National Education Policy-2020

M.A./M.Sc. GEOGRAPHY

Syllabus-2026

बाबासाहेब भीमराव अम्बेडकर विश्वविद्यालय

Babasaheb Bhimrao Ambedkar University
(A Central University)
Lucknow

GEOGRAPHY COURSE STRUCTURE M.A./M.Sc.

Sem	Course Code	Paper Title	Course Type	Credit	CIA	ESE	Max Marks
I	MGH101T	Geographical Thought: Concepts and Issues	Theory	4	25	75	100
I	MGH102T	Advanced Geography of India	Theory	4	25	75	100
I	MGH103T	Geomorphology-Theories and Concepts	Theory	4	25	75	100
I	MGH104T	Principles of Remote Sensing and GIS	Theory	4	25	75	100
I	MGH105P	Practical of Remote Sensing and GIS	Practical	4	25	75	100
I	MGH106T	Fundamental Principles of Remote Sensing and GIS	Theory (OE)	4	25	75	100
II	MGH201T	Regional Planning and Development	Theory	4	25	75	100
II	MGH202T	Advanced Climatology & Biogeography	Theory	4	25	75	100
II	MGH203T	Advanced Oceanography	Theory	4	25	75	100
II	MGH204T	Hydrology & Water Resource Management	Theory	4	25	75	100
II	MGH205P	Statistical Methods and Digital Cartography	Practical	4	25	75	100
II	MGH206T	Application of Remote Sensing and GIS in Earth Systems	Theory (OE)	4	25	75	100
III	MGH301T	Advance Remote Sensing & GIS	Theory	4	25	75	100
III	MGH302T	Geography Of Population & Migration	Theory	4	25	75	100
III	MGH303T	Economic and Resource Geography	Elective	4	25	75	100
III	MGH304T	Marketing Geography	Elective	4	25	75	100
III	MGH305T	Industrial Geography	Elective	4	25	75	100
III	MGH306T	Cultural Geography	Elective	4	25	75	100
III	MGH307P	Field Survey and Educational Tour	Practical	4	25	75	100
III	MGH308R	Dissertation (Progressive)	Research	4	25	75	100
IV	MGH401T	Urban Geography	Theory	4	25	75	100
IV	MGH402T	Geography of Agricultural Transformations	Theory	4	25	75	100
IV	MGH403T	Ecology & Ecosystem Services Assessment	Elective	4	25	75	100
IV	MGH404T	Rural Geography	Elective	4	25	75	100
IV	MGH405T	Geography of Health	Elective	4	25	75	100
IV	MGH406T	Contemporary Political Geography	Elective	4	25	75	100
IV	MGH407P	Geospatial Techniques and Surveying	Practical	4	25	75	100
IV	MGH408R	Dissertation (Submitted)	Research	4	25	75	100

M.A./M.Sc. 1st Year, Semester I, Course I (Theory)

Programme/Class: M.A./M.Sc.	**Year:** FIRST	**Semester:** FIRST
Subject: Geography		
Course Code: MGH101T	**Course Title:** Geographical Thought: Concepts and Issues	

Course Objectives:

- To critically examine the evolution of geographical thought from classical to contemporary perspectives.
- To analyze and evaluate key philosophical and theoretical frameworks in geography.
- To apply advanced geographical theories and methodologies to real-world issues and case studies.
- To develop independent research skills and contribute to scholarly discourse in geography

Course Learning outcomes: Students will be able to understand:

- Gain comprehensive insights into the evolution and methodologies of geographical thought.
- Develop skills to critically evaluate philosophical and theoretical advancements in geography.
- Apply geographical theories to real-world challenges and independent research.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)

Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w

Unit	Topics	No. of Lectures
I	History of Geographical Thought, Changing Paradigm of Geography; Dualism in Geography: Systematic v/s Regional, Physical v/s Human.	10
II	Positivism in Geography, Quantitative Revolution and its Impact, Systems and Models in Geography.	10
III	Concept of Earth Surface, Concept of landscape, Concept of Region and its Typology and Concept of Spatial Organization.	12
IV	Radical Geography; Geography as a Science of Human Ecology; Behavioralism & Phenomenology in Geography. Post-modernism in Geography; Nature and Recent Trends in Geography; Progress of Geography in India.	13

Suggested Readings:

1. Ali, S.M. (1960): Arab Geography, Institute of Islamic Studies, Aligarh Muslim University, Aligarh, First Edition.
2. Daniel, P., Bradshaw, M., Shaw, D. and Sidaway, J. (2000): Human Geography. Issues for the 21st Century. Prentice Hall, London.
3. Diddee, J. (ed.) (1990): Indian Geography, Institute of Indian Geographers, Pune, first edition.
4. Dikshit, R. D. (2003): Geographical Thought. A Critical History of Ideas. Prentice-Hall of India, New Delhi. (in English and Hindi).
5. Dube, B. (1967): Geographical Concepts in Ancient India, National Geographical Society of India, Varanasi
6. Getice, A., Getis, J. and Fellman, J. D. (2007): Introduction to Geography. 10th edition. McGrawHill, New York.
7. Hartshorne, R. (1959): Perspective on the Nature of Geography, John Murray, London
8. Harvey, D. (1969): Explanations in Geography. Arnold, London.
9. Holt-Jensen, A. (1980): Geography: Its History and Concepts. Harper and Row Publishers, London.
10. Husain, Majid. (2002): Evolution of Geographical Thought, Rawat Publications, Jaipur.
11. Johnston, R., Gregory, D., Pratt, G., Watts, M. and Whatmore, S. (2003): The Dictionary of Human Geography. Blackwell Publishers, Oxford. 5th edition.
12. Johnston, R. and Sidaway, J.D. (2004): Geography and Geographers: Anglo-American Human Geography Since 1945, Arnold Publishers, London.
13. Rawling, E. and Daugherty, R. (eds.) (2005): Geography into the Twenty-first Century. 2nd edition. John Wiley and Sons, Chichester.
14. Taylor, G. (ed.) (1953): Geography in the Twentieth Century. Methuen and Company, London.

M.A./M.Sc. 1st Year, Semester I, Course II (Theory)

Program/Class: M.A./M.Sc.	**Year:** FIRST	**Semester:** FIRST
Subject: Geography		
Course Code: MGH102T	**Course Title:** Advanced Geography of India	

Course Objectives:

- Analyze India's physical structure and population patterns.
- Examine links between natural and man-made resources.
- Interpret India's physical, cultural, and economic features.
- Assess interactions shaping India's socio-economic landscape.

Course Learning Outcomes: On completion of this course, learners will be able to:

- Understand the physical structure of India and its Population Characteristics.
- Understand the natural and Man-made Resources and their interrelationship.
- Understand the physical, cultural, and economic characteristics of India.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)

Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w

Unit	Topics	Lectures
I	Introduction. Making of India through geological times, structure and relief; Drainage systems and watersheds; Physiographic divisions; Climate characteristics: mechanism of the Indian Monsoon; Forests: types, distribution and utilization.	10
II	Population Characteristics. Population growth: trends and pattern; Population: distribution and density; Ageing of population; Sex and literacy differentials; Ethnic groups; Trends of urbanization; National population policy - 2000.	10
III	Agricultural Scene. Agricultural characteristics and trends; Land holdings, land tenure, land consolidation and land reforms; Infrastructure: irrigation, power, fertilizer, HYV seeds and farm technology; Green, white, blue and yellow revolutions.	12
IV	Industrial Resource Base. Regional distribution and development potentials of mineral and power resources; New industrial policy: Globalization and liberalization; Industrial complexes and industrial regions; Transport development: rail and road; Geographical regions; Detailed study of the Middle Ganga plain and Karnataka plateau region.	13

Suggested Readings:

1. Chapman, G. and Baker, K.M. (eds.) (1992): The Changing Geography of Asia. Routledge, London.

2. Farmer, B.H. (1983): Introduction to South Asia. Methuen and Company Ltd., London.
3. Ganguly, S. and Neil, DeVotta (eds.) (2003): Understanding Contemporary India. Lynne Reinner Publishers., Boulder and London.
4. Gole, P. N. (2001): Nature Conservation and Sustainable Development in India. Rawat Publications, Jaipur and New Delhi.
5. Johnson, B. L. C. (ed.) (2001): Geographical Dictionary of India. Vision Books, New Delhi.
6. Johnson, B.L.C. (1983): Development in South Asia. Penguin Books, Harmonsworth.
7. Khullar, D. R. (2006): India. A Comprehensive Geography. Kalyani Publishers., New Delhi. 144.
8. Krishnan, M. S. (1968): Geology of India and Burma. 4th edition. Higgin Bothams Private Ltd., Madras.
9. Nag, P. and Gupta, S. S. (1992): Geography of India. Concept Publishing. Company, New Delhi.
10. Sharma, T. C. (2003): India: Economic and Commercial Geography. Vikas Publication, New Delhi.
11. Singh, J. (2003): India: A Comprehensive and Systematic Geography. Gyanodaya Prakashan, Gorakhpur.
12. Singh, R. L. (ed.) (1971): India. A Regional Geography. National Geographical Society of India, Varanasi.
13. Spate, O.H.K., Learmonth, A.T.A. and Farmer, B. H. (1979): India and Pakistan. Methuen and Company Ltd., London.
14. Subbarao, B. (1959): The Personality of India. University of Baroda Press, Baroda.
15. Sukhwal, B.L. (1987): India. Economic Resource Base and Contemporary Political Patterns. Sterling Publication, New Delhi.

M.A./M.Sc. 1st Year, Sem. I, Course III (Theory)

Programme/Class: M.A./M.Sc.	**Year:** FIRST	**Semester:** FIRST
Subject: Geography		
Course Code: MGH103T	**Course Title:** Geomorphology - Theories and Concepts	

Course Objectives:

- Evaluate geomorphological theories.
- Analyze geomorphic processes and landscapes.
- Apply research methods in geomorphology.
- Use theory in practical contexts.

