CC-I

Session: 2024-25			
Part A - Introduction			
Name of Programme	M.Sc. Geography		
Semester	**I**		
Name of the Course	Geography and Climate		
Course Code	M24-GEO-101		
Course Type	CC-1		
Level of the course	400-499		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-101.1. enhance the knowledge about atmospheric constituents and structure. M24-GEO-101.2. develop the scientific understanding about climatic elements and their characteristics. M24-GEO-101.3. sharpens the understanding about atmospheric moisture, stability, instability and weather system. M24-GEO-101.4. enrich the knowledge about climatic classification, climate change and global warming.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours	-	-

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Definition of weather and climate; climatology and meteorology. 2. Origin, composition and structure of atmosphere. 3. Solar radiation, greenhouse effect, heat budget and temperature distribution.	15
II	4. Atmospheric pressure and its distribution pattern. 5. Theories of general circulation and planetary winds. 6. Walker circulation- ENSO and La Nina, origin of monsoons and jet streams.	15
III	7. Atmospheric Moisture: humidity, evaporation, condensation; precipitation formation theories and types of precipitation, acid rain.	15

	8. Stability and instability of atmosphere, air masses and fronts. 9. Weather systems: origin and characteristics of extra tropical and tropical cyclones.	
IV	10. Climatic classification: bases of climatic classification by Koeppen, Trewartha and Thornthwaite. 11. Climatic change: pattern, evidences and theories of climate change. 12. Global warming: theories and impacts on earth systems.	15
	Total Contact Hours	60

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	05	Written Examination:70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Athrens, C.D. (1994): Meteorology Today: An Introduction to Weather, Climate and Environment, West Publishing Co., Minnesota, USA.
2. Barry, R.G. and Chorley, R.J. (2010): Atmosphere, Weather and Climate, Marthren.
3. Critchfield, H.J. (1987): General Climatology, Printice Hall of India, New Delhi.
4. Collins, J.M. (2014): Climatology, Oxford.
5. Das, P.K. (1984): The Monsoons, National Book Trust, New Delhi.
6. Lal, D.S. (1966): Climatology, Chaitanya Publishing House, Allahabad.
7. Lutgens, F.K. and Tarbuck, E.J. (2010): The Atmosphere: An Introduction to Meteorology, Prentice Hall of India, New Delhi.
8. Miller, A.A. (1979): Climatology, Methuen and Co., London.
9. Oliver, J.E. and Hidore, J.J. (2003): Climatology: An Atmospheric Science, Pearson Education Inc. New Delhi.
10. Rama Sastry, A.A. (1984): Weather and Weather Forecasting, Publication Division, New Delhi.
11. Trewartha, G.T. (1980): An Introduction to Climate, McGraw Hill Company, New York.

SEM

Session: 2024-25	
Name of the Programme	MSc Geography
Semester	**I**
Name of the Course	Seminar
Course Code	M24-GEO-107
Course Type: (CC/DEC/PC/Seminar/CHM/OEC/EEC)	Seminar
Level of the course	400-499
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-107.1.improve the articulation and presentation skill of students M24-GEO-107.2.analyse and comprehend the given problem
Credits	Seminar
	2
Teaching Hours per week	2
Max. Marks	50
Internal Assessment Marks	0
End Term Exam Marks	50
Examination Time	1 hour
Instructions for Examiner: Evaluation of the seminar will be done by the internal examiner(s) on the parameters as decided by staff council of the department. There will be no external examination/viva-voce examination.	

CC-11

Session: 2024-25			
Part A - Introduction			
Name of Programme	M.Sc. Geography		
Semester	III		
Name of the Course	Geography and Ecosystem		
Course Code	M24-GEO-301		
Course Type	CC-11		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-301.1 familiarize with the concept and elements of ecosystem. M24-GEO-301.2 enrich knowledge about the characteristics of different biomes. M24-GEO-301.3 aware about the inter-linkages between human artifacts and natural environment. M24-GEO-301.4 acquaint about world environmental problems and policy framework.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours	-	-

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Ecosystem: Concept, bases, types, components and function of ecosystem, ecosystem approach and its relevance in geography. 2. Energy flow in ecosystem: food chain, food web, trophic levels, ecological production and ecological pyramids. 3. Biogeochemical cycles: carbon, phosphorus and nitrogen cycles.	15
II	4. Scheme of biome classification: factors affecting the distribution of biomes. 5. Salient features of the following biomes: (i)Tropical evergreen rain forest biome (ii)Savanna biome (iii)Monsoon biome (iv)Temperate biome	15

	(v)Marine biome (vi)Mountain biome (vii)Desert biome	
III	6. Human-environment relationship: classification of resources; use and ecological imbalance with reference to soils, forests and energy resources. 7. Concept of air, water, and noise pollution: level of problem, causes and measurement tools. 8. Biodiversity and conservation: preservation and conservation of ecosystem through resource management.	15
IV	9. Environmental issues: climate change, ozone depletion, global warming and global cooling 10. International efforts for environment management and conservation: The Stockholm Conference, The Earth Summit, Kyoto Protocol, Paris declaration and after; sustainable development goals (SDGs). 11. Environment governance: environment policies and environmental legislation in India: prevention & protection Act of wild life, water, air, forest, environment protection and National Environment Tribunal Act., National Green tribunal Act.	15
	Total Contact Hours	60

Suggested Evaluation Methods

Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	05	Written Examination:70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Agarwal, A. and Sen, S. (1999) The Citizens Fifth Report. Centre for Science and Environment New Delhi.
2. Akitsu, T. (2019). Environmental Science: Society, Nature, and Technology. Jenny Stanford Publishing
3. Bodkin, E. (1982) Environmental Studies, Charles E. Merril Pub Co., Columbus, Ohio.
4. Bertalanffy, L. (1958) General Systems Theory, George Bragiller, New York.
5. Brinkmann, R. (2016) Introduction to Sustainability. Wiley-Blackwell.
6. Chandna, R.C. (1998) Environmental Awareness, Kalyani Publishers, New Delhi.
7. Chorley, R.J. (1962) Geomorphology and General Systems Theory, U.S.G.S. Professional Paper, 500B.
8. Eyre, S.R. and Jones, G.R.J. (1966) Geography as Human Ecology, Edward Arnold, London.
9. Goudie, A. et al. (1990): Geomorphological Techniques, George Allen & Unwin (publishers) Ltd.

10. Kormondy, E.J. (1989) Concepts of Ecology, Prentice Hall.
11. Mishra, S.P. and Pandey, S.N. (2016) Essential Environmental studies, Ane publications New Delhi.
12. Nobel and Wright (1996): Environmental Science, Prentice Hall, New York.
13. Odum, E.P. (1971) Fundamentals of Ecology, W.B. Saunders, Philadelphia.
14. Russwurm, L.H. and Sommerville, E. (1985) Man's Natural Environment-A Systems Approach, Duxbury, Massachusetts.
15. Saxena, H.M (2017), Environment Geography, Rawat Publications, New Delhi.
16. Sharma, H.S. (2000) Ranthambhore Sanctuary-Dilemma of Eco-development, Concept, New Delhi.
17. Simmons, I.G. (1981) Ecology of Natural Resources, Edward Arnold, London.
18. Singh, S. (1991) Environmental Geography, Prayag Publications, Allahabad.
19. Smith, R.L. (1991) Man and his Environment: An Ecosystem Approach, Harper & Row, London.
20. World Watch Institute: State of the World, Latest Report, Washington, D.C.

CC12

Session: 2025-26			
Part A – Introduction			
Name of Programme	M.Sc. Geography		
Semester	III		
Name of the Course	Regional Development and Planning with Special Reference to India		
Course Code	M24-GEO-302		
Course Type	CC-12		
Level of the course	400-499		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-302.1. understand the concept of regions. M24-GEO-302.2. acquaint with various models of economic and regional development. M24-GEO-302.3. aware of development in India and identify the regional disparity in agriculture, industry and HDI. M24-GEO-302.4. understand the Indian plans and how they are formed.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
1	1. Concept of regional development, regional disparities, balanced regional development 2. Region and its typology 3. Basis of regionalization in India and their characteristics	15
II	4. Theories of regional development: (i) Trickle Down Theory (ii) Growth Pole Theory (iii) Cumulative causation Model (iv) Core-Periphery Theory 5. Concept of sustainable development, inclusive development: and eco-feminism.	15
III	6. Development and regional disparities in India since Independence: (i) Disparities in Agricultural Development (ii) Industrial Development. 7. Disparities in human resource development in terms of poverty, education and health.	15
IV	8. India through Planned Era with special reference to: (i) Tribal area development plan (ii) Hill Area development plan (iii) Desert, drought prone and backward area development plan (iv) Command area	

	development programme. 9. Niti Ayog: aims and objectives 10. Urban planning in India with special reference to National Capital Region	15

