and Environment

3.4 Gender Budgeting, Government laws and policies for gender equality at work, National Policy of Women Empowerment, International Labour Organisation (ILO) and LGBTQ

Unit 4.0: Population and Development

4.1 Concept of Development and its Indices: Human Development Index (HDI), Multi-dimensional Poverty Index (MDPI), Gender Development Index (GDI)

4.2 Literacy, Basic education and Development; Issues related to dropout

4.3 Gender and Development: Working hours of men and women

4.3 In-migration and Out-migration in the context of economic and human development

SUGGESTED READINGS:

- The dictionary of human geography. In The dictionary of human geography- R. J. Johnston
- A dictionary of human geography- A Rogers, N., Castree, & R. Kitchin,
- Human geography: people, place, and culture - E. H., Fouberg, A. B., Murphy, & H. J.. De Blij,
- Spatial structures: Introducing the study of spatial systems in human geography- R. J. Johnston
- The spaces of postmodernity: readings in human geography- S. Flusty, M. Dear.
- Human geography: The basics- A. Jones

- Conducting research in human geography: theory, methodology and practice- R., Kitchin, & N. Tate
- Practising Human Geography. India- P. Cloke
- Human geography: society, space and social science- D., Gregory, R., Martin, & G. Smith,
- Exploring Human Geography: A Reader. (2014). United Kingdom: Taylor & Francis.
- Human geography- W., Norton, & M. Mercier
- Practising human geography- P. Cloke, I. Cook, P. Crang, M. Goodwin
- Techniques in human geography- J. Lindsay
- Researching human geography- K. Hoggart
- Theories of Development: Contentions, Arguments, Alternatives- R.Peet, E. Hartwick
- A question of place: Exploring the practice of human geography. In A question of place:exploring the practice of human geography- R. J. Johnston
    - Qualitative research methods in human geography- I. Hay.
- Geography Matters: A Reader- Massey, Doreen and John Allen
- Feminism and Geography: The Limits of Geographical Knowledge- Gillian Rose
- Gendered Spaces -Daphne Spain

B.A. SEMESTER-VIII MAJOR

Course Code: MJGG21 (E) SPECIAL PAPER

Course Title: ADVANCED CLIMATOLOGY AND PEDOLOGY (Theory)

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the dynamics of the climate system
- to comprehend the applied aspects of Climatology
- to learn concepts of Pedology and land evaluation
- to understand processes of climate-soil interaction

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to analyze the causes and effects of climate change
- to apply methods of weather forecasting and climate modelling
- to apply models of land degradation
- to evaluate measures of climate change mitigation

COURSE CONTENT

Unit-1.0: Climate System

1.1. Climate forcing: Land-Ocean-Atmosphere Interaction and Climate Variability

1.2. Theories of Climate Change; Palaeoclimatic evidences of Climate Change

1.3. Anthropogenic Climate Change: Carbon Footprint, Modern surface temperature trends, Extreme weather events

1.5. Climate feedback: Types and Effects

Unit-2.0: Applied Climatology

2.1. Climate and Environment: Impact on Vegetation and Water Resources

2.2. Atmospheric Modification: Types and Implications – Air Pollution, Urban Heat Island

2.3. Weather Forecasting: Types and Methods

2.4. Climate Modelling: Types and Applications, IPCC models

Unit-3.0: Pedology

3.1. Concept of Pedon and poly-pedon; Soil micro-morphology; Soil Classification System: Morphogenetic

3.2. Soil Geology; Soil Patterns: Landform-soil pattern, slope-soil pattern

3.3. Land Degradation; Soil Erosion Models

3.4. Land evaluation: Land capability, suitability, and irrigability classification

Unit-4.0: Climate-Soil Interaction

4.1. Climate-Soil Feedback Loop: Greenhouse gas cycling – carbon and methane

4.2. Greenhouse gas removal: Silicate weathering; Soil carbon sequestration

4.3. Agricultural Land Use-Driven Feedbacks: Tillage, Manures and Fertilizers, Irrigation; Organic farming

4.4. International Conventions and Agreements on greenhouse gas reduction through soil management

SUGGESTED READINGS:

- Climatology- D.S. Lal
- General Climatology- H.J. Critchfield
- Atmosphere, weather and climate- R.G. Barry and R.J. Chorley
- Climatology: An Atmospheric Science- J.E. Oliver and J.J. Hidore
- Soil and Climate- R. Lal and B.A. Stewart
- Soil Genesis, Classification, Survey, and Evaluation – Vol. 1&2 - A.K. Kolay
- Fundamentals of Soils- J. Gerrard

B.A. SEMESTER-VIII MAJOR

Course Code: MJGG22 (A) SPECIAL PAPER

Course Title: TERRAIN EVALUATION AND FLUVIAL GEOMORPHOLOGY (Practical)

Time: 4 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to apply techniques of terrain analysis
- to appreciate techniques of drainage basin analysis
- to use measurement techniques of river hydrology
- to use measurement techniques of river morphology

COURSE LEARNING OUTCOMES:

Upon completion, students would be able:

- to apply techniques of river basin morphology
- to refer to the knowledge of river morphology for planning
- to apply sustainable use of river resources

COURSE CONTENT:

Unit-1: Techniques of Terrain Analysis

1.1 Determination of Geomorphic Units; Pattern and Facet Mapping

1.2 Land System Mapping (CSIRO Method and Alternative Approaches)

1.3 Geomorphological Mapping: Types, Limitations, and Practicalities

1.4 Valley Form and Slope Analysis

Unit-2: Drainage Basin Analysis using Geospatial Techniques

2.1 Concept of Watershed and Water Divide; Identification of Drainage Basin

2.2 Stream Ordering and Analysis of Morphometric Parameters

2.3 Construction of River Profile: Longitudinal and Cross-section

2.4 Analysis of Morpho-tectonic Parameters

Unit-3: River Hydrology and Measurements

3.1 Stream Flow Measurement and Runoff Estimation

3.2 Estimation of Unit Stream Power and Shear Stress

3.3 Calculation of Velocity and Discharge using Manning Equation.

3.4 Flood Frequency Analysis; Flood Zone Mapping using GIS

Unit-4: River Morphology and Measurements

4.1 Calculation of Hydraulic Geometry; Channel Bathymetry Analysis

4.2 Sinuosity Index, Width-Depth Ratio, Bar-Wwaterbody Ratio; Braid-Channel Ratio

4.3 Measurement of River Bank Erosion

4.4 Sediment Yield, Sediment Load, and Channel Sedimentation

SUGGESTED READINGS:

- Flood Geomorphology- V. R Baker, R. C Kochel,. and P. C. Patton
- Fundamentals of Fluvial Geomorphology R. Charlton
- Tropical Geomorphology- A Gupta
- Large Rivers: Geomorphology and Management- A. Gupta
- Fluvial Forms and Processes- A. D. Knighton
- Tools in Fluvial Geomorphology- M. G. Kondolf, and H. Piégay,. Wiley-Blackwell.
- Fluvial Processes in Geomorphology- L. B., Leopold, M. G Wolman,. and J. P. Miller
- River Confluences, Tributaries and the Fluvial Network- S.P Rice, A. G Roy, and B.L. Rhoads

B.A. SEMESTER- VIII MAJOR

Course Code: MJGG22 (B) SPECIAL PAPER

Course Title: GEOGRAPHY OF TOURISM (Practical)

Time: 4 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to apply survey techniques for tourism studies
- to appreciate SWOT analysis technique for tourism destinations
- to use tools of geoinformatics in data generation and mapping
- to attain field-based knowledge in tourism research

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to accustomed to techniques of tourism research
- to refer to knowledge of geoinformatics in tourism development
- to apply statistical software related to data analysis in tourism

COURSE CONTENT:

Unit-1.0: Survey Techniques

1.1 Methods of Ethnographic Survey

1.2 Designing Questionnaires and Application of Likert Scale

1.3 Application of Delphi Techniques in Tourism Research

1.4 Application of Total Station for survey in tourist centres

Unit-2.0: Statistical Analysis

2.1 Connectivity and Accessibility Analysis of Tourism Hubs

2.2 Tourism Forecasting: Qualitative and Quantitative Methods

2.3 Application of Statistical Software Related to Data Analysis in Tourism

2.4 SWOT Analysis on Tourism Destination

Unit-3.0: Application of Geoinformatics

3.1 Image Registration and Preparation of subset on areas of tourist interest

3.2 Application of Band Ratioing in Tourism Research

3.3 Generation of DEM on Areas of Tourist Interest; Application of Hill shade analysis

3.4 Generation of Heat Maps: Hotspot analysis

Unit-4.0: Fieldwork in Tourism Geography

4.1 Identification of Research Gap; Framing of Research Questions

4.2 Visit to a Tourist Place for Survey on Hosts and Guests

4.3 Report writing on Issues of Environment and Sustainability

4.4 Thematic Mapping for Visitors' Satisfaction

SUGGESTED READINGS:

- Critical Issues in Tourism: A geographical perspective- G.Shaw and A.M.Williams.
- Tourism System: An introductory Text- R.C.Mill and A.M.Morrision
- The Business of Tourism- J.C.Holloway
- Tourism and Development in the third world- J.Lea
- Hosts and Guests: The Anthropology of Tourism-V.L.Smith
- Cultural Tourism- H.D. Cros
- Issues in cultural tourism studies- M.K.Smith
- Tourism and religion: Issues and implications- R.Butler and W.Suntikul
- Pro-poverty Tourism- R.K.Pruthi
- Climate change and Tourism: From policy to practices- S.Becken and J.E.Hay

B.A. SEMESTER-VIII MAJOR

Course Code: MJGG22 (C) SPECIAL PAPER

Course Title: URBAN GEOGRAPHY AND SUSTAINABLE URBAN DEVELOPMENT (Practical)