Course outcomes: Students will be able to understand:

- Understand core geomorphological theories and principles to analyze landform development.
- Develop advanced skills in analyzing and interpreting geomorphological processes and landscapes.
- Apply modern and traditional geomorphological methods to conduct empirical research.
- Utilize theoretical knowledge in practical scenarios.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w	

Unit	Topics	No. of Lectures
I	Meaning, Scope and Fundamental Concepts of Geomorphology, Evolution of Geomorphic Ideas during Medieval and Modern Period.	10
II	Geological Time Scale, Karst and Coastal Landform, Models of Landscape Developed by W.M. Davis, W. Penk and L.C. King.	10
III	Earth Movements- Endogenetic and Exogenetic Forces, Concept of Plate Tectonics, Mountain Building, Vulcanicity and Earthquakes.	13
IV	Morphometric Analysis of Relief Hypsometric Curve, Altimetric Frequency Curve, Histogram and Clinographic Curve; Strahler's Method of Drainage Ordering, Frequency and Density of the Drainage.	12

Suggested Readings:

1. Singh, Savindra (2018), Physical Geography (Eng./Hindi) Allahabad, India: Prayag Pustak
2. Huggett, R.J. (2007): Fundamentals of Geomorphology. New York, U.S.A.: Routledge.
3. Khullar, D.R. (2012). Physical Geography. New Delhi. India: Kalyani Publishers.
4. Strahler, A. H. and Strahler, A N. (2001): Modern Physical Geography (4/E). New York, U.S.A.: John Wiley and Sons, Inc.

5. Thornbury, W. D. (2004): Principal of Geomorphology. New York, U.S.A.: Wiley.
6. Bloom, A. L. (2003). Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, New Delhi, India: Prentice-Hall of India
7. Kale V. S. and Gupta. A. 2001. Introduction to Geomorphology, Orient Longman Limited, Calcutta.
8. Keary, P. and Vine, M. 1997. Global Tectonics, 2nd edition, Blackwell Scientific Publications, Oxford.
9. King. C. A. M. 1972. Beaches and Coast, Edward Arnold (Publishers) Ltd., London.
10. Knighton, D.1998: Fluvial Forms and Processes: A New Perspective, Arnold, London.
11. Morisawa, M. 1985. Rivers, Longman, London.
12. Murthy, K.S. 1998. Watershed Management in India, 3rd edition, Wiely Eastern Ltd./ NEW AGE INTERNATIONAL Ltd., New Delhi

M.A./M.Sc. 1st Year, Sem. I, Course IV (Theory)

Program/Class: M.A./M.Sc.	**Year:** FIRST	**Semester:** FIRST
Subject: Geography		
Course Code: MGH104T	**Course Title:** Principles of Remote Sensing and GIS	

Course Objectives:

- Introduce the basic concepts and principles of Remote Sensing and Geographic Information System (GIS).
- To understand the components, platforms and data acquisition process in Remote Sensing.
- Understanding of the basic concepts of GIS and spatial data.
- Develop an understanding of the applications of Remote Sensing and GIS in geographical studies.

Course Learning Outcomes: On completion of this course, learners will be able to:

- Understand the basic concepts, principles and components of Remote Sensing and GIS.
- Explain the process of electromagnetic radiation, image acquisition and interpretation.
- Describe different types of spatial and attribute data used in GIS.
- Apply basic knowledge of Remote Sensing and GIS in environmental and geographical studies.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w	

Unit	Topics	L
I	Introduction to Remote Sensing: Meaning, Definition, Scope and History of Remote Sensing; Principles of Remote Sensing; Electromagnetic Radiation (EMR), Electromagnetic Spectrum, Atmospheric Windows and Interaction of EMR with Atmosphere and Earth's Surface.	10
II	Sensors and Platforms: Passive and Active Sensors; Spatial, Spectral, Radiometric and Temporal Resolution; Aerial Photography and Satellite Remote Sensing; Introduction to Major Earth Observation Satellites (Landsat, IRS, Sentinel).	10
III	Introduction to GIS: Meaning, Components and Functions of GIS; Spatial and Attribute Data; Raster and Vector Data Models; Coordinate Systems, Map Projection and Datum; Basic GIS Data Input, Storage and Management.	13

IV	Applications of Remote Sensing and GIS: Land Use/Land Cover Mapping, Agriculture, Forestry, Water Resources, Urban Planning, Disaster Management, Environmental Monitoring and Natural Resource Management; Introduction to GPS and its Applications.	12

Suggested Readings:

1. Joseph, G. (2005). *Fundamentals of Remote Sensing*. Universities Press, Hyderabad.
2. Lillesand, T. M., Kiefer, R. W. & Chipman, J. W. (2015). *Remote Sensing and Image Interpretation* (7th Ed.). John Wiley & Sons.
3. Campbell, J. B. & Wynne, R. H. (2011). *Introduction to Remote Sensing* (5th Ed.). Guilford Press.
4. Sabins, F. F. (2007). *Remote Sensing: Principles and Interpretation* (3rd Ed.). Waveland Press.
5. Jensen, J. R. (2016). *Introductory Digital Image Processing: A Remote Sensing Perspective* (4th Ed.). Pearson.
6. Chang, K. T. (2021). *Introduction to Geographic Information Systems* (10th Ed.). McGraw-Hill Education.
7. Burrough, P. A. & McDonnell, R. A. (1998). *Principles of Geographical Information Systems*. Oxford University Press.
8. Lo, C. P. & Yeung, A. K. W. (2007). *Concepts and Techniques of Geographic Information Systems* (2nd Ed.). Pearson Education.
9. Anji Reddy, M. (2018). *Remote Sensing and Geographical Information Systems*. BS Publications.
10. Kang-tsung Chang (2018). *Geographic Information System* (latest available edition). McGraw-Hill Education.

M.A./M.Sc. 1st Year, Sem. I, Course V (Practical)

Program/Class: M.A./M.Sc.	**Year:** FIRST	**Semester:** FIRST
Subject: Geography		
Course Code: MGH105P	**Course Title:** Practical of Remote Sensing and GIS	

Course Objectives:

- To familiarize students with the basic working environment of Remote Sensing and GIS software.
- To develop practical skills in downloading, handling and displaying spatial data.
- To introduce basic digitization and map preparation techniques.
- To enable students to prepare simple thematic maps using GIS.

Course Learning Outcomes:

On completion of this course, learners will be able to:

- Understand the basic interface and tools of GIS and Remote Sensing software.
- Download satellite imagery and spatial data from open-access sources.
- Perform basic georeferencing and on-screen digitization.
- Prepare simple thematic maps with essential map elements.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): P- 4/w	

Unit	Topics	No. of Lectures
I	Introduction to Remote Sensing and GIS Software (ArcGIS/QGIS); Familiarization with software interface, toolbars, table of contents, data frame, catalog and basic file management.	10
II	Downloading Spatial Data: Downloading satellite imagery (USGS Earth Explorer), OpenStreetMap data, administrative boundaries and other freely available spatial datasets; Introduction to coordinate system and projection.	10
III	Georeferencing scanned maps; Creation of point, line and polygon shapefiles; On-screen digitization of roads, rivers, settlements and administrative boundaries; Editing and attribute data entry.	14
IV	Preparation of simple thematic maps; Symbolization, labeling, map layout (Title, Legend, North Arrow, Scale Bar and Coordinate Grid); Exporting maps in PDF and image formats.	14

Suggested Readings:

1. Joseph, G. (2005). Fundamentals of Remote Sensing. Universities Press.
2. Lillesand, T. M., Kiefer, R. W. & Chipman, J. W. (2015). Remote Sensing and Image Interpretation. John Wiley & Sons.
3. Chang, K. T. (2021). Introduction to Geographic Information Systems. McGraw-Hill.
4. Burrough, P. A. & McDonnell, R. A. (1998). Principles of Geographical Information Systems. Oxford University Press.
5. Lo, C. P. & Yeung, A. K. W. (2007). Concepts and Techniques of Geographic Information Systems. Pearson Education.
6. Anji Reddy, M. (2018). Remote Sensing and Geographical Information Systems. BS Publications.
7. Sabins, F. F. (2007). Remote Sensing: Principles and Interpretation. Waveland Press.
8. Campbell, J. B. & Wynne, R. H. (2011). Introduction to Remote Sensing. Guilford Press.
9. Jensen, J. R. (2016). Introductory Digital Image Processing: A Remote Sensing Perspective. Pearson.
10. ESRI. ArcGIS Desktop Help (latest available documentation).

M.A./M.Sc. 1st Year, Sem. I, Course VI (Theory)

Programme/Class: M.A./M.Sc./M.Tech.	**Year:** FIRST	**Semester:** FIRST
Subject: Geography		
Course Code: MGH106T	**Course Title:** Fundamental Principles of Remote Sensing and GIS	

Course Objectives:

- Introduce the basic concepts and principles of Remote Sensing, Geographic Information System (GIS) and Global Positioning System (GPS).
- To understand the components, platforms and data acquisition process in Remote Sensing.
- Understanding of the basic concepts of GIS and spatial data.
- To familiarize students with the principles of GPS/GNSS-based positioning and its integration with RS and GIS.

Course Learning Outcomes: On completion of this course, learners will be able to:

- Understand the basic concepts, principles and components of Remote Sensing, GIS and GPS.
- Explain the process of electromagnetic radiation, image acquisition and interpretation.
- Describe different types of spatial and attribute data used in GIS.
- Explain the principles of GPS positioning and its role in geospatial data collection.
- Apply basic knowledge of Remote Sensing, GIS and GPS in environmental and geographical studies.

Credits: 4	**Open Elective**
Max. Marks: 25 (Internal) + 75 (External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)

Total No. of Lectures-Tutorials-Practical (in hours per week): L – 4/w

Unit	Topics	No. of Lectures
I	Introduction to Remote Sensing: Meaning, Definition, Scope and History of Remote Sensing; Principles of Remote Sensing; Electromagnetic Radiation (EMR), Electromagnetic Spectrum, Atmospheric Windows and Interaction of EMR with Atmosphere and Earth's Surface.	10
II	Sensors and Platforms: Passive and Active Sensors; Spatial, Spectral, Radiometric and Temporal Resolution; Aerial Photography and Satellite Remote Sensing; Introduction to Major Earth Observation Satellites (Landsat, IRS, Sentinel).	10
III	Introduction to GIS: Meaning, Components and Functions of GIS; Spatial and Attribute Data; Raster and Vector Data Models; Coordinate Systems, Map Projection and Datum; Basic GIS Data Input, Storage and Management.	12
IV	Global Positioning System (GPS) and Applications: Introduction to GNSS; GPS Segments – Space, Control	13

	and User; Principles of GPS Positioning: Trilateration and Pseudo-range; Sources of Error and Differential GPS (DGPS); Applications of Remote Sensing, GIS and GPS in Land Use/Land Cover Mapping, Agriculture, Forestry, Water Resources, Urban Planning, Disaster Management and Environmental Monitoring.	