Total Contact Hours			60
Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Chand, M and Puri, V.K. (1983): Regional Planning in India, Allied Publishers, New Delhi.
2. Chandna, R.C. (2000): Regional Planning: A Comprehensive Text. Kalyani Publishers, New Delhi.
3. Chaudhuri, J.R. (2001): An Introduction to Development and Regional Planning with special reference to India. Orient Longman, Hyderabad.
4. Friedmann, J. and Alonso, W. (1973): Regional Development and Planning. The MIT Press, Mass.
5. Hettne, B., Inotai, A. and Sunkel, O. (2000): Studies in the New Regionalism. Vol. I-V. Macmillan Press, London.
6. Kuklinski, A.R. (1972): Growth Poles and Growth Centres in Regional Planning. Mouton and Co., Paris.
7. Kundu and Moonis Raza (1988): Indian Economy: The Regional Dimension, CSRD/SSS, JNU. New Delhi.
8. Leys, C. (1996): The Rise and Fall of Development Theory. Indian University Press, Bloomington.
9. Mahapatra, A.C. and Pathak, C.R. (2003): Economic Liberalization and Regional Disparities in India. Star Publishing House, Shillong.
10. Misra, R.P. (1992): Regional Planning: Concepts, Techniques, Policies and Case Studies. Concept Publishing Company, New Delhi.
11. Misra, R.P. and Natraj, V.K. (1978): Regional Planning and National Development. Vikas Publication, New Delhi.
12. Raza Moonis (1988): Regional Development Vol. 10, Contribution to Indian Geography Heritage Publishers, New Delhi.
13. Patnaik, C. S. (1981): Economics of Regional Development and Planning in Third World Countries, Associate Publishing House, New Delhi.
14. Sundaram K.V. (1986): Urban and Regional Planning in India, Vikas Publishing House, New Delhi

DEC-1			
Session: 2024-25			
Part A - Introduction			
Name of Programme	M.Sc. Geography		
Semester	III		
Name of the Course	Coastal Geomorphology		
Course Code	M24- GEO - 303		
Course Type	DEC-1		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M-24-GEO-303.1. understand the significance and classify the coasts. M-24-GEO-303.2. investigate the origin of wave and tide generations. M-24-GEO-303.3. analyse and classify various landforms and their processes in coastal environment. M-24-GEO-303.4. learn the mechanism rates and causes of shoreline change.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Nature and scope of coastal geomorphology and its significance, time as a factor in coastal geomorphology 2. Classification of coasts and shore: submerged and emerged coasts, classification of coasts by Johnson, Valentine, and Shepard.	15
II	3. Waves generation and modification, waves in shallow and deep water, wave energy, waves induced currents, Tsunamis and Seiches. 4. Origin and types of tides: theories of origin of tides (equilibrium theory, progressive wave theory and stationary wave theory).	15
III	5. Processes and mechanism of marine erosion and resultant landforms. 6. Depositional landforms: origin, classification, and distribution. (sandy and muddy shores- beaches and beach ridge, barrier spit and bar; mudflats and marshes (salt and tidal), formation of estuaries and mangrove swamps, coastal sand dunes and deltas.	15

IV	7. Structural control of shore zone morphology and shoreline change: mechanism rates and causes, coastal engineering structures: seawalls, groins, breakwaters. 8. Coastal zone management: mapping and monitoring of coastal changes, legal and institutional coastal regulation, effective coastal zone policies.	15
	Total Contact hours	60

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination: 70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Ahmad, E. (1973): Coastal Geomorphology of India. Orient Longmans, Bombay.
2. Bird, E.C. (1984): Coasts- An Introduction to Coastal Geomorphology, Basil- Blackwell, Oxford.
3. Bose, A.et. al (1985): Coastal Zone Management of West Bengal, Pub. Sea Explorers Institute, Calcutta.
4. Davis J.L (1973): Geographical Variation in Coastal Development. Hafner Pub. Co., New York.
5. French, P.W. (1997): Coastal and Estuarine Management, Routledge, London.
6. Goudie, A. S. (2004): Encyclopedia of Geomorphology, Roultedge.
7. Ivan, V. (2006): Global Coastal Change. Oxford: Blackwell publishing.
8. John, P. (1984): An Introduction to Coastal Geomorphology. Arnold Heinemann, London.
9. King. C.A.M (1972): Beaches & Coasts, Edward Arnold, London.
10. Masselink, G. Hughes, M. Knight, J. (2011): Introduction to Coastal Processes and Geomorphology.
11. Pethick, J. (1983): An Introduction to coastal Geomorphology. Oxford University Press, New York.
12. Shepard, F.P. and Wanless, N.R. (1971): Our changing Coastlines. Oxford University Press.

DEC-1

Session: 2025-26			
Part A – Introduction			
Name of Programme	M.Sc. Geography		
Semester	III		
Name of the Course	Fluvial Geomorphology		
Course Code	M24-GEO-304		
Course Type	DEC-1		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-304.1. acquaint with the basic concepts of fluvial system. M24-GEO-304.2. familiarize with the sediment transfer processes and major types of channels. M24-GEO-304.3. cognize with flood forecasting and management techniques. M24-GEO-304.4. aware about flood plain management using geospatial technology in fluvial system.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Fluvial System: types, variables, feedbacks, thresholds, responses and scales in fluvial geomorphology. 2. Water erosion: types of water erosion and erosive processes, monitoring of water erosion (field measurements and models) management problems associated with erosion.	15
II	3. Sediment transfer: sources, modes, storage, movement and measurement of sediment load and yield, controls as sediment yield, human activity and sediment yield. Concept of fluvial grade. 4. Channel forms and processes: channel types, geometry, size, shape, channel pattern, bedrock channels and associated land forms.	15

III	5. Floods: Flood frequency, magnitude, forecasting and structural and non-structural adjustment to floods, catastrophic and paleo floods, reconstruction of past floods. 6. Impact of construction activities on fluvial systems. 7. Human adjustment in floodplains, alluvial fans and deltaic environments.	15
IV	8. Managing river channels: channelization and flow regulation; impacts of water management on the physical, chemical and ecological condition of channels and floodplains, river restoration. 9. Remote sensing and GIS applications in mapping, monitoring and management of fluvial environments.	15
	Total Contact Hours	60

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination: 70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Charlton, R. (2008): Fundamentals of Fluvial Geomorphology, Routledge, London.
2. Chorley R.J. (1973): Introduction of Fluvial Processes. Methuen and Company, London.
3. Fryirs, K.A. and Brierley G.J. (2013): Geomorphologic Analysis of River Systems, Wiley Blackwell, Chichester.
4. Gregory K.J. (1977): River Channel Changes. John Wiley and Sons, New York.
5. Gregory K.J. and Walling, D.E. (1985): Drainage Basin: Forms and Process-A Geomorphological Approach. John Wiley and Sons, New York.
6. Kingston D. (1984): Fluvial Forms and Processes. Edward Arnold, London.
7. Kondelf, G.M. and Piegay, H. (2003): Tools in Fluvial Geomorphology. Wiley, Chichester.
8. Leopold C.B. (1964): Fluvial Processes in Geomorphology. Freeman, London.
9. Morisawa. (1981): Fluvial Geomorphology. George Allen and Unwin, London.
10. Robert, A. (2003): River Processes-An Introduction to Fluvial Dynamics, Hodder Education.

DEC-1			
Session: 2024-25			
Part A - Introduction			
Name of Programme	M.Sc. Geography		
Semester	III		
Name of the Course	Arid Geomorphology		
Course Code	M24- GEO -305		
Course Type	DEC-1		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-305.1. understand the unique geomorphic processes that shape arid landscapes. M24-GEO-305.2. investigate the wind erosion landforms and sources of dust M24-GEO-305.3. analyse and classify various depositional landforms and their processes in desert environments M24-GEO-305.4. the influence of climate change on desert dynamics and learn the causes, consequences and monitoring techniques for desertification		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Definition, nature, and scope of arid geomorphology. 2. Nature and properties of wind as a geomorphic agent, global distribution of deserts and arid regions. 3. Importance of studying arid regions in the context of global environmental change.	15
II	4. Wind erosion and landforms: processes: abrasion, deflation, and aerodynamic erosion; landforms; yardangs, ventifacts, pans, stone pavements, deflation hollows, desert varnish: processes and significance. 5. Dust-sources: contemporary and proximal, mineral composition. 6. Dust-generating and dust yielding systems, gross spatial patterns of production and removal, and it's paleo-environmental significance.	15

III	7. Factors and processes influencing wind deposition. 8. Wind deposition landforms: loess deposits, sand ripples, dunes, desert pavements, bajadas, barchan and seif 9. Dune classification schemes: morpho dynamics of the crescentic, longitudinal, and complex dunes.	15
IV	10. Temporal and spatial variability in desert climates and influence of climate change on desert dynamics 11. Human impacts on aeolian systems (overgrazing, deforestation, mining) 12. Desertification and its controls with special reference to India.	15
	Total Contact hours	60