Time:4 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to apply techniques of occupational diversity and specialisation
- to appreciate techniques of network analysis
- to use measurement techniques of peri-urban landscape change
- to use techniques of urban land use mapping and ground truth verification

COURSE LEARNING OUTCOMES:

Upon completion, students would be able:

- to accustomed to techniques of social area analysis
- to refer to knowledge of geoinformatics for planning
- to apply network analysis for sustainable transportation

COURSE CONTENT:

Unit-1.0: Functional Identification

1.1 Index of Urbanization

1.2 Urban Occupational Diversity and Specialization

1.3 Functional Classification

1.4 Social Area Analysis

Unit-2.0: Quantitative Analysis

2.1 Network Analysis (Konig, Shimbel, Alpha, Beta, Gamma and Dispersion Indices)

2.2 Centrality Index

2.3 Spacing Ratio

2.4 Delineation of Sphere of Influence

Unit-3.0: Application of Remote Sensing and Geographical Information System (GIS)

3.1 Georeferencing, Digitization, Integration of GIS data

3.2 GIS data analysis: Buffer and Network

3.3 Urban Growth Analysis, Peri-urban Landscape Change

3.4 Hierarchy of Settlements and Sustainable Development Perspectives

Unit-4.0: Field work in Urban Geography

4.1 Primary Data Collection through Questionnaire based Survey

4.2 Census and other Official Data Analysis

4.3 Urban Land Use Mapping and Ground Truth Verification (GTV)

4.4 Understanding of Local Issues and suggesting probable solutions

SUGGESTED READINGS:

- The Urban Geography Reader- N. R. Fyfe and J. T., Kenny
- Splintering Urbanism: Networked Infrastructures, Technological Mobility and the Urban Condition- S. Graham and S.Marvin
- Urban Geography -T. Hall
- Urban Geography- D. H., Kaplan J. O. Wheeler and S. R Holloway
- Urbanization: An Introduction to Urban Geography- P. L. Knox and L., McCarthy
- Urbanisation in India spatial dimensions -V. L. S., Prakasa Rao, & V. K. Tewari
- An introduction to urban geography- J. R. Short
- Urban politics and public policy R. L., Lineberry, & I. Sharkansky
- (1993). Urbanization and urban systems in India: R. Ramachandran, A. Datta

B.A.SEMESTER-VIII MAJOR

Course Code: MJGG22 (D) SPECIAL PAPER

Course Title: GEOGRAPHY OF POPULATION, GENDER AND DEVELOPMENT (Practical)

Time: 4 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

The course aims:

- to impart knowledge on various measures in Population Geography
- to focus on various data sources related to population and gender studies
- to enhance knowledge related to the challenges of conducting survey in gender research
- to introduce the project report based on the aspects of Population Geography and Gender.

COURSE LEARNING OUTCOME:

On completion of the course, students would be able:

- to enhance the skills of learners about the qualitative and quantitative analysis of the Geography of Population and Gender related issues
- to orient learners with the relevant tools and techniques for understanding the dynamics of the Geography of Population.
- to equip learners with the measures to conduct field research in population and gender studies.

COURSE CONTENT

Unit -1.0: Nature and Representation of Data

1.1. Importance of data in Population and Gender studies

1.2. Understanding the data source of census and sample surveys

1.3. Data analysis, interpretation, and representation through Spreadsheet

1.4. Data interpretation through SPSS

Unit-2.0: Population Dynamics:

2.1. Density of population, MMR, WPR, sex ratio, age-sex pyramid, dependency ratio

2.2. Rates of Population Growth; Population Projections

2.3. Crude and standardized measures of fertility estimates

2.4. Crude and standardized measures of mortality estimates

Unit-3.0: Development and Gender Issues

3.1. Human Development Index; Multi-dimensional Poverty Index

3.2. Gender Development Index

3.3. State Health Index

3.4. Net Enrolment Ratio, Gross Enrolment Ratio, Literacy and Dropout Rates

Unit-4.0: Field Survey

4.1. Primary data collection through questionnaire

4.2. Application of Qualitative Data

4.3. Application of Quantitative Data

4.4. Primary data handling and representation

SUGGESTED READINGS:

- The dictionary of human geography. In The dictionary of human geography- R. J. Johnston
- A dictionary of human geography- A Rogers, N., Castree, & R. Kitchin,
- Human geography: people, place, and culture - E. H., Fouberg, A. B., Murphy, & H. J. De Blij,
- Spatial structures: Introducing the study of spatial systems in human geography- R. J. Johnston
- The spaces of postmodernity: readings in human geography- S. Flusty, M. Dear.
- Human geography: The basics- A. Jones
- Conducting research in human geography: theory, methodology and practice- R., Kitchin, & N. Tate
- Practising Human Geography. India- P. Cloke
- Human geography: society, space and social science- D., Gregory, R., Martin, & G. Smith
- Exploring Human Geography: A Reader. (2014). United Kingdom: Taylor & Francis.
- Human geography- W., Norton, & M. Mercier
- Practising human geography- P. Cloke,I. Cook, P. Crang,.M., Goodwin
- Techniques in human geography- J. Lindsay
- Researching human geography- K. Hoggart
- Theories of Development: Contentions, Arguments, Alternatives- R.Peet, E. Hartwick
- A question of place: Exploring the practice of human geography. In A question of place: exploring the practice of human geography- R. J. Johnston
- Qualitative research methods in human geography- I. Hay.
- Geography Matters: A Reader- Massey, Doreen and John Allen
- Feminism and Geography: The Limits of Geographical Knowledge- Gillian Rose
- Gendered Spaces -Daphne Spain