Suggested Readings:

1. Joseph, G. (2005). Fundamentals of Remote Sensing. Universities Press, Hyderabad.
2. Lillesand, T. M., Kiefer, R. W. & Chipman, J. W. (2015). Remote Sensing and Image Interpretation (7th ed.). John Wiley & Sons.
3. Campbell, J. B. & Wynne, R. H. (2011). Introduction to Remote Sensing (5th ed.). Guilford Press.
4. Sabins, F. F. (2007). Remote Sensing: Principles and Interpretation (3rd ed.). Waveland Press.
5. Jensen, J. R. (2016). Introductory Digital Image Processing: A Remote Sensing Perspective (4th ed.). Pearson.
6. Chang, K. T. (2021). Introduction to Geographic Information Systems (10th ed.). McGraw-Hill Education.
7. Burrough, P. A. & McDonnell, R. A. (1998). Principles of Geographical Information Systems. Oxford University Press.
8. Lo, C. P. & Yeung, A. K. W. (2007). Concepts and Techniques of Geographic Information Systems (2nd ed.). Pearson Education.
9. Anji Reddy, M. (2018). Remote Sensing and Geographical Information Systems. BS Publications.
10. Hofmann-Wellenhof, B., Lichtenegger, H. & Wasle, E. GNSS – Global Navigation Satellite Systems: GPS, GLONASS, Galileo & more. Springer.

M.A./M.Sc. 1st Year, Semester II, Course I (Theory)

Program/Class: M.A./M.Sc.	**Year:** FIRST	**Semester:** SECOND
Subject: Geography		
Course Code: MGH201T	**Course Title:** Regional Planning and Development	

Learning Objectives

The learning objectives of this course are as follows:

- The students will be exposed to 'regional' approach in studying geography.
- The students will be conscious of the various facets of regional geography –
- foundations and dimensions, regional consciousness and identity, and forms and evolution.
- The students will be aware of the hierarchy of regional divisions of India.

Learning Outcomes

The learning outcomes of this course are as follows:

- The students will be able to understand and analyze the principal issues confronting the regions today.
- The students will get an insight into 'how regions work', through case-study from India.
- □ The students will be able to understand and analyze the principal issues confronting the different regions of India.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)

Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w

Unit	Topics	No. of Lectures
I	Concept of Regional Development: Changing paradigm, Sustainable development.	10
II	Indian Thoughts of Development: Ideas of Gandhi, Census of India and NITI Aayog. Identification of Regional Disparities: spatial patterns and temporal trends.	10
III	Regionalization for Sustainable Development: area development programmes, agro - climatic regions, metropolitan regions.	12
IV	Regional development strategies include growth centres, special economic zones, a watershed approach, and micro-level planning. Human Development Index.	13

Suggested Readings:

- Boudeville, J.R (1966): Problems of Regional Economic Planning, Edinburgh University Press, Edinburgh.
- Chand.M, Puri.V.K, (1983): Regional Planning in India, Allied Publishers, New Delhi.

- Freeman, T. (1974). Geography and Planning. London: Hutchinson University Library.
- Gill, R.(1975): Economic Development: Past and Present, Prentice-Hall of India, New Delhi.
- Glasson, J.(1975): An Introduction to Regional Planning, Hutchinson and Co., London.
- Gottman, J., & Harper, R. A. (1967). Metropolis on The Move. New York: John Willy & Sons.
- Hall, P. (1974). Urban and Regional Planning. New Zealand: Penguin Books.
- Hall, P. (2002). Urban and Regional Planning. New York: Rouledge.
- Husain, M. (1994). Regional Geography. New Delhi: Anmol Publication Pvt. Ltd. Company, New Delhi.

M.A./M.Sc. 1st Year, Sem. II, Course II (Theory)

Program/Class: M.A./M.Sc.	**Year:** FIRST	**Semester:** SECOND
Subject: Geography		
Course Code: MGH202*T*	**Course Title:** ADVANCED CLIMATOLOGY & BIOGEOGRAPHY	

Learning Objectives: The learning objectives of this course are as follows:

- Providing a comprehensive understanding of climatic systems of the Earth and their influence on the spatial distribution of flora and fauna.
- Examine atmospheric processes, climate variability, and biogeographic regions through theoretical and applied frameworks.
- Develop critical thinking on the dynamic interactions between climate, landforms, biodiversity, and human interventions.
- Introduce global and regional environmental issues such as climate change, biodiversity loss, biome shifts, and conservation challenges.
- Encourage interdisciplinary approaches in analyzing ecosystem processes, climatic drivers, and spatial distribution patterns.

Learning Outcomes: The learning outcomes of this course are as follows:

- Demonstrate an in-depth understanding of climatic systems, atmospheric processes, and biogeographic principles influencing the distribution of life on Earth.
- Evaluate the interrelationship between climate variability, ecosystem dynamics, and species distribution with reference to global and regional case studies.
- Apply theoretical concepts to assess biogeographic patterns and climatic influences across diverse landscapes, including forests, mountains, deserts, and aquatic systems.
- Critically assess environmental issues such as climate change, biodiversity loss, and habitat degradation, and propose sustainable adaptation or mitigation strategies.
- Communicate scientific observations and research findings effectively through academic writing, presentations, and spatial visualizations.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)

Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w

Unit	Topics	No. of Lectures
I	Energy in the Earth-Atmosphere System: Distribution of Insolation and Energy in the Earth and its Atmosphere, Factors affecting the Insolation and Energy and their impact on Earth and its Atmosphere.	12
II	Circulations within the Atmosphere: Tri-Cellular Wind System, Movement of Air Masses and Influences of Jet Streams; World Climatic Patterns: Koppen, Components of the Climatic	10

	Classifications, Criteria of the Climatic Classifications and Latitudinal Extent of various Climates of the world.	
III	Extent and Distribution of major Biomes of the Earth: Mapping, Key Features of each Biome, Characteristics of various Floral and Faunal Species and their Continental Locations, Factors affecting their distribution and their inter relationships including the Latitudinal and Altitudinal Biomes, Dominating species and related Contemporary Issues.	12
IV	Ecological successions: Nature and Types of Ecological Succession, its Impact and Importance, Stages and Climax.	11

Suggested Readings:

1. Trewartha G. T., 1980. An Introduction to Climate, McGraw Hill Company, New York.
2. Lal, D. S. 2003. Climatology, Allahabad: Sharda Pustak Bhawan.
3. Haggett, R.J. 1998. Fundamentals of Biogeography, Routeldge, U.S.A.
4. Clarke, G. L. 1967. Elements of ecology, New York: John Wiley Pub.
5. Mathur, H.S. 1998. Essentials of Biogeography, Anuj Printers, Jaipur.
6. Parmesan, C., Yohe, G. 2003. A globally coherent fingerprint of climate change impacts across natural systems. Nature, 421 (6918), 37–42.
7. Hoyt, J.B. 1992. Man, and the Earth, Prentice Hall, U.S.A.

M.A./M.Sc. 1st Year, Sem. II, Course III (Theory)

Program/Class: M.A./M.Sc.	**Year:** FIRST	**Semester:** SECOND
Subject: Geography		
Course Code: MGH203T	**Course Title:** ADVANCED OCEANOGRAPHY	

Learning Objectives: The learning objectives of this course are as follows:

- Understand core principles of oceanography.
- Analyze marine and coastal processes.
- Assess impacts on oceanic environments.
- Apply knowledge to resource management and policy.

Course Learning Outcomes: On completion of this course, learners will be able to:

- Understand the fundamental principles of physical, chemical, biological, and geological oceanography.
- Analyse marine and coastal processes using advanced oceanographic methods and technologies.
- Assess the impact of human activities and natural phenomena on oceanic and coastal environments.
- Apply oceanographic knowledge to marine resource management, conservation, and policy development.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)

Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w

Unit	Topics	No. of Lectures
I	Oceanography - nature, scope and development, distribution of land and water, Ocean bottom topography, bottom relief of Pacific, Atlantic and Indian Ocean.	12
II	Characteristics of Ocean water: temperature - distribution, salinity - composition, source and distribution, density of sea water.	10
III	Movement of ocean water, currents causes and its characteristics, currents of Atlantic, Indian and Pacific Ocean, Waves, tides and theories of its origin.	12
IV	Ocean deposits & coral reefs, Sea Level Change: Causes and consequences, Importance of EEZ and CRZ; Marine Pollution and Its Effects.	11

Suggested Readings:

1. Davis, R.J.A. (1986): Oceanography - An Introduction of the Marine Environment, Win C. Brown, Iowa
2. Day, T. (2006): Oceans, Chelsea House, New York
3. Erickson, J. 2003): Marine Geology: Exploring the New Frontiers of the Ocean, Facts on File, Inc., New York
4. Garrison, T. (2009): Essentials of Oceanography, Brooks/Cole, Belmont, California
5. Ilyin, A.V. (2003): Evolution of the Ocean Floor Morphostructure - Actualistic Model, in Evans, I.S., Dikau, R. Tokunaga, E., Ohmori, H. and Hirano, M.

(eds.) Concepts and Modelling in Geomorphology: International Perspectives, Terrapub, Tokyo, pp. 43-59

6. King, C.A. (1962): Oceanography for Geographers, Edward Arnold, New York.

M.A./M.Sc. 1st Year, Sem. II, Course IV (Theory)

Program/Class: M.A./M.Sc.	**Year:** FIRST	**Semester:** SECOND
Subject: Geography		
Course Code: MGH204T	**Course Title:** Hydrology & Water Resource Management	

Learning Objectives:

The learning objectives of this course are as follows:

- To develop an in-depth understanding of the hydrologic cycle and its components within natural and anthropogenic contexts.
- To analyze the principles of groundwater hydrology, aquifer dynamics, and subsurface water flow.
- To examine critical water-related challenges such as droughts, floods, and water quality degradation.
- To understand frameworks and policies for water resource planning and management at multiple governance levels.