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination: 70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Bull, W. B. (2007): Desert Environments: The Physical Geography of the United States. Academic Press.
2. Campbell E.M., ed. (2005): Australian landforms: Understanding a low, flat, arid and old landscape, Rosenberg Publishing.
3. Cooke, R.U. Warren, A., Goudie, A.S. (1993): Desert Geomorphology
4. Goudie, A.S. (2006): Dust and Desertification
5. Lancaster, N. (1995).: Geology of Desert Environments. Springer.
6. Pye, K., Tsoar, H. (1990): Aeolian Sand and Sand Dunes
7. Rundel, P. W., & Boehm, A. M. (2013): Plant Ecology of Deserts, Springer.
8. Sharma M.L. (1986) Geomorphology of Semi-arid region- A case study of Gambhir River Basin, Rajasthan, India, Scientific Publishers.
9. Thomas, D. S. G. (2011): Arid Zone Geomorphology: Processes, Form, and Change in Drylands. Wiley-Blackwell.
10. Thomas, D.S.G. (1989). Arid Zone Geomorphology

DEC-2

Session: 2024-25			
Part A - Introduction			
Name of Programme	M.Sc. Geography		
Semester	III		
Name of the Course	Urban Geography		
Course Code	M24-GEO-307		
Course Type	DEC-2		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-307.1 provide understanding about evolution of towns and pattern of urbanization. M24-GEO-307.2 enrich knowledge about economic and functional characteristics of cities. M24-GEO-307.3 acquaint with urban morphology and land use models. M24-GEO-307.4 familiarize with theories of urban development.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours	-	-

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Urban geography: concepts and approaches, nature and scope. 2. Origin and evolution of towns and factors of urban growth; theories of urban origins 3. The global context of urbanization: trends and pattern; cycle of urbanization.	15
II	4. Economic base of cities: concept and employment ratio. 5. Functional classification of cities: concept and scheme of classification M. Aurousseau, Harris, Nelson and Alexander 6. Rural - Urban Fringe: structural characteristics and its development. 7. City and region: concepts of influence and dominance, methods of delimitation of area of influence and dominance. 8. SEZ: concept, policies and consequences.	15
	9. Urban morphology and land use structure: city core, commercial, industrial, residential and public utilities. 10. Classical models of city structure: concentric zone model by E.W.	

III	Burgess, sector model by Homer Hoyt, multiple nuclei model by Harris and Ullman, 11. Modifications of the classical models: Kearsley' modifications of Burgess model, Mann's model of midsize British city, White's model of the 21st century city and Vance's urban realms model. 12. Internal structure of third world cities: *Bazar model* and colonial model of South Asian cities, model of South East Asian cities and model of African cities.	15
IV	13. Social Area Analysis; concept and bases of residential segregation. 14. Diffusion theories by Bylund, Morril, Hudson and Vance. 15. Rank size rule: concept and its applications. 16. Law of primate city: concept and its applications.	15
	Total Contact Hours	60

Suggested Evaluation Methods

Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	05	Written Examination:70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Berry, J.E. (1970) Geography Perspective on Urban System, Prentice Hall, New Jersey.
2. Cater, H. (1972) The study of Urban Geography, Edward Arnold, London.
3. Clark, D. (1982), Urban Geography, Croom Halm, London and Cambridge.
4. Datta, A. and Shaban, A. (2017) Mega-Urbanization in Global South: Fast Cities and New Urban Utopias of the Post-colonial State, Routledge: London and New York.
5. Johnson, J. (1974) Suburban Growth, John Wiley and Sons, London.
6. Kaplan,D.H. and Holloway, S.R. (2024) Urban Geography, John Wiley, USA.
7. Mayer, H.M. and Kohn, C.F. (1968) Readings in Urban Geography. The University of Chicago Press, Chicago.
8. Michael P. (2004) Urban Geography: A Global Perspective, Routledge, USA.
9. Northam, R.M. (1979) Urban Geography, John Wiley, Toronto.
10. Parnell, S. and Oldfield, S. (2014) The Routledge Handbook on Global Cities, Routledge, London.
11. Ramachandra, R (1992) Urbanization and Urban System in India, Oxford, London.
12. Raymond and Murphy (1960) The American Cities: An Urban Geography, McGraw Hills, New York.
13. Scott, A.J. (2002) Global City-Regions: Trends, Theory, Policy, Oxford Press, London.
14. Sinha, S.P. (1984) Processes and Pattern of Urban Development in India: A Study of Haryana, The associated Publishers, Ambala Cantt.
15. Southhall, A. (1998) The City in Time and space, Cambridge University Press, Cambridge.

DEC-2			
Session: 2024-25			
Part A - Introduction			
Name of Programme	M.Sc. Geography		
Semester	III		
Name of the Course	Glacial Geomorphology		
Course Code	M24- GEO -308		
Course Type	DEC-2		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-308.1. explain the nature, scope, principles and importance of glacial geomorphology M24-GEO-308.2. assess the mass balance, energy budget and flow mechanism of glaciers M24-GEO-308.3. assess the processes and landforms shaped by erosion and deposition in glacial and periglacial environment M24-GEO-308.4. understand the glaciers response to climate change and contemporary issues of glacial retreat		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Nature, scope, principles and significance of glaciers, importance of glacial geomorphology in earth system science. 2. Cryosphere, Ice ages, glacier formation, classification, linkages between glacial and periglacial environments.	15
II	3. Glacier mass balance and energy budget. 4. Glacier movement and flow mechanisms.	15
III	5. Processes and landforms of erosion by glacial and periglacial environment. 6. Processes and landforms of deposition by glacial and periglacial environment.	15

IV	7. Glaciers as indicators of climate change and response. 8. Glacial hazards and risk assessment, contemporary issues in glacial retreat.	15
Total Contact hours		60

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination: 70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Benn, D.I., Evans, D.J.A. (1998): Glaciers and Glaciation, Publisher Arnold, London
2. Bennet.M.R. (2002) Glacial Geology, Wiley-Blackwell Publication.
3. Bhatnagar. N. (2018) Glaciology and Glacial Geomorphology, Arcler Education Inc. Publisher.
4. Ehlers, J., Gibbard, P. (2004): Quaternary Glaciations, Elsevier BV, Amsterdam.
5. Hambrey, M.J. (1994): Glacial Environments, UCL press, London.
6. Kaul M.N. (1990) Glacial and Fluvial Geomorphology (Lidder Valley).
7. Knight, P.G.(2009): Glacier Science and Environmental Change, Cambridge University Press & Assessment.
8. Menzies, J. (2002): Modern and Past Glacial Environments, Butterworth-Heinemann Ltd
9. Sugden, D.E., John, B.S. (1976): Glaciers and Landscape, The Arctic Institute of North America publishers.
10. Thornbury, WD. (2004): Principles of Geomorphology, John Wiley Sons, New York.

DEC-2			
Part A - Introduction			
Name of Programme	M. Sc. Geography		
Semester	III		
Name of the Course	Geography of Rural Settlement		
Course Code	M24-GEO-309		
Course Type	DEC-2		
Level of the course	500-599		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-309.1: gain knowledge about the concepts of rural settlement geography and its significance and approaches. M24-GEO-309.2: enhance the knowledge of morphology of settlements and dwellings in rural India. M24-GEO-309.3: understand the social issues in rural settlements like poverty housing and healthcare facilities, M24-GEO-309.4: familiarize with the environmental issues and rural developmental planning in India.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist at least 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Nature, scope, significance and approaches to rural settlement geography 2. Factors affecting site and situation of rural settlements. 3. Distribution of rural settlements: size and spacing of rural settlements. 4. Types, forms and patterns of rural settlements.	15
II	5. Morphology of rural settlements, socio-economic- behavioural model, caste segregation model. 6. Rural dwellings: factors affecting house types, essential features of houses, ground plan and layout of houses in India	15
III	7. Regionalization of rural settlements with special reference to India. 8. Social issues in rural settlements: poverty, housing and health care in India.	15

IV	9. Environmental issues in rural settlements. 10. Rural development plans in India.	15
	Total Contact Hours	60

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Alam, S.M. (1982) Settlement System of India, Oxford and IBH Publication Co, New Delhi.
2. Brock, J.O.M and Welb, J.W. (1978): Geography of Mankind. McGraw Hill, London.
3. Chisholm, M. (1967): Rural settlements and Land Use, John Wiley, New York.
4. Clout, H.D. (1977): Rural Geography, Pergamon, Oxford.
5. Daniel, P. and Hopkinson, M. (1986): The Geography of Settlement. Oliver & Byod, Edinburgh.
6. Grover, N. (1985): Rural Settlements – A Cultural Geographical analysis, Inter-India Publication, Delhi.
7. Hudson, R.S. (1976): A Geography of Settlements, MacDonald & Evans., New York.
8. Mitra, A. (1960): Report on House Types and Village settlement Patterns in India. Publication Development, Govt. Of India, New Delhi.
9. Mayer, I and R.J. Haqqet. (1979): Settlements: Theory and Practice. Harper & Row, London.
10. Ramachandran, H. (1985): Village Clusters and Rural Development, Concept Publication, New Delhi.
11. Rao, E.N. (1986): Strategy for Integrated Rural Development, B.R. Publication Cor., Delhi.
12. Rappaport, A. (1969): House form and Culture, Prentice Hall, New Jersey.
13. Sen, L.K. (1972): Readings in Micro-level Planning and Rural Growth Centres. National Institute of Community Development, Hyderabad.
14. Singh, R.L. (1978): Transformation of Rural Habitat in Indian Perspectives: A Geographic Dimension, NGSI Research Publication, No. 19, Varanasi.
15. Srinivas, M.N. (1968): Village India, Asia Publication House, Bombay.
16. Wan Mali, S. (1983): Service Centres in Rural India, B.R. Publication, New Delhi.