B.A. SEMESTER-VIII MAJOR

Course Code: MJGG22 (E) SPECIAL PAPER

Course Title: ADVANCED CLIMATOLOGY AND PEDOLOGY (Practical)

Time: 4 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to measure and represent climatic data
- to apply methods of environmental monitoring
- to conduct soil surveys and soil analyses
- to represent spatial distribution and variation of soil characteristics

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able to:

- to analyze climatic data
- to evaluate climate variability and its implications
- to identify soil patterns and characteristics
- to create ideas and suggest measures for land resource management

COURSE CONTENT:

Unit-1.0: Measurement and Representation of Climatic Parameters

1.1. Measurement of weather elements using traditional instruments and Automated Weather Station

1.2. Statistical Analysis of Climate Data; Representation of Climate Trends and Patterns: Deviational graphs, Relative Temperature Graph, Isanomals, Equipluves

1.3. Interpretation of atmospheric variables using satellite images

1.4. Global and Regional Climatological Data Sources: IMD-gridded products; Downscaling of GCM using statistical approach

Unit-2.0: Applied Climatological Techniques

2.1. Water budget; Water Cycle Changes

2.2. Aridity and Moisture Index; Mapping of Bioclimatic Zones

2.3. Climate Vulnerability Index

2.4. Application of Machine Learning in Climate Studies for Environment Monitoring

Unit-3.0 Soil Survey and Soil Sample Analysis

3.1. Identification of geomorphic unit-wise soil association

3.2. Techniques and Methods of Soil Sampling

3.3. Determination of soil colour; Measurement of soil temperature and soil moisture

3.4. Particle size analysis; estimation of organic C, N, P, K

Unit-4.0: Soil-physiographic Mapping and Applications

4.1. Digital Soil Mapping

4.2. Preparation of Soil Degradation Maps

4.3. Land Capability and Land Suitability Mapping

4.4. Watershed Prioritization for Land Resource Management

SUGGESTED READINGS:

- Elements of Practical Geography- R.L. Singh
- Practical Geography- A. Sarkar
- Climatology: An Atmospheric Science- J.E. Oliver and J.J. Hidore
- Soil and Climate- R. Lal and B.A. Stewart
- Soil Survey Manual- ICAR-NBSS&LUP
- Soil Genesis, Classification, Survey, and Evaluation – Vol. 1&2 - A.K. Kolay
- Fundamentals of Soils- J. Gerrard

B.A.S EMESTER-VIII

RESEARCH/DISSERTATION

Course Code: MJGG23

Course Title: GEOSPATIAL ANALYSIS AND GEOVISUALIZATION (Practical)

Time: 4 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to get familiar with geo-environmental analysis using remote sensing techniques
- to understand geospatial tools for urban survey and infrastructure mapping
- to understand web mapping
- to get accustomed to geospatial analysis in the context of climate change

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to use high-resolution satellite data for geographical research
- to apply geospatial analysis for resource mapping
- to use mobile mapping and interactive cartography for geographical research

COURSE CONTENT:

Unit-1.0: Web GIS and Cartography for Geographical Research

1.1 Introduction to QGIS and Web Mapping

1.2 Generation of Spatial Quarries

1.3 Site Suitability Analysis

1.4 Mobile Mapping and Interactive Cartography

Unit-2.0: Application in Geomorphic Research

2.1 Analysis of Channel and In-channel Morphology: NDWI and MNDWI

2.2 River Bank Migration and Mapping: IDW and Krigging Techniques

2.3 Construction of Cross-section and Longitudinal Profile Using SRTM Data

2.4 Mapping of Channel Bathymetry Using SRTM Data

Unit-3.0: Application in Human Settlement Studies

3.1 High Resolution Satellite Data in Optical Remote Sensing; Use of Thermal Microwave Data

3.2 Introduction to Geospatial Tools for Urban Survey and Infrastructure Analysis

3.3 Road Transport Volume and Capacity Assessment

3.4 Unmanned Aircraft System (UAS): Principles and Use of Drone for Geospatial Analysis

Unit-4.0: Geospatial Analysis in the context of Biodiversity and Climate Change

4.1. Land/Sea Surface Temperature Analysis and Mapping

4.2. Estuarine and Coastal Vulnerability Assessment

4.3. Spatial Distribution of Disease: Analysis of Diffusion and Mapping

4.4. Introduction to Point Cloud Data: Application of LiDAR in solving human problems

SUGGESTED READINGS:

- Fundamentals of remote sensing- George Joseph
- Principles of Geographical Information Systems-Spatial Information Systems and Geostatistics, - P. A. Burrough and R. A. McDonnell.
- Introduction to remote sensing- J. B. Campbell
- Introduction to geographic information systems - K. T. Chang
- Getting Started with Geographic Information Systems- K. C. Clarke, 2001
- Fundamentals of Geographic Information Systems - M. N. DeMers
- Remote sensing of vegetation: Principles, techniques, and applications-, G. M. Foody. Remote sensing of the environment: An earth resource perspective-, J. R. Jensen. Computer processing of remotely-sensed images: An introduction- P. M. Mather Remote sensing and GIS integration: Theories, methods, and applications- Q. Weng.