Learning Outcomes:

On transaction of this course students will be able to

- Explain the functioning of the hydrologic system and evaluate the role of human activities in altering its components.
- Assess groundwater conditions using aquifer types, geological formations, and monitoring methods.
- Critically analyze contemporary issues like water scarcity, pollution, and inter-sectoral water conflicts.
- □ Evaluate and interpret water policy frameworks and propose strategies for sustainable and participatory water governance.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w	

Unit	Topics	No. of Lectures
I	Introduction (Theory): The history of hydrology, System Concept in hydrology, hydrologic cycle, Elements of hydrologic cycle, Human impact on the hydrologic cycle, Water balance.	12
II	Groundwater Hydrology (Theory): Groundwater Hydrology: Divisions of subsurface water, formations according to their water-bearing properties, types of aquifer and aquifer properties, Darcy's law and elementary groundwater flow equation, geological formations as aquifers, groundwater monitoring, groundwater resource estimation.	10
III	Contemporary Issues and Challenges (Theory): Drought, flood, water use conflicts, water quality and major water pollutants (points and non-point source), water quality criteria for different uses.	12
IV	Water Resource Planning (Theory): Concepts and objectives of water resource planning, Institutional frameworks and planning	11

	bodies in India, Multi-level governance and stakeholder participation, Water governance and policies	

Suggested Readings:

1. Subramanya, K. 2010. Engineering Hydrology, Tata McGraw Hill Education Pvt. Ltd. New Delhi.
2. Abbas, B.M. 1982. The Ganges Water Dispute, Vikas Publishing House Pvt. Ltd., New Delhi.
3. Aggarwal, A. 1991. Floods, Floodplains and Environmental Myths, Centre for Science and Environment, New Delhi.
4. Rai, S.C. 2017. Hydrology and Water Resources: A Geographical Perspective, Ane Book Pvt. Ltd., New Delhi.
5. Kumar, M. D. (Ed.). (2021). Politics and policies for water resources management in India. Routledge.
6. Thornthwaite, C.W. and Mather, J.R. 1957. Instructions and Tables for Computing Potential Evapotranspiration and the Water Balance, Drexel Institute of Technology, Centerton, New Jersey.
7. Bhattacharya, S.K. 1988. Urban Domestic Water Supply in Developing Countries, CBS Publishers, CR Distributors, Delhi.
8. Mahajan G. 1989. Evaluation and Development of Groundwater, Ashish Publishing House, New Delhi.

M.A./M.Sc. 1st Year, Sem. II, Course V (Practical)

Program/Class: M.A./M.Sc.	**Year:** FIRST	**Semester:** SECOND
Subject: Geography		
Course Code: MGH205P	**Course Title:** Statistical Methods and Digital Cartography	

Learning Objectives:

The learning objectives of this course are as follows:

- Apply advanced cartographic techniques and tools.
- Use statistical methods for spatial data analysis.
- Integrate cartography with statistical analysis.
- Apply skills to geographic problem-solving and decision-making.

Course Learning Outcomes: On completion of this course, learners will be able to:

- Apply advanced cartographic techniques and tools for creating and interpreting maps.
- Understand and apply statistical methods to analyze and visualize geographical data effectively.
- Develop skills in integrating cartographic visualization with statistical analysis to address complex spatial questions.
- Apply cartographic and statistical knowledge to real-world geographic problem-solving and decision-making.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w	

Unit	**Topics**	**No. of Lectures**
I	Statistical Methods: Collection, Processing and Management of Data; Measurement of Scale, Concept and Methods of Sampling; Correlation - Pearson's, Spearman's; Regression Analysis and Confidence Limit, Test of Significance; Chi-square and Student T-test.	12
II	Z score, Lorenz Curve and Gini's Coefficient, Location Quotient, Coefficient of Localization & Localization Curve, Nearest Neighbour Analysis, Network Analysis, Graph Techniques and Degree of Connectivity, Shape Analysis, Gravity Model, Retail Gravitation.	12
III	Cartograms - Climatic Diagrams, Rainfall Dispersion Diagram; Water Budget, Ergo-graph Climatic and Circular, Multiple Dot, Spherical Diagram, Traffic Flow, Land Utilization Maps	10
IV	Practical Record & Viva-Voce	11

Suggested Readings:

1. Monkhouse, F. J. and Wilkinson, F.J. (1985): Maps and Diagrams. Methuen, London
2. Raisz, E. (1962): General Cartography. John Wiley and Sons, New York. 5th edition.

3. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata.
4. Sharma, J. P. (2001): Prayogik Bhugol., Rastogi Publication, Meerut 3rd. edition.
5. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Hindi and English editions). Kalyani Publishers, New Delhi.
6. Singh, L.R. (2006): Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad.

M.A./M.Sc. 1st Year, Sem. II, Course VI (Theory)

Programme/Class: M.A./M.Sc./M.Tech.	**Year:** FIRST	**Semester:** SECOND
Subject: Geography		
Course Code: MGH206T	**Course Title:** Application of Remote Sensing and GIS in Earth System	

Learning Objectives:

- To develop an understanding of how Remote Sensing and GIS are applied across the major spheres of the Earth system — atmosphere, hydrosphere, lithosphere, cryosphere and biosphere.
- To familiarize students with satellite-derived data products and indices used for monitoring Earth system processes.
- To develop skills in analyzing geospatial data for environmental change detection and hazard assessment.
- To examine the role of geospatial technology in Earth system modelling, sustainability and policy support.

Course Learning Outcomes: On completion of this course, learners will be able to:

- Explain the application of Remote Sensing and GIS in studying atmospheric, oceanic and land surface processes.
- Interpret satellite-derived indices (NDVI, LST, NDWI, SAR-based indices) for environmental and Earth system analysis.
- Apply geospatial techniques for monitoring natural hazards, climate change, and cryosphere and coastal dynamics.
- Evaluate the role of RS and GIS in Earth system modelling, sustainable resource management and environmental decision-making.

Credits: 4	**Open Elective**
Max. Marks: 25 (Internal) + 75 (External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)

Total No. of Lectures-Tutorials-Practical (in hours per week): L – 4/w

Unit	Topics	No. of Lectures
I	RS and GIS in Land Surface and Vegetation Studies: Land Use/Land Cover (LULC) mapping and change detection; vegetation indices (NDVI, EVI, LAI) and crop monitoring; forest cover and deforestation assessment; land degradation and desertification mapping; Land Surface Temperature (LST) and urban heat island studies.	**10**
II	RS and GIS in Hydrosphere, Cryosphere and Coastal Systems: Surface water body mapping and NDWI; watershed delineation, drainage and flood inundation mapping; groundwater potential zone identification; glacier mass balance and snow-cover mapping; coastal landform change, shoreline shift and sea-level rise monitoring.	**10**
III	RS and GIS in Atmospheric and Climate Studies: Satellite meteorology: geostationary and polar-orbiting weather satellites; monitoring of clouds, rainfall, temperature and aerosols; remote sensing of greenhouse gases and air quality; RS-GIS applications in climate	**12**

	change detection, drought monitoring and weather forecasting support.	
IV	RS and GIS in Hazards, Lithosphere and Earth System Modelling: Geological and geomorphological mapping; landslide susceptibility and earthquake-hazard assessment; RS-GIS in disaster management; floods, cyclones, forest fires.	**13**

Suggested Readings:

1. Lillesand, T. M., Kiefer, R. W. & Chipman, J. W. (2015). Remote Sensing and Image Interpretation (7th ed.). John Wiley & Sons.
2. Campbell, J. B. & Wynne, R. H. (2011). Introduction to Remote Sensing (5th ed.). Guilford Press.
3. Jensen, J. R. (2007). Remote Sensing of the Environment: An Earth Resource Perspective (2nd ed.). Pearson Education.
4. Sabins, F. F. & Ellis, J. M. (2020). Remote Sensing: Principles, Interpretation, and Applications (4th ed.). Waveland Press.
5. Chang, K. T. (2021). Introduction to Geographic Information Systems (10th ed.). McGraw-Hill Education.
6. Bhatta, B. (2010). Remote Sensing and GIS. Oxford University Press, New Delhi.
7. Elachi, C. & van Zyl, J. (2006). Introduction to the Physics and Techniques of Remote Sensing (2nd ed.). Wiley.
8. Verbyla, D. L. (1995). Satellite Remote Sensing of Natural Resources. CRC Press.
9. Gupta, R. P. (2017). Remote Sensing Geology (3rd ed.). Springer.
10. IPCC. Sixth Assessment Report (AR6) — Working Group I: The Physical Science Basis. Cambridge University Press.
11. Anji Reddy, M. (2018). Remote Sensing and Geographical Information Systems. BS Publications.
12. Recent research articles (last 5 years) from journals such as Remote Sensing of Environment, International Journal of Remote Sensing, ISPRS Journal, and Geocarto International, to be assigned unit-wise by the course instructor.

M.A./M.Sc. 2nd Year, Semester III, Course I (Theory)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** THIRD
Subject: Geography		
Course Code: MGH301T	**Course Title:** Advance Remote Sensing and GIS	

Learning Objectives:

- To develop an understanding of remote sensing, GIS, and GPS technologies and their potential applications.
- To develop basic skills to interpret remote sensing images for various applications in geography.
- To develop basic skills to use GIS for various applications in geography.

Learning Outcomes:

- Overall understanding of the potential of Remote Sensing, GIS, and GPS
- Understanding of image interpretation
- Understanding of GIS analysis workflow and integrated applications in various domains of Geography

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)

Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w

Unit	Topics	No. of Lectures
I	Remote sensing principles, physics of electromagnetic radiation and its interaction with the atmosphere and earth surface materials.	10
II	Satellite platforms, Sensor technologies and their applications, with an emphasis on high-resolution and hyperspectral imaging systems.	11
III	Acquiring and processing remote sensing data, including pre-processing, image enhancements and classification. Emerging technologies such as drone-based remote sensing, LiDAR, and artificial intelligence in geospatial analysis.	12
IV	Basic concepts of GIS with a focus on spatial thinking, geographic problem-solving and decision-making processes. RS and GIS applications in areas like urban planning, environmental management, resource management and public health.	12

Suggested Readings:

1. Choniyal, D D, (2016) Sudur Samvaden evam Bhogolic Suchna Pranali ke sighant, Sharda Pustak Bhavan, Allahabad.
2. Lillesand, T.M. and Kiefer, R.W. (2000): Remote Sensing and Image Interpretation. 4th edition. John Wiley and Sons, New York
3. Campbell, J.B. (2002): Introduction to Remote Sensing. 5th edition, Taylor and Francis, London.
4. Bhatta, B. (2010): Remote Sensing and GIS, Oxford University Press, New Delhi.