DEC-3			
Part A - Introduction			
Name of Programme	M. Sc. Geography		
Semester	III		
Name of the Course	Geography of Transport and Trade		
Course Code	M24-GEO-311		
Course Type	DEC-3		
Level of the course	500-599		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-311.1. understand the nature and scope of transportation and its types. M24-GEO-311.2. gain knowledge about the concepts of geography of transport and its influencing factors M24-GEO-311.3. enhance knowledge about the theories of trade and apply them to real-world examples. M24-GEO-311.4. familiarize with the trade pattern and policies of major countries.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist at least 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Meaning, nature & scope of transport geography. 2. Factor Influencing growth and development of transport system. 3. Economic and regional development and transport development.	15
II	4. Characteristics and significance of modes of transport: railway, roads, airways and waterways, pipelines. 5. Urban transport: growth and problems 6. Transport policies of major countries in world (USA. European Union, China and India).	15
III	7. Meaning, scope and significance of geography of trade 8. Theoretical perspectives: Mercantilism, theory of absolute advantage, theory of comparative advantage, product life cycle theory, gravity model of trade.	15
IV	9. Trade: Types; Spatial patterns of internal and international trade. 10. Trade policies of major countries (USA, China, Japan and India)	15

Total Contact Hours	60

DEC-3	
Part A – Introduction	
Name of Programme	M.Sc. Geography
Semester	III
Name of the Course	Political Geography

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Alexander, J. W. (1993): Economic Geography, Prentice Hall, New Jersey
2. Black, W. R. (2003): Transportation: A Geographical Analysis, Guilford Press, New York
3. Hensher, D.A. (2004): Handbook of Transport Geography and Spatial Systems, Volume 5 of Handbooks in Transport, Elsevier, Oxford
4. Hoyle, B.S., and Knowles, R.D. (eds.) (1992): Modern Transport Geography, Belhaven Press, London
5. Rodrigue, J.P., Comtois, C. and Slack, B. (2006): The Geography of Transport Systems, Routledge, London, New York
6. Saxena, H. M. (2005): Transport Geography, Rawat Publication, New Delhi
7. Taffee, S. G. and Gawtheir, T. S. (1973): Geography of Transportation, Prentice Hall, New Jersey.
8. Thomas, S. L. and Conkling, V. (1971): Geography of International Trade, McGraw Hill, New York
9. Thomas, S. L. and Conkling, V. (1974): The Geography of Economic Activity, McGraw Hill, New York
10. White, H. P. and Senior, M. L. (1984): Transport Geography, John and John Company, Chicago
11. White, H.P. and Senior, M.L. (1983): Transport Geography, Longman, Hong Kong

Course Code	M24- GEO -312		
Course Type	DEC-3		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24- GEO -312.1 understand the core concepts of political geography. M24- GEO -312.2 expand knowledge of the state, nation, boundaries and process of colonialism. M24- GEO -312.3 understand various geopolitical theories and supra-national organizations. M24- GEO -312.4 aware the India's role in global politics and its electoral processes.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Nature, scope and development of political geography; relationship with political economy and political sociology. 2. Theoretical contributions to political geography: Ratzel, Hartshorne, Taylor, and Harvey.	15
II	3. The state: concept and evolution; nation and the nation-states; organic theory of the state; state and world political order; 4. Frontiers and boundaries: concepts, classification, and their changing perspective. 5. Colonialism, imperialism, post-colonialism and post-colonial theory, decolonization and neo-colonialism.	15
III	6. Global strategic views: Mahan and sea power; Mackinder and heartland; Spykman and rimland; Servasky and air power. 7. S.B. Cohen's model of geo-strategic and geo-political regions. supra-national organizations (EU, NATO, ASEAN, SCO, BRICS, BIMSTEC) and their geographical significance.	15

IV	8. India's position in international conflict: role in international law and global diplomacy; geo-political significance of Indo-pacific region and quad group; between two worlds India's position in world politics; populism; assets of Indian defence. 9. Electoral systems and reforms; methods of studying; Redistricting: Issues and concerns; geographical influence in voting; politico-electoral regions of India; gerrymandering and electoral abuse in India; political parties in India and Haryana.	15
	Total Contact Hours	60

Suggested Evaluation Methods

Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination: 70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Adhikari, S. (1997): Political geography. Rawat Publications.
2. Alexander, L. M. (1963): World political patterns. Rand McNally.
3. Cox, K. R. (2002). Political geography: Territory, state and society. Wiley-Blackwell.
4. De Blij, H. J., & Glassner, M. I. (1968): Systematic political geography. John Wiley.
5. Deshpande, C. D. (1992): India: A regional interpretation. Northern Book Centre.
6. Dikshit, R. D. (1996): Political geography: A contemporary perspective. Tata McGraw-Hill.
7. Dikshit, R. D. (1999): Political geography: A century of progress. Sage Publications.
8. Fisher, C. A. (1968): Essays in political geography. Methuen.
9. Glassner, M. I., De Blij, H. J., & Yacher, L. (1980): Systematic political geography. John Wiley.
10. Moddie, A. E. (n.d.): Geography behind politics (Latest ed.). Hutchinson
11. Pounds, N. J. G. (1972): Political geography. McGraw-Hill.
12. Prescott, J. R. V. (n.d.). The geography of frontiers and boundaries. Aldine
13. Short, J. R. (1982): An introduction to political geography. Routledge.
14. Short, J. R. (2002): An introduction to political geography. Taylor & Francis.
15. Sukhwal, B. L. (1968). Modern political geography of India. Sterling Publishers.
16. Taylor, P. J. (1985): Political geography. Longman.
17. Swiss Federal Institute of Technology Zurich (ETH Zurich). (n.d.): The future of state failure: Implications for policy and research. Retrieved from https://www.files.ethz.ch/isn/128690/pub1059-1.pdf

DEC-3	
Part A – Introduction	
Name of Programme	Masters in Geography
Semester	III
Name of the Course	Social Geography with special Reference to India
Course Code	M24-GEO-313
Course Type	DEC-3

Level of the course	500-599		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-313.1. enrich the understanding about spatial dimensions of Indian society. M24-GEO-313. 2. take cognizance of caste and clan territories in India. M24-GEO-313.3. acquaint with linguistic and religious profile of India. M24-GEO-313. 4. aware about social change and transformation in spatial context.		
Credits	Theory	Tutorial	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist at least 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Nature and scope of social geography, its development and place among social sciences. 2. Indian social geography: Data sources and problems. 3. Social differentiation and region formation, social evolution, social space, social and spatial justice.	15
II	4. Tribes: social formations, rural-urban and spatial distribution and impacts of development. 5. Castes: origin, caste and morphology of settlements, caste and clan territories and distribution of scheduled castes	15
III	6. Languages: classification, historical processes of diffusion and geographical distribution, linguistic regions 7. Religions: origin, historical background and spatial distribution of religious groups, minority and segregation in space, communalism.	15
IV	8. Social change and transformation in India, Modernization and Sanskritization 9. Rural-urban interaction and social change. 10. Social wellbeing: overview of the concept.	15
	Total Contact Hours	60

Suggested Evaluation Methods

Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination	
• Seminar/presentation/assignment/quiz/class test etc.:	10		

• Mid-Term Exam:	15	

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Ahmad, A. (1999). Social Geography, Rawat Publication, New Delhi.
2. Dubey, S.C. (1991). Indian Society, National Book Trust, New Delhi.
3. Jean, D. and Sen, A. (1996). Economic Development and Social opportunity, Oxford University Press, New Delhi,
4. Schwartzberg J. (1978). An Historical Atlas of South Asia, University of Chicago Press, Chicago.
5. Sen, A and Jean, D. (1996). Indian Development: Selected Regional Perspectives, Oxford University Press,
6. Smith, D. (1977). Geography: A Welfare Approach, Edward Arnold, London.
7. Sopher, D. (1980). An Exploration of India, Cornell University Press.
8. Rao, S. (1958). Personality of India, M.S. University Baroda, Vadodara.

PC-3	
Part A - Introduction	
Name of the Programme	MSc Geography
Semester	III
Name of the Course	Remote Sensing and Digital Image Processing
Course Code	M24-GEO-315
Course Type	PC- 3

Level of the course	500-599		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-315.1. acquire of skills to differentiate the type of data from satellite imageries. M24-GEO-315. 2. interpret physical and socio-economic features on imageries. M24-GEO-315.3: acquaint with software and pre-processing of satellite data. M24-GEO-315.4. enhance the skills about processing and extracting features from satellite imageries.		
Credits	Theory	Practical	Total
	0	4	4
Teaching Hours per week	0	8	8
Internal Assessment Marks	0	30	30
End Term Exam Marks	0	70	70
Max. Marks	0	100	100
Examination Time	0	4 hours	

Part B- Contents of the Course

Instructions for Paper-Setter

Note for Paper Setters: The examiner shall set four questions. All questions are compulsory.