B.A. SEMESTER-VIII

Research/Dissertation

Course Code: MJGG24

Course Title: AREA STUDY (Practical)

Time: 4 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*

(4 credits, one credit per unit **)**

Area study enables the students to follow the guided path to carry out the research on a topic of his/her special interest. The objective of the course is to initiate the process of literature review in the field of the special paper opted by the incumbent and acquire report writing skills. The subject content includes the following broad steps:

- Framing of Research Design
- Literature Review in search of research gap; Research Methodology
- Data Collection, Computation, and Tabulation, followed by Cartographic works
- Data Analysis, Interpretation for bringing out Findings
- Proposals, Suggestions, and drawing of conclusions
- Presentation of Report on Area Study

VISVA-BHARATI

DEPARTMENT OF GEOGRAPHY

Four Year Undergraduate Programme

STUDENTS WHO DO NOT PERSUE FOR RESEARCH DEGREE IN UG PROGRAMME OF NEP BUT CONTINUES IN B.A.SEM-VII AND VIII.

Semester	Paper Code	Title of the Paper	Credit
B.A.SEM- VII	MJGG18 (H)	Soil and Bio-Geography	4
B.A.SEM- VII	MJGG20 (H)	Agricultural Geography	4
B.A.SEM-VIII	MJGG24 (H)	Industrial Geography	4

B.A.SEMESTER-VII MAJOR

Course Code: MJGG18 (H)

Course Title: SOIL AND BIO-GEOGRAPHY (Theory)

Time: 4 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to learn concepts of soil and soil degradation
- to familiarize Earth as a biospheric ecosystem and its internal organization

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able to:

- to apply the knowledge of soil science in the environmental and agricultural studies
- to apply ecological concepts to environmental issues

COURSE CONTENT:

Unit 1.0 Soil and its Utility

1.1 Soil constituents; Mechanical composition: density and pore space

1.2 Pedogenic Regimes: Podsolization, Laterization, Calcification, Gleization, Salinization

1.3 Soil as resource for agricultural development: Factors affecting soil fertility

1.4 Soil nutrients for plant growth, Integrated Nutrient Management

Unit 2.0: Soil and Water Conservation in India

2.1 Causes of soil erosion and degradation

2.2 Soil Conservation: Thrust Areas and Emerging Issues

2.3 Principles of Integrated Basin Management

2.4 Water Conservation: Trust Areas and Emerging Issues

Unit 3.0 Concept and Components of Biogeography

3.1 Development of Biogeography', Relationship of Biogeography with other branches of Geography

3.2 Concepts of Biosphere: Definition and subdivisions

3.3 Concept of Ecosystem: Importance of Ecosystem in the study of Biogeography

3.4 Concept of Biomes and Biodiversity: Definition, Distribution and importance

Unit 4.0 Environmental Controls on Plants and Animals

4.1 Environmental control on Plants through water and soil characteristics: Global distribution of Forest, Grassland and Desert shrubs

4.2 Concept of Ecotone, Specific Zero and Survival Limit

4.3 Environmental control on Plant and Animal reproduction: Reproductive signals of plants and animal species

4.4 Bioclimatic Regions: Characteristics and Importance on Global and Indian perspectives

SUGGESTED READINGS:

- Factors of Soil Formation: A System of Quantitative Pedology- H. Jenny
- The Nature and Properties of Soils- R.R. Weil and N.C. Brady
- Soil Genesis, Classification, Survey, and Evaluation – Vol. 1&2 - A.K. Kolay
- Fundamentals of Soils- J. Gerrard
- Biogeography- S. Singh

B.A.SEMESTER-VII MAJOR

Course Code: MJGG20 (H)

Course Title: AGRICULTURAL GEOGRAPHY (Theory)

Time: 4 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able to:

COURSE CONTENT:

Unit 1.0: Dimensions of Agri-Ecosystem

1.1 Concept of Agri-ecosystem and its components: Physical and Human

1.2 Climate change and its impact on Agri-ecosystem

1.3 Classification of Land and Land use

1.4 Farming system and types of Farming Region

Unit 2.0: Focus and Approaches to Agricultural Geography

2.1 Traditional Agricultural Geography

2.2 Behavioural approach in Agricultural Geography

2.3 Political Economy approach to Agricultural Geography

2.4 Theories to explain agricultural changes

Unit 3.0: Changing Agricultural Scenario and Policies

3.1 Globalization: Concept and nature of agricultural crop production

3.2 Changes in farming system due to globalization: Productivist and Post-Productivist agriculture

3.3 Competition on Land use: Agricultural vs. Non-agricultural

3.4 Geography of Hunger: Dimensions and Policies

Unit 4: Agricultural Geography in Indian Context

4.1 Agricultural Regions of India: Agro-climatic, Agro-ecological and Crop Combination Regions

4.2 Food Deficit and Food Surplus Regions of India

4.3 Agricultural Revolution in India: Green, White, Blue and Pink

4.4 Planning Policies in Indian Agriculture

SUGGESTED READING:

- Agricultural Geography: by Husain Majid (Rawat Publications)
- Agricultural Geography: by Vijoy K. Sinha, S.N. Pandey, H.N. Dutta, Aftab Anwar Shaikh & Ar. Dushyant P. Kamat (Amazon.in)
- Agricultural Geography in India: by Kashi Nath Singh (Sunrise Publications)
- Studies in Agricultural Geography: by Ali Mohammad (Amazon.in)
- Agricultural Geography: (कृषी भूगोल) by Prof. Dr. Lalit Sandanshiv (Atharva Publications)
- Systematic Agricultural Geography: (Internet Archive)
- Agricultural Geography: for B.A. by H.S. Garg (SBPD Publications)
- Agricultural Geography: for M.A. and B.A. (SBPD Publications)
- The Dynamics of Agricultural Change: by David Grigg (Alibris)
- Agricultural Geography: by Leslie Symons (Alibris)
- The Geography of Rural Change: by Brian W. Ilbery (Alibris)
- An Introduction to Agricultural Geography: by David Grigg (Alibris)
- The Study of Agricultural Systems: by Thomas A. Rumney (Alibris)
- Agriculture and Environment: A Geographical Perspective: by David J. Briggs (Alibris)
- The Look of the Land: by John F. Hart (Alibris)

B.A.SEMESTER-VII MAJOR

Course Code: MJGG20 (H)

Course Title: INDUSTRIAL GEOGRAPHY (Theory)

Time: 4 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able to:

COURSE CONTENT:

Unit 1.0: Contents, Tools and Basic Inputs

1.1 Manufacturing as an economic activity: Definition, Scope and Approaches to the study of Industrial Geography

1.2 Geonomic parameters of Land, Labour, Capital, Market and Organization as individual and collective determinants of industrial location

1.3 Classification of industries: SIC and NIC

1.4 Types of raw materials and Industrial Location

Unit 2.0: Market, Transportation Cost, Linkages and Indian Industrial Situation

2.1 Typology of Market : Modes of transportation, transportation cost and structure

2.2 Horizontal and vertical expansion possibilities of market: Target group and socio-economic behavioral factors of consumers, Agglomeration and Linkages

2.3 Industrialisation and its global history

2.4 Political Economy and Industrial Policies

Unit 3.0: Basics of Industrial Location Theories

3.1 Industrial location theory: Alfred Weber, Importance of Critical Isodapane and labour locations

3.2 Concept of Market demarcation: Uniform and variable transport cost of Tord Palander's model

3.3 Industrial location theory proposed by August Lösch
3.4 Space economy and concepts of Walter Isard's theory

Unit 4.0: Industrial Geography in Indian Context

4.1 Industrialization Pattern and its Growth
4.2 Industrial Regions: Major and Minor
4.3 Large Scale Industries: Progress and Problems
4.4 Unorganized Section and Informalization of the Indian Economy

SUGGESTED READINGS:

- Industrial Geography: by S.D. Maurya
- Industrial Geography of India: by B.N. Sinha
- The New Industrial Geography: Regions, Regulation and Institutions: by Trevor J. Barnes and Meric S. Gertler
- Industrial Geography: by Sunil Baghla
- Commercial and Industrial Geography: A Text Book for Schools, Colleges, and Reference
- Industrial Geography: by Neeru Mahajan
- Industrial Geography: by Bisht
- Industrial Geography: by S. Singh
- Marxist Researchers and the New Industrial Geography: by David Harvey
- Planning Theory: From the Political Debate to the Methodological Reconstruction: by Franco Archibugi
- Quantitative Eco-nomics: How Sustainable are our Economies? by Peter Bartelmus
- The Geographica: by Strabo
- Political Essay on the Kingdom of New Spain: by Alexander von Humboldt

VISVA-BHARATI

DEPARTMENT OF GEOGRAPHY

Proposed Course Structure (MINOR PAPER)

for Academic Session 2023-2024

Four Year Undergraduate Programme

Paper Type	Semester	Paper Code	Paper Name	Credits	WCH
Minor	I and II	MNGG01	Introduction to Physical Geography	4	4
Minor	III and IV	MNGG02	Introduction to Human Geography	4	4
Minor	V and VI	MNGG03	World Geographies: Regional Aspects	4	4
Minor	VII	MNGG04	Geography of India	4	4