5. Nag Prithvish and Kudrat M. (1998): Digital Remote Sensing, Concept Publishing Company Private Limited.
6. Curran, P.J. (1985): Principles of Remote Sensing, Longman, London.
7. Chaisman, N. 1992: Exploring Geographical Information Systems, John Wiley and Sons Inc., New York.
8. Marcolongo, B. And Mantorani, F. 1997: Photogeology: Remote Sensing Application in Earth Science, Oxford and IBH Pub. Pvt. Ltd., New Delhi.
9. Rajan, M.S. 1995: Space Today, 2nd edition, National Book Trust, New Delhi Rao, U.R. 1996: Space Technology for Sustainable Development, Tata McGraw-Hill, NewDelhi
10. Sabins, F.F., 1997: Remote Sensing: Principles and Applications, 3rd edition, W.H. Freeman & Company, New York.

M.A./M.Sc. 2nd Year, Sem. III, Course II (Theory)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** THIRD
Subject: Geography		
Course Code: MGH302T	**Course Title:** Geography of Population & Migration	

Learning Objectives:

The learning objectives of this course are as follows:

- This course intends to orient the students towards interdisciplinary perspectives on population issues at different geographical scales.
- It will acquaint the candidate to appreciate the role of spatial perspectives towards showcasing population changes and its impact on the economy, society, environment and politics at diverse geographical spheres.
- Different forms of human migration, its characteristics and regional patterns shall be highlighted.
- Student shall learn about the demographic transition models, its genesis, process and consequences from spatial perspectives.
- Students shall also understand the various population policies and programs for the sustainable population management.

Learning Outcomes:

- After taking this course, a candidate should be able to appreciate the active role of population geography as a distinct field of human geography.
- S/he should be conversant with different sources of demographic data, and well versed with debates on population-development linkages.
- Students should be able to examine the different components of population change, its drivers, and their consequences upon contemporary socio-economic, environmental, and political changes.
- Student will become conversant with the different forms of human migration, its characteristics, types, regional patterns, major drivers and consequences across geographical context.
- Students will be confident to visualize the consequences of demographic transition on the economy, society and politics.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w	

Unit	Topics	No. of Lectures
I	Introduction: nature, scope, development, sources of population data, demographic transition; population projections, policies and planning	12
II	Population Composition: age, sex, literacy, rural-urban; theories of population: Malthus and critique; the demographic transition theory, population composition and theories.	12

III	Mortality, Fertility and Nuptiality: measurements, theories, regional patterns.	11
IV	Migration: theories and models, typologies (internal and international), patterns and flows; causes and consequences.	10

Suggested Readings:

1. Birdsell, N., Kelley, A.C., and Sinding, S.W. 2001. Population Matters: Demographic Change, Economic Growth, and Poverty in Developing World, Auckland: Oxford University Press.
2. Bonar, James. Theories of population from Raleigh to Arthur Young. Routledge, 2014.
3. Clarke, J.I. 1972. Population Geography. 2nd edition, Oxford: Pergamon Press.
4. Dyson, T. 2010. Population and Development: The Demographic Transition, London: Zed Books.
5. Jeffery, R., and Jeffery, P. 1997. Population, Gender, and Politics: Demographic Change in Rural North India, Cambridge, UK: Cambridge University Press.
6. May, J.F. 2012. World Population Policies: Their Origin, Evolution, and Impact, Washington DC: Springer.
7. Newbold, K.B. 2010. Population Geography: Tools and Issues, New York: Rowman and Littlefield Publishers Inc.
8. Poston, D.L., and Bouvier, L.F. 2010. Population and Society: An Introduction to Demography, New York: Cambridge University Press.
9. Poston, D.L., and Micklin, M. (eds.) 2005. Handbook of Population, New York: Kluwer Academic.
10. Preston, S., Heuveline, P., and Guillot, M. 2000. Demography: Measuring and Modelling Population Processes, Oxford: Wiley-Blackwell.
11. Seigal, J.S., and Swanson, D.A. (eds.) 2004. The Methods and Materials of Demography. 2nd edition, San Diego, CA: Elsevier Academic Press.
12. Weeks, J.R. 2008. Population: An Introduction to Concepts and Issues. 10th edition, Belmont, CA: Thomson Wadsworth.
13. Brettell, C. B., and Hollifield, J.F. (eds.) 2014. Migration Theory: Talking across Disciplines, 3d ed. New York: Routledge.
14. Castles, S., de Haas, H. and Miller, M.J. 2014. The Age of Migration: International Population Movements in the Modern World, 5th ed. New York and London: Guilford.

M.A./M.Sc. 2nd Year, Sem III Course III (Theory)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** THIRD
Subject: Geography		
Course Code: MGH303T	**Course Title**: Economic and Resource Geography	

Learning Objectives:

The learning objectives of this course are as follows:

- Understand spatial patterns of economic activities in India.
- Analyze regional economic disparities and policy impacts.
- Evaluate effects of globalization on India's economy.
- Apply geographic analysis to address regional economic challenges.

Course outcomes: Students will be able to understand:

- Understand the spatial distribution of economic activities across India and the factors influencing these patterns.
- Analyze regional disparities in economic development and the role of governmental and non-governmental policies in shaping economic landscapes.
- Evaluate the impact of globalization on India's economy, including changes in labor markets, industries, and trade.
- Apply geographic analysis to assess and propose solutions for economic challenges facing different regions of India.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)

Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w

Unit	Topics	No. of Lectures
I	Nature, scope and significance of economic and resource geography. Concepts of resources and their relation with Nature, man and culture. Classification of resources.	12
II	Biotic and abiotic resources, Energy resources. Classification of Economic Activities, Factors influencing Location of Industry.	12
III	Resource conservation and resource regions, Industrial Regions in India. Theories and Models of Economic and Recourse Geography.	10
IV	Sustainable development of resources. Politics of the world resources. Impact of globalisation on the Indian economy and its impact on the environment.	11

Suggested Readings:

1. Bryson, J., Henry, N., Keeble, D. and Martin, R. (eds.) (1999): The Economic Geography Reader: Producing and Consuming Global Capitalism. John Wiley and Sons, Inc, New York.
2. Clark, G. L., Gertler, M. S. and Feldman, M. P. (eds.) (2000): The Oxford Handbook of Economic Geography. Oxford University Press, USA.
3. Coe, N. (2007): Economic Geography: A Contemporary Introduction. Blackwell Publishers, Inc., Massachusetts.

4. Gautam, A. (2006): Aarthik Bhugol Ke MoolTattava, Sharda Pustak Bhawan, Allahabad.
5. Guha, J. S. and Chattoraj, P.R. (2002): A New Approach to Economic Geography: A Study of Resources. The World Press Private Limited, Kolkata.
6. Hanink, D. M. (1997): Principles and Applications of Economic Geography: Economy, Policy, Environment. John Wiley and Sons, Inc, New York.
7. Hartshorne, T. A. and Alexander, J. W. (1988): Economic Geography (3rd revised edition) Englewood Cliff, New Jersey, Prentice Hall.
8. Hudson, R. (2005): Economic Geographies: Circuits, Flows and Spaces. Sage Publications, London.
9. Knowles, R, Wareing, J. (2000): Economic and Social Geography Made Simple, Rupa and Company, New Delhi.
10. Sokal, Martin 2011. Economic Geographics of Globalisation: A short Introduction. Cheltenham, UK: Edward Elgar.
11. Alexander, J. W. (1988): Economic Geography. Prentice-Hall, New Delhi.

M.A./M.Sc. 2nd Year, Sem. III, Course III (Theory)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** THIRD
Subject: Geography		
Course Code: MGH304T	Course Title: **Marketing Geography**	

Learning Objectives:

The learning objectives of this course are as follows:

- Understand concepts, scope, and approaches of marketing geography.
- Analyze market structure, hierarchy, and location models.
- Examine trade systems from local to global levels.
- Study agricultural marketing systems in India.

Course outcomes: Students will be able to understand:

- Explain key concepts and approaches in marketing geography.
- Apply models (Christaller, Lösch, Reilly) to market analysis.
- Evaluate factors influencing trade and global trading systems.
- Assess Indian agricultural marketing and its structures.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w	

Unit	Topics	No. of Lectures
I	Marketing Geography: Definition, scope and significance. Growth and development, Approaches of Study: Commodity, Spatial, Social, Economic, Behavioral. Application of Planning: Market, Urban, Agriculture.	11
II	Classification, structure and hierarchy of Market, Christaller and Losch Model of Market Locations, Reilly's Models of Interaction and Trade Area Delimitation.	12
III	Local, Regional, National and International Markets, Factors of Development of Trades. World Trade Organization, World Trading Zone: SAFTA (South Asian Free Trade Association), NAFTA (North Atlantic Free Trade Association).	12
IV	Indian Agricultural Marketing, Regulated, Government Purchase Centers, Informal Marketing.	10

Suggested Readings:

1. Berry, B.J.L. – Geography of Market Centers and Retailing, Prentice Hall.
2. Saxena, H.M. – Marketing Geography, Jaipur.
3. Skinner, G.W. – Marketing and Social Structure in Rural China, Journal of Asian Studies, Vol.24
4. Yadav, H.R. – (ed. Yadav, H.L.) Retailing in Saryupar Plain (Hindi), Radha Publications, New Delhi.
5. Davies, R.L. - Marketing Geography.
6. Shrivastava, V.K. – (ed) Commercial Activities in South Asia, Concept Publications, NewDelhi.
7. Shrivastava, V.K. & Dixit, R.S., Biparan Bhoogol.

M.A./M.Sc. 2nd Year, Sem. III, Course III (Theory)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** THIRD
Subject: Geography		
Course Code: MGH305T	Course Title**: Industrial Geography**	

Learning Objectives:

- The learning objectives of this course are as follows:
- Understand concepts and development of industrial geography.
- Analyze industrial location factors and theories.
- Examine spatial patterns of major industries.
- Assess impacts of globalization and industrial policies.

Course Learning Outcomes:

On completion of this course, learners will be able to:

- Explain industrial geography concepts and trends.
- Apply location theories (Weber, Hoover) to industries.
- Evaluate distribution of major industries in India and the world.
- Assess industrial development, policies, and sustainability issues.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w	

Unit	**Topics**	**No. of Lectures**
I	Meaning and Scope of Industrial Geography, Industrial Revolution and its Consequences, Trends of Industrialization in India & Abroad.	9
II	Factors of Location of Industries, Theories of Industrial Location - Weber, Hoover, Losch; Industrial Complexes.	12
III	World and India Industrial Regions. Distribution and Spatial Pattern of Iron & Steel, Textile, Sugar & Fertilizer Industry, Industries and Economic Development, Problems and Prospects of Industrial Sprawl. Weber, Theories of Industrial Geography.	11
IV	Impact of Globalization on Industrial Development, Industrial Policies and their Implications in Industrialization in India, Sustainable Industrial Development.	13

Suggested Readings:

1. Alezender, G. – Geography of Manufacturing (1967)
2. Miller, E. – Geography of Manufacturing, Prentice Hall.
3. Fridrich, J. Alfred Weber's Theory of Location of Industries.
4. Riley, R.C. _ Industrial Geography, London.
5. Smith, D.M. – Industrial Geography.
6. Hooever, E.M. – Location in Space Economy.
7. Kumar, Pramila & Sharma, S.K. – AudhogikBhoogol, Bhopal.
8. Lora, R.M. – AudhogiBhoogol
9. Sharma, V.N. – Industrial Development and Planning in India.