Distribution of Marks for Evaluation

Exercise= 10x4 **File Record=10** **Viva-voce=20**

Unit	Practicals	Contact Hours=120
I	1. Types of Satellites and Satellite Data. Characteristics of Indian remote sensing satellite and types of data. 2. Preparation of interpretation key of satellite imageries (different Satellite data, IRS P6 and LANDSAT) 3. Visual interpretation and preparation of land use/land cover from satellite imageries LISS IV or PAN Sharpened Image or LANDSAT Data).	30
II	4. Geo-referencing and its significance. 5. Giving Geographic and projected Coordinates to toposheets and Maps. 6. Digital Image Pre-processing: (i) image enhancement (ii) sub set and (iii) resolution merge/sharpening of image	30
III	7. Spectral Signature Curves. 8. Preparation of FCC and comparison of features on true colour, panchromatic and FCC. NDVI and its significance.	30
IV	9. Digital classification of satellite data (supervised and unsupervised) 10. Ground truthing and accuracy of classification.	30

Suggested Evaluation Methods

Internal Assessment: 30		**End Term Examination: 70**	
➢ **Practicum**	**30**	➢ **Practicum:**	**70**
• Class Participation:	5	Lab record, Viva-voce, write-up and	
• Seminar/presentation/assignment/quiz/class test etc.:	10		

• Mid-Term Exam:	15	execution of the practical

Part C- Learning Resources

Recommended Books/e-resources/LMS:

1. Bhatta Basudeb (2014). Remote Sensing and GIS. Oxford University Press, Oxford.
2. Campbell, (2009). Digital Remote Sensing.
3. Guha Pardeep (2013). Remote Sensing for the Beginner. East West Press, New Delhi.
4. Jensen. J.R. (2013). Remote Sensing of the Environment: An Earth Resource Perspective, Pearson Publications.
5. Kumar Meenakshi (2001). Remote Sensing, NCERT, New Delhi.
6. Lillesand and R.W. Kiefer, (2005). Remote Sensing and Image Interpretation, John Wiley and Sons.
7. Pritvish Nag, and M. Kudrat (1998). Digital Remote Sensing, Concept Publishing Company, New Delhi.

OEC

Session: 2025-26	
Part A – Introduction	
Name of Programme	M.Sc. Geography
Semester	III
Name of the Course	Climate Change and Earth Systems

Course Code	M24-OEC-317		
Course Type	OEC		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-OEC-317.1. understand about dynamics, trend and pattern of past climates. M24-OEC-317.2. enrich the knowledge about role of GHGs in global warming. M24-OEC-317.3. acquaint with future trends of climate change and policy framework. M24-OEC-317.4. create awareness about impacts of global warming on earth systems and environment.		
Credits	Theory	Practical	Total
	2	0	2
Teaching Hours per week	2	0	2
Internal Assessment Marks	15	0	15
End Term Exam Marks	35	0	35
Max. Marks	50	0	50
Examination Time	3 hours	-	-

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Climatic variations, fluctuations and change. 2. Past climates and evidences of climate change.	8
II	3. Earth's radiation balance, Greenhouse effect and global warming. 4. Greenhouse gases: emission, concentration and effects.	7
III	5. IPCC and its reports: trend and pattern of global warming. 6. Future climate change and predictions.	8
IV	7. Climate change, water resources and agriculture. 8. Global warming, disaster vulnerability and environment.	7
Total Contact Hours		30

Suggested Evaluation Methods

Internal Assessment: 15		**End Term Examination: 35**	
➢ **Theory**	**15**	➢ **Theory:**	**35**
• Class Participation:	4	Written Examination: 35	
• Seminar/presentation/assignment/quiz/class test etc.:	4		
• Mid-Term Exam:	7		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Andrew, D. (2011): Introduction to Modern Climate Change, Cambridge University Press.
2. Andrew, D. (2012): The Science and Politics of Global Climate Change, Cambridge

University Press.
3. Anthony, G. (2013): The Politics of Climate Change, Wiley.
4. David, W.W. (2019): The Uninhabitable Earth, Penguin Books.
5. Intergovernmental Panel on Climate Change, UNEP and WMO. IPCC Assessment Reports 1-5.
6. John, H. (2009): Global Warming: The Complete Briefing, Cambridge University Press.
7. Jefferey Bennet, (2016): Global Warming Premier, https://www.globalwarmingprimer.com/.
8. Trewartha, GT. (1980): An Introduction to Climate, McGraw Hill Company, New York.
9. Will, S., Regina, AS., Peter, D., Tyson, J.J., Pamela, A., Matson, B. M., Frank, O., Katherine, R., Hans-Joachim, S., Billie, L., Turner, R. and Wasson, J. (2005): Global Climate Change and the Earth System: A Planet under Pressure. Springer Verlag Berlin Heidelberg, Germany.

CC-13

Session: 2025-26	
Part A – Introduction	
Name of Programme	M.Sc. Geography
Semester	IV

Name of the Course	Geographical Thought		
Course Code	M24- GEO -401		
Course Type	CC-13		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-401.1. understand the nature and philosophical foundations of geography. M24-GEO-401.2. know the key conceptual frameworks, and dichotomies and dualisms in geography. M24-GEO-401.3. familiar with scientific approaches and methodologies. M24-GEO-401.4. enhance knowledge of humanistic and critical perspectives in geography		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Classification of knowledge, the nature of geography, and its position among the sciences. 2. Nature of geographic knowledge during the ancient (Greek, Roman) and medieval Arab periods. 3. Foundations of modern geography: contributions of Varenius, Kant, Humboldt, and Ritter.	15
II	4. Emergence of geography as a study of (i) physical features (ii) chorology (iii) landscapes. 5. Concepts in geography: environmental determinism, possibilism, neo-possibilism and probabilism, areal differentiation. 6. Dichotomy and dualism in geography: physical vs human geography and systematic vs regional geography.	15
III	7. Quantitative revolution: emergence of geography as spatial science. 8. Positivist explanations in geography: laws, theories and models. 9. Inductive and deductive logic in geographic explanations.	15

IV	10. Behavioral and humanistic perspectives in geography. 11. Social relevance in geography: welfare, radical and feminist perspectives. 12. Postmodernism and geography.	15
	Total Contact Hours	60

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination: 70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Ali, S. M. (1966): Geography of the Puranas. Archaeological Survey of India.
2. Cresswell, T. (2013): Geographic thought: A critical introduction. Wiley-Blackwell.
3. Dickinson, R. E. (1969): The makers of modern geography. London.
4. Dikshit, R. D. (1997): Geographical thought: A contextual history of ideas. Prentice Hall of India.
5. Gaile, G. L., & Willmott, C. J. (2003): Geography in America at the dawn of the 21st century. Oxford University Press.
6. Hartshorne, R. (1959): Perspectives on the nature of geography. Rand McNally.
7. Harvey, D. (1989): Explanation in geography. Edward Arnold.
8. Holt-Jensen, A. (2011): Geography, history and concepts: A student's guide (4th ed.). SAGE Publications.
9. James, P. E., & Martin, G. J. (1972): All possible worlds: A history of geographical ideas. John Wiley & Sons.
10. Johnston, R. J. (1983): Geography and geographers: Anglo-American human geography since 1945: Edward Arnold.
11. Peet, R. (1998): Modern geographical thought. Blackwell Publishers.

CC-14

Session: 2025-26

Part A – Introduction			
Name of Programme	M.Sc. Geography		
Semester	IV		
Name of the Course	Hydrology and Oceanography		
Course Code	M24-GEO-402		
Course Type	CC-14		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-402.1. know about the basic concepts and applications of hydrology. M24-GEO-402.2. understand the techniques of rainfall estimation and runoff processes. M24-GEO-402.3. enrich the knowledge about topographic features of oceanic floor and deposits. M24-GEO-402.4. augment the knowledge about movement and circulation in oceanic water.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Definition, nature, scope, importance and historical development of hydrology. 2. Relationship of hydrology with other physical sciences. 3. Hydrological cycle, estimation of global water budget, human impact on hydrological cycle.	15
II	4. Rainfall: frequency, intensity and measurement accuracy, determination of average rainfall (arithmetic mean, Theissen polygon, isohyet methods); types of variations in rainfall. 5. Hydrograph: components, analysis, separation methods, affecting factors; variations in runoff, rainfall-runoff relationship.	15
III	6. Major topographic features of ocean basins, bottom relief of Atlantic, Pacific and Indian oceans. 7. Sources, classification and distribution of ocean deposits, corals-origin, types and conditions for development; theories of the origin of coral reefs	15

	(Subsidence and Standstill).	
IV	8. Origin, causes, types and effects of the ocean currents; currents of the Atlantic, Pacific and Indian oceans. 9. Oceanic temperature: distribution and causes of variation. 10. Composition of oceanic water and distribution of salinity.	15
	Total Contact Hours	60

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination: 70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Digman, L.S. (2002): Physical Hydrology. Prentice Hall, New Jersey.
2. Lal, D.S. (2007): Oceanography. Sharda Pustak Bhawan, Allahabad.
3. Patra K.C. (2010): Hydrology and Water Resource Engineering, Norsa Publishing House, New Delhi.
4. Reddy, P.J. (1992): A Text Book of Hydrology, Laxmi Publications, New Delhi.
5. Siddhartha, K. (1999): Oceanography-A Brief Introduction, Kisalaya Publications, New Delhi.
6. Singh. S. (2008): Oceanography. Prayag Pustak Bhawan, Allahabad.
7. Sharma, R. C. and Vatal, M. (1993): Oceanography for Geographers, Chaitanya Publishing House, Allahabad.
8. Subramanya, K. (1994): Engineering Hydrology, Tata McGraw-Hill Publishing Company Limited, New Delhi.
9. Ward, W.C. (1967): Principles of Hydrology, McGraw Hill, New York.