B.A. SEMESTER-I and II
MINOR
Course Code- MNGG01
Course Title: INTRODUCTION TO PHYSICAL GEOGRAPHY

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the global dynamics of the Earth
- to get familiar with geomorphic forms and processes
- to understand the dynamics of the interface of the atmosphere and the hydrosphere
- to familiarize Earth as a biospheric ecosystem and its internal organization

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to get familiar with the interrelatedness of the physical components of the Earth
- to integrate and analyze physical and biological components of the Earth
- to apply ecological concepts to environmental issues

COURSE CONTENT:

Unit- 1.0: Geomorphology And Geotectonics

1.1 Origin of the Earth and its Interior

1.2 Epeirogenic and Orogenic Movement, Earthquake and Volcanism

1.3 Weathering, Mass wasting and Erosion

1.4 Erosional and Depositional Landforms: Fluvial, Glacial and Aeolian

UNIT-2.0: Climatology and Oceanography

2.1 Atmosphere: Structure and Composition, Global warming

2.2 Pressure Belts and Wind Systems

2.3 Humidity and Precipitation, El Nino and La Nina

2.4 Origin and Distribution of Ocean Basins; Ocean Currents and Tides

UNIT- 3.0: Soil and Bio-geography

3.1 Soil Forming Processes and Soil Classification

3.2 Soil Erosion and Conservation

3.3 Concept of Biosphere and Biomes; Global Distribution of Forest, Grasslands and Desert Shrubs

3.4 Concept of Ecosystem, Food Chain and Food Web

UNIT- 4.0: Physical Geography of West Bengal

4.1 Geology

4.2 Relief and Drainage

4.3 Soil and Natural Vegetation

4.4 Climate

SUGGESTED READINGS:

- General Climatology- H. J. Critchfield
- Climatology- D. S. Lal
- Geomorphology- S. Singh
- Introduction to Physical Geography- A. Strahler
- Principles of Geomorphology- W.D. Thornbury
- The Physical Basis of Geography: An Outline of Geomorphology- S.W. Wooldridge and R.S. Morgan
- Factors of Soil Formation: A System of Quantitative Pedology- H. Jenny
- The Nature and Properties of Soils- R.R. Weil and N.C. Brady
- Biogeography- S. Singh

B.A. SEMESTER-III and IV
MINOR
Course Code- MNGG02
Course Title: INTRODUCTION TO HUMAN GEOGRAPHY

Time: 3 Hours

Full Marks-100 (External-80Marks, Internal-20 Marks)
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the nature of human geography
- to get familiar with the dynamics of human geography
- to understand the emergence of human settlements
- to familiarize the aspects of human habitat and society

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to appreciate the changing nature of human geography
- to get familiar with the diversification of economic activities
- to conceptualize issues related to social well-being and development

COURSE CONTENT:

Unit-1.0: Basics of Human Geography

1.1	Nature, Scope and Branches of Human Geography
1.2	Human- Environment Relationship: Determinism and Possibilism, Different branches of Human Geography
1.3	Human Resources Regions of the World
1.4	Food gathering and Hunting economies of India Tribes

Unit-2.0: Population Geography

2.1	Concept of Under, Optimum and Over Population
2.2	Population Growth in Developed and Developing Countries: Determinants and Patterns
2.3	Population Explosion and Contemporary Social and Environmental Issues
2.4	Age-Sex Pyramids and Ageing of Population

Unit-3.0: Settlement Geography

3.1	Rural Settlements: Site, Situation and Morphology
3.2	House Types and their Building Materials in India

3.3 Emergence and Characteristics of Urban Settlements

3.4 Hierarchy of Urban Settlements

Unit-4.0: Human Geography of West Bengal

4.1 Renaissance in Colonial Bengal: Impact of Social and Cultural Reforms

4.2 Partition of India and its Effect on Economy and Society of West Bengal

4.3 Agriculture of West Bengal: Problems and Prospects

4.4 Industrialisation in West Bengal: Constraints and OpportUnities

SUGGESTED READINGS:

- The Dictionary of Human Geography- R. J. Johnston
- A Dictionary of Human Geography- A. Rogers, N. Castree, & R. Kitchin
- Human geography: people, place, and culture- E. H. Fouberg, A. B. Murphy, & H. J. De Blij
- Spatial structures: Introducing the study of spatial systems in human geography- R. Johnston
- The spaces of postmodernity: readings in human geography- M. Dear, & S. Flusty
- Human geography- The basics- A. Jones
- Key texts in human geography- P. Hubbard, R. Kitchin, & G. Valentine
- Conducting research in human geography: theory, methodology and practice- R. Kitchin, & N. Tate.
- Philosophy and human geography: an introduction to contemporary approaches- R. Johnston
- Practising Human Geography- P. Cloke.
- Human geography: society, space and social science- D. Gregory, R. Martin, & G. Smith.
- Human geography- W. Norton, & M. Mercier
- Practicing Human Geography - P. Cloke, I. Cook, P. Crang, M. Goodwin, J. Painter.
- Techniques in Human Geography- J. Lindsay
- Researching human geography- K. Hoggart
- Qualitative research methods in Human Geography- I. Hay.
- Introduction to Settlement Geography-, S. Ghosh.
- Human Geography- M. Husain
- Geography of Population- R. C. Chandna
- Human and Economic Geography- G. C. Morgan, C. L. Goh
- The Human Mosaic: A Cultural Approach to Human Geography- P. L. Price, M. Domosh,, R. P. Neumann