M.A./M.Sc. 2nd Year, Sem. III, Course III (Theory)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** THIRD
Subject: Geography		
Course Code: MGH306T	Course Title: **Cultural Geography**	

Learning Objectives:
The learning objectives of this course are as follows:

- To enhance the understanding of culture using key concepts of geography
- To develop analytical skills to decode culture
- To provide a critical understanding of the contemporary issues.

Learning Outcomes: The learning outcomes of this course are as follows:

- The students will be able to make sense of culture
- Acquire knowledge of geographic epistemologies for analyzing culture
- Develop analytical capability to read contemporary issues of culture

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w	

Unit	Topics	No. of Lectures
I	Nature and Scope of Cultural Geography, Approaches and Development; Relationship of Culture with Environment; Resources and Technology.	10
II	Major Concepts-Cultural Diffusion, Material Culture, Cultural Landscape and Cultural Ecology; Origin & Dispersal of Man.	12
III	Origin, Types & Dispersal of Human Races, Racial Composition of India; Linguistic and Religious Structure of the World.	10
IV	Domestication of Plants and Animals; Renewal and Dispersal Activities of Crops-Paddy, Maize, Sugarcane and Rubber. Agricultural Practices and Innovations; Globalization and Cultural Development; Ecological Impact of Population Explosion; Cultural Hearths; Major Cultural Realms and Regions of the World.	13

Suggested Readings:

1. Dohrs, I., Sommers, L.,1967, Cultural Geography, Thomas Crowell Company
2. Fred, E. D., Lawrence, M., Cultural Geography, Thomas Y. Crowell Company, New York
3. Jackson, P., David, D., Atkinson, D., Cultural Geography, Rawat Publication
4. Schech, S., and Haggis, J., 2000, Culture and Development, Blackwell Publishers, Great Britain
5. Hussain Majid. Cultural Geography, Anmol Publications PVT. Ltd
6. Mitchell, D.,2000, Cultural Geography- A Critical Introduction, Black Well
7. Oakes, Timothy.S., and Price, Patricia L., 2008, The Cultural Geography Reader, Routledge Publication, New York

M.A./M.Sc. 2nd Year, Sem. III Course IV (Practical)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** THIRD
Subject: Geography		
Course Code: MGH307P	**Course Title: Field Survey and Educational Tour**	

Course Objectives:

- Understand principles of surveying and map projections.
- Analyze geographical variations across locations.
- Examine interactions between natural and cultural settings.
- Apply fieldwork skills to study regions and prepare tour reports.

Course Learning Outcomes:

On completion of this course, learners will be able to:

- Learn fundamentals of Surveying and Projections.
- The variation among geographical locations.
- Interaction with people with different natural and cultural settings.
- Study physical and human geography of area being visited.
- Learn to prepare tour report.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w	

Unit	Topics	No. of Lectures
I	Plain Table Survey: Intersection, Resection (Two-Point Problem, Three Point Problem), Indian Pattern Clinometer.	12
II	Projections: Meaning, Classification and Choice of Projections; Construction and Characteristic of Projections-Polyconic, Galls, Equatorial Zenithal Projection - Gnomonic, Sinusoidal, Mollweide and their interrupted cases, International Projection.	22
III & IV	Geographical Excursion: How to prepare a field book, steps and methods for preparing a tour report, methodology for research in a field trip, various aspects of study in a field trip, and preparation of surveying in a field trip. (22 lectures shall be taken before and during the field trip by Tour Incharge)	11

External Assessment:

a. 30 Marks for Practical Exam
b. 30 Marks for Excursion and Excursion Report
c. 15 Marks VIVA (On the basis of Practical and Excursion Report)

Suggested Continuous Evaluation Methods:

The following shall be the guidelines and structure of the Educational tour;

Geographical Excursion Committee:

1. All faculty members shall organize geographical excursions as 'tour in-charge' in rotation according to the departmental seniority list.
2. The 'Geographical Excursion Committee' will be headed by the Head of Department. The tour in-charge shall act as convener of the committee and shall convene a meeting at the beginning of the session or semester. All

other teachers of the department shall be members of the committee. Three meritorious students based on the last available examination result shall be invited by the tour in-charge to participate in the meetings as members of the committee.

3. **Committee shall:**
   a) Review the tour plan.
   b) Confirm that all arrangements are made before tour departure.
   c) Listen to students' opinions and give recommendations to the tour in-charge accordingly.
   d) Review the tour's academic nature and evaluate the day-wise tour plan and academic activity as submitted by the Tour in-charge.

Structure of the tour party:

1. For 10 or less than 10 students, one faculty member with one non-teaching staff shall accompany the Tour party. For 11 to 20 students, two faculty members with one non-teaching staff shall accompany the Tour party. For 21 to 35 students, three faculty members with one non-teaching staff shall accompany the Tour party. If two/three faculty members are required for the tour, the second and third faculty members shall be selected on the recommendation of the tour in-charge. If the number of students is more than 35, a separate tour party shall be constituted in a similar manner.
2. If female students are also participating in the tour, one of the staff must be female (teaching or non-teaching). In case of unavailability of female staff to accompany the tour from the subject (Geography), the head of the Geographical Excursion Committee can nominate any other female teaching or non-teaching staff of the Department.

Responsibility of tour in-charge:

1. The tour shall last at least 6 days at a location with inter-region variation.
2. The tour in-charge shall submit tentative day-wise activity reports in advance to the head of the Geographical Excursion Committee.
3. The tour in-charge shall coordinate with Institutes/Colleges/ Universities/Research institutes etc., in a location where the tour is being planned for the following activities:
   a) Interaction of students.
   b) Lectures on the area's various local physical and cultural attributes by the experts.
   c) Local visits with faculty members who understand the area academically.
4. Lectures by tour in-charge on physical and human characteristics of the area being visited for an educational tour.
5. Survey students with at least one instrument like Dumpy Level, Sextant, Theodolite, GPS, etc.
6. Questionnaire survey on various socio-cultural or any other aspects. The questionnaire must be prepared in advance and shall be shared during the Geographical Excursion Committee meeting.
7. Tour in-charge shall collect undertaking from all students regarding any misshaping or casualty, which shall be counter signed by their guardian.
8. The tour in-charge will prepare a list of students accompanying the tour with their information like mobile number, address, guardian contact

information and one recent colour photo. One copy will also be submitted to the Head of Department.

9. Teachers shall always try to minimize tour expenditure of students by:
    a) Using concession train reservations and avoiding buses if possible.
    b) Making stay arrangements for students in advance in youth hostels/lodges/guest houses, etc.
    c) Try to visit a few important locations only with the objective of spot study and avoiding unnecessary travel for sightseeing.
10. After the completion of the tour, there shall be a presentation by students regarding learning outcomes and experiences under the supervision of the tour in-charge. The presentation shall be attended by Geographical Excursion Committee members along with other faculty members, staff, students, etc.
11. All students shall submit a tour report under the supervision of the Tour in-charge for evaluation. The tour report shall portray all activities conducted and places visited for the purposes of the study.
12. In case of any incident/injury where one or more than one student can't join the tour party on the return journey. One teaching/non-teaching staff member shall stay with the student until the student's guardian arrives or an alternative arrangement is not made by the college. In case the tour in-charge stays, the other teacher/staff member shall act as tour in-charge for the remaining tour period. TA, DA and other expenses shall be paid by the institution for excess days of stay.

Exemption of Students from Tour:

1. Tour can be exempted in very special circumstances by the recommendation of the Geographical Excursion Committee. Exempted students will prepare local tour reports based on his/her own local tour visits. The report shall be prepared under the supervision of the tour in-charge.

TA, DA and other expenses:

1. The TA, DA and other expenses of teachers and attendants shall be met out by the University as admissible to their cadre as per government rules.

M.A./M.Sc. 2nd Year, Sem. III, Course V (Research Project)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** THIRD
Subject: Geography		
Course Code: MGH308R		**Course Title:** Dissertation (Progressive)

Learning Objectives:

The learning objectives of this course are as follows:

- Develop advanced research and analytical skills.
- Apply theoretical knowledge to a specific research problem.
- Conduct independent investigation using appropriate methods.
- Present findings in a structured and scholarly manner.

Course Learning Outcomes: On completion of this course, learners will be able to:

- Identify significant gaps in existing geographic knowledge and formulate relevant, feasible research questions.
- Design a robust research methodology that employs appropriate geographic techniques to address the identified questions.
- Execute effective data collection and analysis, demonstrating proficiency in using advanced tools and software specific to geographic research.
- Produce a scholarly Dissertation that clearly communicates the study's findings, methods, and implications, and effectively present the research in a professional academic setting.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)

Dissertation Guidelines

- In the beginning of 3rd **semester,** the Dissertation supervisor shall be assigned to students.
- Dissertation shall be allotted by the departmental committee on the basis of the student's research interests and the specialization of a faculty member.
- By the end of 3rd **semester,** a synopsis of the Research Project shall be submitted by the student and will be approved by the departmental committee.
- Students will continue to work on assigned research projects during the F o u rt h **Semester** under the guidance of the Supervisor.
- Students will submit their final dissertations by the end of fourth semester teaching.
- Synopsis Must Include the following:

1. Title of Research Project	**7.** Hypothesis (If required)
2. Table of Content	**8.** Methodology
3. Introduction	**9.** Tentative Chapterization
4. Review of the Literature	**10.** Conclusion
5. Study Area	**11.** References
6. Amis and Objective	

M.A./M.Sc. 2nd Year, Sem. IV Course I (Theory)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** FOURTH
Subject: Geography		
Course Code: MGH401T	**Course Title:** Urban Geography	

Learning Objectives:

The learning objectives of this course are as follows:

- To develop a comprehensive understanding of urban environment and ecosystems dynamics, and to analyze global trends and patterns of urbanization.
- To identify and examine the major urban geo-environmental challenges and evaluate sustainable strategies for effective urban management.
- To critically assess the necessity of futuristic cities, and to asses relevant government policies, programmes, and initiatives pertaining to urban management and sustainability.