DEC-4	
Session: 2024-25	
Part A - Introduction	
Name of Programme	M.Sc. Geography

Semester	IV		
Name of the Course	Soil Geography		
Course Code	M24- GEO - 403		
Course Type	DEC-4		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24- GEO – 403.1. differentiate between the soil forming factors and processes. M24- GEO – 403. 2. understand the soil classification and various pedogenic regimes. M24- GEO – 403. 3. understand the physical, chemical and biological properties of soils. M24- GEO – 403. 4. evaluate the land and soil on land capability classification		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Soil geography: meaning, nature, and scope; its relationship with pedology and edaphology. 2. Soil forming factors: parent material, organic, climatic, topographic, and time. 3. Processes of soil formation and soil development.	15
II	4. Historical development of soil classification, soil profile and its development; 5. Pedogenic regimes: podsolization, laterization, calcification and salinization. 6. Genetic and taxonomic classification of soils by USDA, their characteristics and world patterns.	15
III	7. Physical properties of soils: morphology, texture, structure, water, air, temperature, and other properties of soil. 8. Chemical properties of soil and soil reaction. 9. Biological properties of soils: macro and micro-organisms in soils.	15

IV	10. Types and causes of soil erosion, soil degradation and conservation techniques: policies and programs (global and Indian context) 11. Evaluation of land and soil: parametric and non-parametric systems, land capability classification. 12. Soil survey and mapping, land degradation assessment, and soil management practices for sustainable land use.	15
	Total Contact hours	60

Suggested Evaluation Methods

Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination: 70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Backman, H.O and Brady, N.C. (1960): The Nature and Properties of Soils, McMillan, New York.
2. Basile, R.M. (1971): A Geography of Soils, William C. Brown, Dubuque, Ia.
3. Bennet, Hugh H.: Soil Conservation, McGraw Hill, New York.
4. Bunting, B.T. (1973): The Geography of Soils, Hutchinson, London.
5. Clarke G.R. (1957): Study of the Soil in the Field, Oxford University Press, Oxford.
6. De N.K. and Ghosh, P. (1993): India: A Study in Soil Geography, Sribhumi Publishing Co., Calcutta.
7. Foth H.D. and Turk, L.M. (1972): Fundamentals of Soil Science, John Wiley, New York.
8. Govinda Rajan, S.V. and Gopala Rao, H.G. (1978): Studies on Soils of India Vikas, New Delhi.
9. James S. Gardiner (1977), Physical Geography, Harper's College Press, New York.
10. McBride, M.B. (1999): Environmental Chemistry of Soils, Oxford University Press, New York.
11. Sharma H.S. and Kale, V.S (2009) Geomorphology in India, Prayag Pustak Bhawan, Allahabad.

DEC-4			
Part A - Introduction			
Name of Programme	MSc in Geography		
Semester	IV		
Name of the Course	Geography of Health		
Course Code	M24-GEO-404		
Course Type	DEC-4		
Level of the course	500-599		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-404.1. understand the concept of health and parameters of health care M24-GEO-404.2. enhance of knowledge about health indicators and measurement. M24-GEO-404.3. augment of knowledge about health infrastructure and policies in India. M24-GEO-404. 4. aware about spatial pattern of communicable and life style diseases.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist at least 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. History and development of Medical/Healthcare Geography. 2. Concept of health, its measurement and data source. 3. Ecological, social and spatial approaches to study human health: therapeutic landscape.	15
II	4. Demographic change and diseases: epidemiological and demographic transition. 5. Epidemiology of communicable and non-communicable diseases. 6. Climate change and human health.	15
III	7. Healthcare infrastructure: spatial organization and pattern in India. 8. National health policies in India since independence. 9. Health financing in India	15
IV	10. Food security, nutrition and hunger index. 11. Anthropometric health outcome and its pattern in India: malnutrition. 12. Demographic health outcomes in India: mortality and life expectancy.	15
	Total Contact Hours	60

Suggested Evaluation Methods

Internal Assessment: 30		End Term Examination: 70	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Akhtar,R. and Learmonth A.T.A (2005): Geographical aspects of Health and Diseases in India, concept publisher.
2. Anthamatten P and H Hazen (2016) An Introduction to Geography of Health, Routledge publication.
3. B.K. Choudhary (2020): Ecology of Tuberculosis in India, Springer.
4. Dreze Jean, Amartya Sen (1996) Economic Development and Social opportunity, Oxford University Press, New Delhi.
5. Dreze Jean and Amartaya Sen (2002) India: Development and Participation, OUP, New Delhi.
6. Gesler. M and Kearns, R.A. (2002): Culture/Place/Health, Routledge.
7. McGlashan N D (1972) Medical Geography: Techniques and Field Studies, London
8. Meade and Erickson (2006) Medical Geography, Rawat Publications, Jaipur.
9. Mooney, G H (1986) Economics, Medicine and Health Care, Harvester Press.
10. National Nutrition Monitoring Bureau (2000) Dynamic Database on Diet and Nutrition, National Institute & Nutrition, Hyderabad.
11. Roger Jeffery (1989) Politics of Health in India, Cambridge University Press.
12. Sen, Amartya & Dreze Jean, Indian Development (1998): Selected Regional Perspectives, Oxford University Press, Delhi.
13. Smith, D.M. (1973) The Geography of Social Well-being in the United States. McGraw Hill, New York.

DEC-4

Session: 2025-26			
Part A – Introduction			
Name of Programme	M.Sc. Geography		
Semester	IV		
Name of the Course	Tropical Climatology		
Course Code	M24-GEO-405		
Course Type	DEC-04		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-405.1. understand the tropical heat balance and its global consequences. M24-GEO-405.2. enrich the knowledge about circulation pattern and dynamics of Monsoon climates. M24-GEO-405.3. understand the dynamics and distribution of rainfall in tropics. M24-GEO-405.4. aware about impact of global warming on tropical climates and their relation with agriculture.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours	-	-

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	**Topics**	**Contact Hours**
I	1. Nature and scope and significance of tropical climatology. 2 Energy balance in tropical areas. 3 Temperature distribution in tropical areas.	15
II	4 Atmospheric pressure and circulation in tropical areas-Hadley Cell. 5 Walker Circulation, ENSO. 6 Monsoons-theories of origin and characteristics and areas of influence.	15
III	7 Tropical Cyclones-Origin and characteristics. 8 Tropical Rainfall-Dynamics and distribution. 9 Heavy Precipitation events in tropical areas	15
IV	10 Tropical Climates-Classification and characteristics. 11 Tropical Climates and agriculture: Human Adaptation to Tropical Climates. 12 Impact of Global Warming on Tropical Climates and Biomass.	15
	Total Contact Hours	60

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination: 70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Barry, R. F. and Chorley, R. J. (1998): Atmosphere, Weather and Climate, Routledge, London.
2. Critchfield, H.J. (1987): General Climatology. Prentice-Hall of India, New Delhi.
3. Das, P. K. (1987): The Monsoons, NBT Publications, New Delhi.
4. Fein, J. S. and Stephens, P. M. (1987): Monsoons, Wiley Inter Sciences.
5. McGregor, G. R. and Nierswold, S. (1998): Tropical Climatology: An Introduction to the Climates of the Low Latitudes, Wiley Inter Science.
6. Parenti, C. (2011): Tropic of Chaos: Climate Change and New Geography of Violence, Nation Books, New York.
7. Robinson, P. J. and Henderson, S. (1999): Contemporary Climatology, Henow.
8. Thompson, R. D. and Perry, A. (1997): Applied Climatology, Principles and Practices, Routledge, London.
9. Trewartha, G. T. (1980): An Introduction to Climate. McGraw Hill Company, New York.