B.A. SEMESTER-V and VI
MINOR
Course Code- MNGG03
Course Title: WORLD GEOGRAPHIES: REGIONAL ASPECTS

Time: 3 Hours

Full Marks-100 (External-80Marks, Internal-20 Marks)
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the physical and environmental issues of the world
- to get familiar with the social and economic issues of the world
- to get familiar with global geopolitics and its recent trends

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to appreciate geographical knowledge of environment and their relevance
- to concern contemporary issues of geo-political national interests

COURSE CONTENT:

Unit-1.0: Physical and Environmental Issues in Geography

1.1 Global Warming and Climate Change

1.2 Biodiversity : Relevance of Conservation

1.3 Natural Hazards and its Responses

1.4 Environmental Pollution and Anthropogenic Hazards

Unit-2.0: Regional Geography: Concepts and Practices

2.1 Regional Geography: Scope, Content and Relevance

2.2 Regions: Definition and Types, Regional approach versus Systematic approach

2.3 Major Natural Regions of the World

2.4 Regional Planning: Issues and Challenge

Unit-3.0: Concepts and Issues in Population Geography

3.1 Demographic Concern: Population Explosion and Under Growth in Developed and Developing Societies respectively

3.2 Population Policies: Pro-natalist and Anti-natalist

3.3 Human and Gender Development

3.4 Migration and Global Brain Drain versus Brain Gain

Unit-4.0: Economic, Social and Cultural Issues in Geography

4.1 Globalization, Privatization and Liberalization

4.2 Global Energy Issues and Conflicts

4.3 Major International Organizations and Trade Blocs

4.4 Social and Cultural Geographies: Language, Race and Ethnicity

SUGGESTED READINGS:

- Geography of the World's Major Regions- J. Cole
- Regional Worlds: Advancing the Geography of Regions- M. Jones & A. Paasi
- Population Geography: J. I. Clarke
- Facing Climate change Together- C. Gautier & J.L. Fellous
- Climate Change in Developing Countries-M.A. van Drunen, R. Lasage & C. Dorland
- Human geography: people, place, and culture- E. H. Fouberg, A. B. Murphy, & H. J. De Blij

B.A. SEMESTER-VII
MINOR
Course Code- MNGG04
Course Title: GEOGRAPHY OF INDIA

Time: 3 Hours *Full Marks-100 (External-80Marks, Internal-20 Marks)*
(4 credits, one credit per unit)

COURSE LEARNING OBJECTIVES:

To impart necessary knowledge and skills to enable students:

- to understand the variations in the physical and biotic aspects
- to get familiar with the economic bases for a self-reliant India
- to get familiar with global geopolitics and its recent trends

COURSE LEARNING OUTCOMES:

On completion of the course, students would be able:

- to appreciate geographical knowledge of environment and their relevance
- to concern contemporary issues of geo-political national interests

COURSE CONTENT:

Unit-1.0: Physical and Biotic Aspects

1.1 Geology

1.2 Physiographic Divisions

1.3 Climate and Soil

1.4 Natural Vegetation and Wildlife

Unit-2.0: Economic Aspects

2.1 Indian Agriculture: Green Revolution and its Impact, Agriculture Reforms in India

2.2 Minerals of India: Spatial Distribution and Mineral Reserve

2.3 Energy Resources: Non-renewable and Renewable Sources

2.4 Factors determining Location of Industries, Role of MNCs and SEZs; Industrial Corridors

Unit-3.0: Environmental Aspects

3.1 Issues related to Desertification and Deforestation

3.2 Environmental Pollution and Mitigation Strategies

3.3 Environmental Impact Assessment: Concept and Practices

3.4 Environmental Movements in India

zeUnit-4.0: Political Aspects

4.1 Geopolitics of Indian Ocean

4.2 Importance of Indian Coast and Strategic significance of Indian Ocean

4.3 Border and Share of River water disputes between India and neighbouring countries

4.4 Strategic, Regional and Economic Alliances benefiting India

SUGGESTED READINGS:

- Geography of India- M. Husain
- India A Comprehensive Geography- D. R. Khullar. Kalyani Publication, New Delhi.
- Geography of India- R. C. Tiwari
- Political Geography of India: A Contemporary Perspective- S. Adhikari
- India: A Regional Geography- R. L. Singh
- India and Pakistan- Land, People and Economy- O. H. K. Spate, and A. T. A. Learmonth
- Environmental Geography- S. Singh
- Geology of India- D. N. Wadia
- Soil Genesis, Classification Survey and Evaluation, Vol. II- A. K. Kolay