Learning Outcomes:

The learning outcomes of this courses are as follows:

- Developing an understanding of foundational concepts and components of urban environment, examining their dynamics and its significance from local to global levels.
- Analysing the urban trends, and relationship between urbanization & geoenvironmental challenges and their ecological and health-related consequences through case studies.
- □ Critically evaluating and assessing the urban environmental management strategies and institutional arrangements for sustainable urban future, focusing on Indian cities.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w	

Unit	Topics	No. of Lectures
I	Introduction: Defining the city and understanding the different approaches to examining it and its transformations.	10
II	Urban Transformations in Historical Contexts: Early cities to industrial cities, global cities, colonial and post-colonial cities.	11
III	Urban society: Social organization of the city, emergence of urban cultures and subcultures, nature of urban economy, Emergence of urban elites and poor.	12
IV	Governing the City: Role of state in urban planning and development, local politics, citizenship and governance. Contemporary Urban Issues; Urban Poverty; Housing; Slum; Study & Preparation of Master Plan of Selected Cities.	12

Suggested Readings:

1. Mohan Sudha 2005: Urban Development and New Localism. Rawat Publications, Jaipur.
2. Pacione, Micheal, 2001: Urban Geography, Routledge, London
3. Naqvi, H. K. (1971). Urbanization and Urban Centres under the Great Mughals. Shimla: Indian Institute of Advance Studies.

4. Racine, J. (ed): Calcutta 1981. Concept Pub. Co., New Delhi.
5. Ramachandran R. 1989: Urbanisation arid Urban Systems in India. Oxford University Press, New Delhi.
6. Rao, R. Rammohan and S. Simhadri 1999: Indian Cities: Towards Next Millenium, Rawat Publications, Jaipur.
7. Ray Chaudhuri, Jayasri (2001): An Introduction to Development and Regional Planning. Orient Longman, Kolkata
8. Sharma, R.N. and K. Sita 2001: Issues in Urban Development. Rawat Publications, Jaipur.
9. Short, J. R. (1984). An Introduction to Urban Geography. London: Routledge and Keygen Paul.
10. Singh, A. K. (1990). Urbanisation and Administration of Urban Infrastructure. New Delhi: Inter-India Publications.

M.A./M.Sc. 2nd Year, Sem. IV Course II (Theory)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** FOURTH
Subject: Geography		
Course Code: MGH402T	**Course Title:** Geography of Agricultural Transformations	

Learning Objectives:

The learning objectives of this course are as follows:

- This course seeks to familiarize students with the theoretical foundations and historical evolution of agriculture, emphasizing the diverse agricultural systems.
- It critically engages with key questions surrounding agricultural transformation, including challenges related to productivity, regional disparities, tenancy and agricultural developmental policies, focusing on India's agrarian landscape.
- The course also aims to analyze the multifaceted socio-economic, environmental, and public health implications of agricultural practices, while examining emerging trends, technological innovations and strategies for sustainable agriculture.

Learning Outcomes:

The Learning outcomes of this course are as follows:

- Students will be able to critically analyze the historical development of farming systems, with particular attention to their spatial distribution, growth patterns, and regional disparities, within the broader context of agricultural transformation.
- Students will develop the capacity to evaluate the socio-economic, ecological, and policy-driven implications of agricultural practices and reforms, drawing on comparative case studies.
- □ Students will gain a comprehensive understanding of sustainable, climate-resilient, and technology enabled approaches focusing on food security, and long-term sustainability in a transforming agricultural landscape.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w	

Unit	Topics	No. of Lectures
I	Introduction to Agriculture Geography; Origin and dispersal of agriculture: Theories and gene-centres of agriculture; Farming System: Organic, Urban Agriculture, Hydroponics, Precision.	10
II	Agricultural Development and Productivity Concept, Spatial pattern of agricultural development; Green to evergreen revolution; Agricultural productivity: determinants and regional imbalances; Agricultural Regions of India.	11
III	Socio-Economic Problems and Implications Agriculture development induced problems: Agrarian distress, Inequality, Tenancy, Socio-economic and human health consequences; Social and policy reforms; Case Studies.	12

IV	Ecological Consequences and Agriculture Sustainability Concept, process, and impacts on land, soil, water and forest; Food security and Nutrition; Sustainable Agriculture; Agro-cities; Case Studies.	12

Suggested Readings:

1. Berardi, G. M., & Geisler, C. C. (Eds.). (2019). The social consequences and challenges of new agricultural technologies. Taylor & Francis.
2. Hester, R. E., & Harrison, R. M. (Eds.). (2012). Environmental impacts of modern agriculture (Vol. 34). Royal Society of Chemistry.
3. Mohammad, N. (Ed.) (1992). New Dimensions in Agricultural Geography (Vol I to VIII). Concept Publishing Company. New Delhi.

M.A./M.Sc. 2nd Year, Sem. IV Course III (Theory)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** FOURTH
Subject: Geography		
Course Code: MGH403T	Course Title: **Ecology & Ecosystem Services Assessment**	

Learning Objectives:
The learning objectives of this course are as follows:

- To build a foundational understanding of: Ecology & Ecosystem Services, its principles, and methodologies.
- To critically examine the socio-economic and ecological implications of development projects through Ecology & Ecosystem Services
- To introduce national and international legal frameworks, policies, and practices related to environmental assessment.
- To equip students with analytical tools to assess, evaluate, and propose mitigation strategies for environmental impacts.

Course outcomes: Students will be able to understand:

- Understand fundamental concepts of ecology, ecosystem structure, functioning, and ecological processes.
- Explain and classify different types of ecosystem services and analyze their role in human well-being and sustainability.
- Apply quantitative and qualitative methods, including Remote Sensing and Geographic Information Systems, for assessing and mapping ecosystem.
- Evaluate ecosystem services in different environmental contexts using spatial, economic, and modelling approaches.
- Analyze environmental challenges such as climate change, ecosystem degradation, and biodiversity loss using geospatial tools.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w	

Unit	Topics	No. of Lectures
I	Fundamentals of Ecology and Ecosystems: Introduction to Ecology: Definition, scope and branches of ecology, Levels of ecological organization and the interdisciplinary nature of ecology. Ecosystem: Concept and Components, Definition and types of ecosystems, Structural components, Trophic levels, food chains, food webs, ecological pyramids. Ecosystem Functioning: Energy flow in ecosystems, Productivity, Biogeochemical cycles: carbon, nitrogen, phosphorus and water cycles. Ecological Balance and Disturbances: Ecological succession, Natural and anthropogenic disturbances.	10
II	Ecosystem Services – Concepts and Classification: Concept and Evolution of Ecosystem Services. Classification: Provisioning, Regulating, Cultural and Supporting Services. Ecosystem Services and Sustainable Development (SDGs, climate linkages). Valuation of Ecosystem Services: Economic and non-economic approaches. GIS & Remote Sensing	10

	Applications: Spatial mapping, modelling tools (InVEST, ARIES), MCDM	
III	Methods and Techniques for Ecosystem Services Assessment: Ecosystem Assessment Frameworks: Millennium Ecosystem Assessment (MA) Framework, Integrated Ecosystem Assessment (IEA) etc. Data Sources: Satellite data (Landsat, Sentinel, MODIS), field and socio-economic data. Methods: Indicators, indices, statistical and participatory approaches. Geospatial Techniques: Spatial analysis, change detection, machine learning, GEE.	12
IV	Applications, Case Studies and Policy Perspectives: Ecosystem Services Assessment: Forest, wetland, urban and agricultural ecosystems. Policy and Governance: SDGs, CBD, Ramsar, Indian environmental policies. GIS & Remote Sensing in Spatial planning, monitoring.	13

Suggested Readings:

1. H.M. Saxena (2015) Environmental Ecology, Biodiversity And Climate Change: Towards Sustainable Dev, Rawat Publication, ISBN: 9788131606896
2. Avnish Chauhan (2025), Environment, Ecosystem Services and Biodiversity, DISCOVERY PUBLISHING HOUSE, ISBN13-9788119365067
3. Manoj Kumar Arya (2023), Biodiversity Environment and Ecosystem Services, DISCOVERY PUBLISHING HOUSE, ISBN 13 -9788195916931
4. Robert C Brears (2025), Climate Change and Natural Capital: Supporting Ecosystem Services, Biodiversity, Carbon Sequestration, Sustainable Development, and Green Infrastructure, Global Climate Solutions, ISBN-13: 978-1991368348
5. Jetske A. Bouma, (2025) Ecosystem Services: From Concept to Practice, Cambridge University Press ISBN-13- 978-1107062887
6. Brewster, E. N. 2010. Climate Change Adaptation: Steps for a Vulnerable Planet, New York, Nova Science.
7. Cain, M.L., Bowman, W.D. and Hacker S.D. (2011). Ecology, 2nd Edition, Sinauer Associates Inc.
8. Chandna R. C., 2002: Environmental Geography, Kalyani, Ludhiana.
9. Chapman, J.L.& M.J. Reiss. (1998). Ecology: Principles and Applications. Cambridge Univ. press.
10. Cunninghum W. P. and Cunninghum M. A., 2004: Principals of Environmental Science: Inquiry and Applications, Tata Macgraw Hill, New Delhi.
11. Das, R. C., 1998. The Environmental Divide: The Dilemma of Developing Countries, A.P.H. Pub., New Delhi.
12. Freedman, Bill. 1995. Environmental Ecology: The Ecological Effects of Pollution, Disturbance, and Other Stresses, Academic Press. London.
13. Global Environment Monitoring UNEP, https://wesr.unep.org/article/global-environment-monitoring
14. Global Environmental Outlook Reports UNEP https://www.unep.org/geo/
15. Intergovernmental Panel on Climate Change IPCC Reports (2021-23) https://www.ipcc.ch/report/ar6/wg2/

M.A./M.Sc. 2nd Year, Sem. IV Course III(Theory)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** FOURTH
Subject: Geography		
Course Code: MGH4**04T**	Course Title**: Rural Geography**	
Learning Objectives: The learning objectives of this course are as follows: • Understand concepts and characteristics of rural geography. • Analyze rural settlement patterns and land use. • Examine socio-economic structure of rural areas. **Course Learning Outcomes:** On completion of this course, learners will be able to: • Explain key concepts of rural geography. • Interpret spatial patterns of rural settlements and resources. • Evaluate issues and challenges in rural development.		
Credits: 4	**Core Compulsory**	
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)	
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w		

Unit	Topics	No. of Lectures
I	Conceptual scope of rural geography, different approaches to study rural Geography, concept and significance of rural development. Indicators of rural development.	10
II	Rural Settlements: Definition and characteristics Types and patterns of rural settlements and their distribution with special reference to spacing, rural house types, based on building materials, size and shape.	12
III	Rural infrastructure facilities and amenities, New Agricultural technology: Rural transportation, rural education, rural industries and rural marketing.	11
IV	Critical review of rural development strategies in India; Integrated Rural Development Program (I.R.D.P.), Community Development programs. MNREGA, Soil Health Card, National Agriculture Policies.	12

Suggested Readings:

1. Singh Kartar., Rural Development: Principles, Policies and Management.
2. Maheshwari, R.S., Rural Development in India.
3. Clout, S.D., Rural Geography.
4. Husain, Majid., Agricultural Geography, New Delhi.
5. Bell, G. (Ed.), Strategies for Human Settlements: Habitat and Environment.
6. Chisholm, M., Rural Settlement and Land Use.
7. Singh, R.L. et.al: Readings in Rural Settlement Geography.
8. Singh, K.N.(Ed.) Rural Development in India: Problems, Strategies and Approaches.