DEC-5

Session: 2024-25			
Part A - Introduction			
Name of Programme	M. Sc. Geography		
Semester	IV		
Name of the Course	Geography of Tourism		
Course Code	M24-GEO-407		
Course Type	DEC-5		
Level of the course	500-599		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-407.1. familiarize with the fundamentals of tourism geography and its typology. M24-GEO-407.2. aware about influencing and motivating factors of tourism. M24-GEO-407.3. know about infrastructure and support system and socio-economic impact of tourism development. M24-GEO-407.4. acquaint with environmental sustainability and policies for tourism development.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist at least 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Definition, nature, scope, significance and approaches of tourism geography. 2. Typology of tourism: domestic, international, inter-regional and intra-regional, mass tourism. 3. Components and element of tourism.	15
II	4. Factors influencing tourism: historical, physical, socio-cultural and economic. 5. Tourism Motivation theories: Maslow's, Dann's, Gray's & Mcintosh. 6. Motivating factors of tourism: leisure, recreation, spiritual, attraction of site and situation.	15
III	7. Infrastructure and support system. 8. Impact of tourism: physical, economic and social.	15

IV	9. Environmental sustainability and tourism. 10. Government policies for tourism development.	15
	Total Contact Hours	60

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Bhatia A.K. (1996): Tourism Development; Principles and Practices. Sterling Publishers, New Delhi.
2. Bhatia, A.K. (1991): International Tourism-Fundamentals and Practices, Sterling, New Delhi.
3. Biju, M.R. (2006): Sustainable Dimensions of Tourism Management, Mittal Publications, N.D.
4. Chandra R.H. Hill (1998): Tourism: Planning and Development, Kanishka Publishers, New Delhi.
5. Hunter C and Green H. (1995): Tourism and the Environment: A Sustainable Relationship, Routledge, London.
6. Kaur R.K. (1985): Dynamics of Tourism & Recreation. Inter-India, New Delhi.
7. Kaur Himalayan (1985): Pilgrimages & New Tourism Himalayan Books, New Delhi.
8. Lea J. (1988): Tourism and Development in the Third World, Routledge, London.
9. Molton D. (1993): Geography of World Tourism Prentice. Hall, New York.
10. Nigam, D., (2002): Tourism, Environment and Development of Garhwal Himalayas, Mittal Publications.
11. Pearce D.G. (1987): Tourism To-day: A Geographical Analysis, Harlow, Longman.
12. Robinson, H. (1996): A Geography of Tourism. Macdonald and Evans, London.
13. Sharma J.K. (2000): Tourism Planning and Development – A New Perspective Kanishka Publishers, New Delhi.
14. Shaw G. and Williams A.M. (1994): Critical Issues in Tourism-A Geographical Perspective, Oxford: Blackwell.
15. Singh, I., (2005): Manipur, A Tourist Paradise, B.R. Publishers, New Delhi.
16. Sinha P.C. Global (1994): Tourism: The Next Decade, Oxford, Butterworth, Heinemann, Oxford.
17. Sinha, P.C. (ed.)., (1988): Tourism Impact Assessment, Anmol Publishers, New Delhi.
18. Siddiqui, S., (2000): Eco - friendly tourism in U.P. Himalayas, B.R. Publishers, New Delhi.
19. Voase R. (1995): Tourism: The Human Perspective Hodder & Stoughton, London.

DEC-5			
Part A – Introduction			
Name of Programme	Masters in Geography		
Semester	IV		
Name of the Course	Gender Geography		
Course Code	M24-GEO-408		
Course Type	DEC-5		
Level of the course	500-599		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-408.1. understand the growth and evolution of gender geography. M24-GEO-408. 2: aware about feminism and gender issues. M24-GEO-408. 3: acquaint with gender gaps and empowerment of women in spatial context. M24-GEO-408.4: enhance the knowledge about gender sensitive issues and policies in India.		
Credits	Theory	Tutorial	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist at least 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Growth and evolution of gender geography; its connotation; traditional concept of interdependence between men and women; emergence of patriarchy, capitalism and post-modern feminist movement. 2. Gender based demographic structure; gender gaps in infant mortality rates; maternal mortality rate; female infanticide; gender and longevity gap- their spatial variations.	15
II	3. Male-Female involvement in economic and social activities; multiple roles of women in land, water and forest resource management. 4. Involvement of women in household activities, agriculture, mining, construction, industry, service and informal sectors.	15
III	5. Gender gaps in social and public life: education, wage differentials in economic activities, health care and nutrition. 6. Scope for bridging gender gap: empowerment of women and education, economic opportunities, access to reproductive health services, involvement in decision making processes in development and environmental management.	15
IV	7. Gender and Neo-liberalization Policies in India.	15

	8. Making of Gender geography in India.	
	Total Contact Hours	60

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

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

2. Boserup, E (1989) Women's Role in Economic Development. Earthscan, London.
3. Dankelman, I and Davidson, J (1989) Women and Environment in the Third World. Earthscan, London.
4. Deblig, H.J (1991) Human Geography-Culture, Society and Space, John Wiley, New York.
5. Datta, Anindita. (2020) Gender, Space and Agency in India: Exploring Regional Genderscapes, Routledge Publication.
6. Hiraway, D (1991) Simians, Cyberages and Women-The Reinvention of Nature. Routledge, New York.
7. Johnston, R.J (1996), The Dictionary of Human Geography, Blackwell, Oxford,
8. Koblinsky, M (1993) The Health of Women-A Global Respective. Westview Press, Boulder.
9. Lee, D (1988) Women in Geography-A Comprehensive Bibliography. Boca Raton, Florida.
10. Lewis, R. R (1995) Femineity and Representation. Routledge, New York.
11. Momsen, JH. and Townsend, J (1987) Geography of Gender in the Third World, Albany, New York.
12. Montagu, A (1964) Man's Most Dangerous Myth-the fallacy of Race. Cleveland.
13. Reagent, A.C. and Monk J.J (1982) Women and Spatial Change. Kendell & Hund, Dubuque, Lowe.
14. Rhodda, A (1991) Women and Environment. Zed, London, Sage Publication
15. Seager, J. and Olson, A. Women in the world – An International Atlas.
16. Sivant, R.L (1985) Women-A World Survey, World Priorities Washington, D.C.
17. Skjelsback, I and Smith, D (2001) Gender, Peace and Conflict. Sage, London.
18. Sowell, T (1994) Race and culture-A world View. Basic Books, New York.
19. UNICEF (1990) The Lesser Child-the Girl in India. United Nations, Geneva.
20. United Nations (1991) The World's Women, 1970-1990. United Nations, New York.
21. Monk, Janice (1984) Approaches to the study of women and landscape, Oxford University Press

DEC-5

Session: 2024-25			
Part A - Introduction			
Name of Programme	M.Sc. Geography		
Semester	IV		
Name of the Course	Urbanization in India		
Course Code	M24-GEO-409		
Course Type	DEC-5		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO409.1 understand about pattern and processes of urbanization in India. M24-GEO409.2 acquaint with contemporary urban infrastructure issues in India. M24-GEO409.3 augment knowledge about urban social issues. M24-GEO409.4 aware about urban governance issues.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours	-	-

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. History of urbanization in India: ancient, medieval, colonial and post-independence phases of urbanization. 2. Processes of urbanization: socio-cultural, political, economic and geographical processes. 3. Pattern of urbanization: settlement structure, level of urbanization, criteria of measurement and spatial pattern of urbanization in India. 4. Recent trends of urbanization in India.	15
II	5. Urban infrastructure issues: Urban housing, sanitation, transport, water crisis and solid waste management with their status, causes, programmes and policies.	15

III	6. Urban social issues**:** Urban poverty, slums and squatter settlements, urban crime and delinquency, marginalization of poor in urban space, squeezing of urban social space with their status, causes, programmes and policies.	15
IV	7. Role of urbanization in economic and social change. 8. Urban land management: land acquisition problems and policies. 9. National urbanization policy. 10. Urban regions of India: case studies of metropolitan regions of Delhi, Mumbai, Kolkata, Chennai, Bengaluru and Hyderabad.	15
	Total Contact Hours	60

Suggested Evaluation Methods

Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	05	Written Examination:70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Ahluwalia, I.J., Kanbur, R. and Mohanty, P.K. (2014) Urbanization in India: Challenges, Opportunities and the Way Forward, SAGE India, New Delhi.
2. Alam, S.M. and Khan, W. (1972) Metropolitan Hyderabad and its Region: A Strategy for Development, Asia Publishing House, Bombay.
3. Amarjit, S. and Komol, S. (2020) Understanding Urbanization in Northeast India, Routledge.
4. Bhagat Ram B. and Hasan, M.I. (2025) Urbanization and Urban Policies in India: Trends, Patterns and Emerging Perspectives, springer.
5. Bhattacharya, B. (2006) Urban Development in India since Pre-Historic Times, Concept Publishing Company, New Delhi.
6. Denis, E. (2019) Subaltern Urbanization in India: An Introduction to the Dynamics of Ordinary Towns, Springer.
7. Forest, G.B. (2009) Cities of India, Shubhi publication.
8. Hust, E. and Mann, M. Urbanization and Governance in India, Manohar Publishers.
9. Kundu, A. (1992) Urban Development and Urban Research in India, Khanna Publication.
10. Mishra, R.P. (2019) Million Cities of India: Growth Dynamics, Internal Structure, Quality of Life and Planning Perspectives, IBP.
11. Mukherjee, J(2018) sustainable Urbanization in India: Challenges and Opportunities, springer.
12. Nangia, S. (1976) Delhi Metropolitan Region: A study in Settlement Geography, Rajesh Publication.
13. Purohit, A. (2011) Urbanization in India, Rosa publisher.
14. Ramachandran, R. (1992) Urbanization and Urban Systems in India, Oxford press, London.
15. Rao V.L.S.P. Urbanization in India: Spatial Dimensions. Concept Publishing Co. New Delhi.
16. Rao V.L.S.P. (1979) The Structure of an Indian Metropolis: A study of Bangalore, Allied Publishers Bangalore.
17. Sharma, A.K. and Mishra, B.D. (2018) Urbanization in India: Issues and Challenges, Ane

Publication, New Delhi.
18. Siva Ramakrishnan, K.C., Kundu, A. and Singh, B.N. (2005) A Handbook of Urbanization in India, Oxford University Press.