M.A./M.Sc. 2nd Year, Sem. IV Course III(Theory)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** FOURTH
Subject: Geography		
Course Code: MGH405T	Course Title**: Geography of Health**	

Learning Objectives:

The learning objectives of this course are as follows:

- Understand concepts and scope of health geography.
- Analyze spatial patterns of diseases and healthcare.
- Examine environmental and socio-economic determinants of health.
- Apply geographic tools to health planning and management.

Course Learning Outcomes:

On completion of this course, learners will be able to:

- Explain key concepts in health geography.
- Interpret spatial distribution of diseases and health services.
- Evaluate factors affecting health and healthcare access.
- Apply geographic analysis to public health issues.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w	

Unit	Topics	No. of Lectures
I	Meaning, Scope, Significance, Development, Methods and Techniques of Geography of Health, Geographical factor affecting human health & diseases - Physical, Social, Economic and Environmental.	12
II	Vital & Health Indices; Classification of Diseases Genetic, Communicable & Non- communicable, Occupational and Deficiency Diseases, Geography of Hunger and Malnutrition.	10
III	Patten of Distribution of Major Diseases in the World; Ecology, Etiology and Transmission of Major Diseases - Cholera, Malaria, Tuberculosis, Hepatitis, Cancer, AIDS and STDs and their Regional Patterns with special reference to India.	12
IV	Disease Diffusion Models and Health Care Accessibility Models; Health Care System International Level - WHO, UNICEF & Red Cross; National Level - Government and NGO's. Health Planning and Policies in India, Family Welfare; Immunization, National Disease Eradication, Aayushman Bharat Yojana & Health for all.	11

Suggested Readings:

1. Cliff, A. & Hagget, P. – Atlas of Disease Distribution.
2. May, J.M. – Study in Disease Ecology.
3. May, J.M. – Ecology of Human Disease.
4. Forste, D.H. – Health, Disease and Environment.

5. Pyle, G.P. – Applied Medical Geography.
6. Mishra, R.P.L. – Medical Geography of India.
7. Rais, Akhter – Environment and Health.
8. Learmonth, A.T.A. – Disease Ecology.
9. Hunter, J.M. – Geography of Health and Disease.
10. Raise, A. and Learmonth, A.T.A. – Geographical Aspect of Health and Disease.

M.A./M.Sc. 2nd Year, Sem. IV Course III((Theory)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** FOURTH
Subject: Geography		
Course Code: MGH4**06T**	Course Title: Contemporary Political geography	

Course Objectives:

- Understand concepts and evolution of political geography.
- Analyze spatial aspects of political processes.
- Examine geopolitical theories in current contexts.
- Apply geospatial tools and evaluate contemporary political issues.

Course Learning Outcomes: On completion of this course, learners will be able to:

- Understand the key concepts, approaches and evolution of political geography in the contemporary world.
- Analyze the spatial dimensions of political processes including state, nation, territory and boundaries.
- Examine geopolitical theories and their relevance in current global and regional contexts.
- Apply geospatial tools (GIS & Remote Sensing) in analyzing political patterns, conflicts and governance.
- Evaluate contemporary political issues such as globalization, regionalism, resource conflicts and environmental geopolitics.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)
Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w	

Unit	**Topics**	**L**
I	Foundations of Political Geography and the State: Introduction to Political Geography: Nature, scope and evolution. Concepts of State, Nation, Nation-State and Sovereignty. Territory and Territoriality: Meaning and Significance. Boundaries and Frontiers: Types and functions. Geopolitical Thought: Classical and Contemporary Approaches	12
II	Geopolitics, Globalization and World Order: Classical Geopolitical Theories: Mackinder, Spykman, Mahan. Critical and Contemporary Geopolitics. Globalization and its political implications. Changing World Order: Unipolarity, multipolarity and emerging powers. Role of international organizations and global governance	10
III	Political Processes, Electoral Geography and Geospatial Techniques: Political Processes: Federalism, decentralization and governance. Electoral Geography: Voting behaviour, delimitation and spatial patterns. Identity Politics: Ethnicity, religion, caste and regionalism. Conflict Geography: Resource conflicts, border disputes and geopolitics of resources. GIS & Remote Sensing Applications: Electoral mapping, conflict analysis, spatial data visualization.	13

IV	Contemporary Issues, Environment and Policy Perspectives: Political Geography of Development and Inequality. Environmental Politics and Geopolitics: Climate change, water conflicts, energy security. Regionalism and Regional Organizations (EU, SAARC, ASEAN). National Security and Strategic Geography. GIS & Remote Sensing in Policy and Decision Support.	10

Suggested Readings:

1. Dikshit, R.D., 1996. Political Geography: A Contemporary Perspective. Tata McGraw Hill, New Delhi.
2. Dikshit, R.D., 1999. Political geography: A Century of progress, Sage, New Delhi.
3. Fisher Charles A., 1968. Essays in Political Geography, Methuen, London.
4. John R., 1982. Short: An introduction to Political Geography Routledge, London.
5. Panikkar K. M., 1959. Geographical Factors in Indian History: 2 vols. Asia Publishing House, Bombay.
6. Adhikari, S. (2013). Political Geography of India. Allahabad, India: Sharda Pustak Bhawan.
7. Agnew, J. (2002). Making Political Geography. London, UK: Arnold.
8. Cox, K. R., Low M. and Robinson J. (2008). The Sage Handbook of Political Geography. USA: Sage Publications.
9. Gallaher, C., et al, (2009). Key Concepts in Political Geography. USA: Sage Publications.
10. Glassner, M. (1993). Political Geography. USA: Wiley

M.A./M.Sc. 2nd Year, Sem. IV Course IV (Practical)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** FOURTH
Subject: Geography		
Course Code: MGH407P	**Course Title:** Geospatial Techniques and Surveying	

Learning Objectives:

The learning objectives of this course are as follows:

- To introduce the fundamental concepts of geospatial technologies (GPS) and surveying.
- To identify various surveying methods, operations and instruments.
- To understand the principles of basic and applied surveying techniques.
- To develop practical skills in the use of surveying and geospatial instruments for spatial data collection and mapping.

Course Learning Outcomes:

- Identify and describe various surveying methods, instruments and GPS technology used in geospatial studies.
- Understand the principles and applications of basic and applied surveying techniques.
- Demonstrate the use of GPS and geospatial technologies for spatial data acquisition and mapping.
- Apply basic surveying and GPS techniques in geographical investigations and field-based mapping.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	**Min. Passing Marks:** 33 (Minimum 25 Marks in External)

Total No. of Lectures-Tutorials-Practical (in hours per week): L- 4/w

Unit	Topics	No. of Lectures
I & II	Measurement of Horizontal and Vertical Angle by Theodolite Survey by Sextant	22
III & IV	Levelling and GPS Survey: Dumpy Level and GPS Principles and Applications.	23

Suggested Readings:

1. Monkhouse, F. J. and Wilkinson, F.J. (1985): Maps and Diagrams. Methuen, London
2. Raisz, E. (1962): General Cartography. John Wiley and Sons, New York. 5th edition.
3. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata.
4. Sharma, J. P. (2001): Prayogik Bhugol., Rastogi Publication, Meerut 3rd. edition.
5. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Hindi and English editions). Kalyani Publishers, New Delhi.
6. Singh, L.R. (2006): Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad
7. Roy, S. K. (2010). *Fundamentals of Surveying*. PHI Learning Pvt. Ltd., New Delhi.
8. Punmia, B. C., Jain, A. K. & Jain, A. K. *Surveying* (Vol. I & II). Laxmi Publications.
9. Kanetkar, T. P. & Kulkarni, S. V. *Surveying and Levelling* (Vol. I & II). Pune Vidyarthi Griha Prakashan.

M.A./M.Sc. 2nd Year, Sem. IV Course V (Research Project)

Program/Class: M.A./M.Sc.	**Year:** SECOND	**Semester:** FOURTH
Subject: Geography		
Course Code: MGH408R	Course Title: **Dissertation (Submitted)**	

Learning Objectives:

The learning objectives of this course are as follows:

- Develop advanced research and analytical skills.
- Apply theoretical knowledge to a specific research problem.
- Conduct independent investigation using appropriate methods.
- Present findings in a structured and scholarly manner.

Course Learning Outcomes: On completion of this course, learners will be able to:

- Identify significant gaps in existing geographic knowledge and formulate relevant, feasible research questions.
- Design a robust research methodology that employs appropriate geographic techniques to address the identified questions.
- Execute effective data collection and analysis, demonstrating proficiency in using advanced tools and software specific to geographic research.
- Produce a scholarly Dissertation that clearly communicates the study's findings, methods, and implications, and effectively present the research in a professional academic setting.

Credits: 4	**Core Compulsory**
Max. Marks: 25(Internal) +75(External)	Min. Passing Marks:40 (Minimum 30 Marks in External)

Dissertation Guidelines:

- Students will continue to work on assigned research projects during the Fourth Semester under the guidance of the Supervisor.
- Students will submit their final dissertations by the end of Fourth semester teaching.