DEC-6

Session: 2024-25			
Part A - Introduction			
Name of Programme	M.Sc. Geography		
Semester	IV		
Name of the Course	Techniques in Environmental Geography		
Course Code	M24- GEO -411		
Course Type	DEC-6		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-411.1. understand the changing scientific methods within geomorphology and processes determination in time and space M24-GEO-411.2. learn the cause, consequences and monitoring techniques for soil, water, air and noise pollution M24-GEO-411.3. calculate the climatic water budget and analyse the relationship between climate and architectural designs M24-GEO-411.4. estimate the missing hydrological data and develop the hydrograph		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Changing scientific method within geography, the main branches of geographical enquiry, the role of techniques in data collection and verification. 2. Cartographic techniques in geomorphology.	15
II	3. Geomorphological mapping, and land system mapping. 4. Dry and wet sieving method of soil textural analysis. 5. Techniques for investigation of slow and rapid mass movement.	15
III	6. Estimation of climatic water budget, evapotranspiration (Thornwaite method). 7. Climate and architectural analysis, comfort indices (heat stress, equatorial comfort, thermal stress), identification of heat and cold waves.	15
IV	8. Cross section geometry of a stream. 9. Estimation of missing hydrological data and adjustment of records.	15

	10. Development of hydrograph, unit hydrograph and S-curve, separation of base flow (arbitrary and empirical methods)	
	Total Contact hours	60

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination: 70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Chow, V.T, Maidment, D.R and Mays, L.W. (1988): Applied Hydrology, McGraw Hill.
2. FAO/UNESCO (1974): Soil Map of the World, Vol. I Legend, UNESCO, Paris.
3. FAO, (1981): A Framework for Land Evaluation, FAO, Rome.
4. FAO, (1995): Planning for Sustainable Use of Land Resources- towards a New Approach, Land and Water Bulletin 2, FAO, Rome.
5. Goudie, A. et al. (1990): Geomorphological Techniques, George Allen & Unwin (publishers) Ltd.
6. Subramanya, K (2013): Engineering Hydrology, Tata McGraw Hill, New Delhi.
7. Sutherland, W.J. (eds.) (2006): Ecological Census Techniques: A Handbook, Cambridge University Press, New York.

DEC-6

Session: 2025-26			
Part A – Introduction			
Name of Programme	M.Sc. Geography		
Semester	IV		
Name of the Course	Geography of Water Resources		
Course Code	M24-GEO-412		
Course Type	DEC-06		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-412.1. aware about the availability of earth's water resources. M24-GEO-412.2. familiarize with development and dynamics of water resources. M24-GEO-412.3. understand the issues and problems of water resources. M24-GEO-412.4. augment the knowledge about conservation and management of water resources.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	**Topics**	**Contact Hours**
I	1. Definition, nature, scope and importance of water resources geography. 2. Distribution and changing trends in use of water in the world. 3. Status of water resources in India.	15
II	4. Factors affecting demand of water, kor water demand, delta and duty of water. 5. Estimation of water demand and use in agricultural sector. 6. Groundwater assessment, development and management. 7. Water pricing and its marketing, virtual and footprints of water.	15
	8. Irrigation induced waterlogging and salinity with reference to Indira Gandhi Canal project. 9. Sources, monitoring and management of water	

III	pollution. 10. Interstate water disputes-history, constitutional provisions, treaties and financial constraints. 11. Water disputes and treaties with reference to India.	15
IV	12. Water harvesting techniques. 13. Watershed management. 14. Issues and challenges of inter basin transfer of water. 15. Environmental flows. 16. Resettlement issues pertaining to water resource projects.	15
	Total Contact Hours	60

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination: 70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Gurjar R.K. and Jat B.C. (2008): Geography of Water Resources, Rawat Publications, Jaipur.
2. Jones, J.A. (1997): Global Hydrology-Processes, Resources and Environmental Management. Longman.
3. Michael. A.M. (1978): Irrigation: Theory and Practices. Vikas Publishing House Pvt. Ltd., New Delhi.
4. Mather, J.R. (1984): Water Resources Distribution, Use and Management. John Wiley, Maryland.
5. Newson, M. (1992): Land, Water and Development River Basin Systems and their Sustainable Management, Routledge, London.
6. Rao, K.L. (1979): India's Water Wealth. Orient Longman, New Delhi.
7. Tideman, E.M. (1996): Watershed Management; Guidelines for Indian Conditions, Omega, New Delhi.

DEC-06

Session: 2025-26			
Part A – Introduction			
Name of Programme	M.Sc. Geography		
Semester	IV		
Name of the Course	Geography and Watershed Management		
Course Code	M24-GEO-413		
Course Type	DEC-06		
Level of the course	500-599		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-413.1. understand the concept of watershed and its characteristics. M24-GEO-413.2. aware about watershed hydrology and its resource appraisal. M24-GEO-413.3. familiar with watershed planning and issues in water resources. M24-GEO-413.4. enhance knowledge about soil and water conservation measures.		
Credits	Theory	Practical	Total
	4	0	4
Teaching Hours per week	4	0	4
Internal Assessment Marks	30	0	30
End Term Exam Marks	70	0	70
Max. Marks	100	0	100
Examination Time	3 hours	-	-

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	**Topics**	**Contact Hours**
I	1. Watershed: concept, delineation, classification, need, scope and significance. 2. Watershed characteristics: physiography, drainage network, soils and geology, land use, vegetation, socio-economic factors and organisation.	15
II	3. Watershed hydrology: infiltration, interception, evaporation and evapotranspiration, groundwater, water quality. 4. Watershed resource appraisal: physical, hydrological, land use/cover. Land capability classification.	15
III	5. Watershed issues: point source pollution, agricultural and urban non-point source pollution, erosion, water scarcity, flooding, drinking water protection, wastewater treatment. 6. Watershed planning and management: objectives,	15

	integrated watershed management, sustainable watershed management.	
IV	7. Watershed management: soil conservation measures, water harvesting and recycling. 8. Watershed management: case studies (Fakot, Sukhomajri, Chitra Durga, Bunga, Bajar-Ganiyar).	15
	Total Contact Hours	60

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Theory**	**30**	➢ **Theory:**	**70**
• Class Participation:	5	Written Examination: 70	
• Seminar/presentation/assignment/quiz/class test etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Brooks, K.N., Folliott, P.F. and Magner, J.A. (2012): Hydrology and the Management of Watersheds, Wiley-Blackwell, Oxford.
2. Cech, T.V. (2003): Principles of Water Resources: History, Development, Management, and Policy, John Wiley and Sons, New York.
3. Heathcote, I.W. (2009): Integrated Watershed Management: Principles and Practice, John Wiley and Sons, New York.
4. Murthy, J.V. S. (1994): Watershed Management in India, Wiley Eastern Ltd., New Delhi.
5. Mutreja, K. N. (1990): Applied Hydrology, Tata McGraw-Hill Pub. Co. Ltd. New Delhi.
6. Narayana, V.V.D., Sastry, G and Patnaik, U.S. (1997): Watershed Management, Publication and Information Division, ICAR, New Delhi.
7. Pranjape, S. and Others. (1998): Watershed-based Development, Bharat Gyan Vigyan Samithi, New Delhi.
8. Maitra, M.K. (2001): Watershed Management: Project Planning, Development and Implementation, Omega Scientific Publishers, New Delhi.
9. Mutreja, K. N. (1990): Applied Hydrology, Tata McGraw-Hill Pub. Co. Ltd. New Delhi.
10. Singh, R. J. (2000): Watershed Planning and Management, Yash Publishing House, Bikaner.
11. Tideman, E.M. (1996): Watershed Management; Guidelines for Indian Conditions, Omega, New Delhi.

PC-4

Part A - Introduction			
Name of the Programme	MSc Geography		
Semester	IV		
Name of the Course	Geographical Information System and Spatial Analysis		
Course Code	M24-GEO-415		
Course Type	PC-4		
Level of the course	500-599		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-415.1. acquire the skills to handle geographical information systems software. M24-GEO-415.2. enhance skills in processing of digital imageries using techniques of GIS. M24-GEO-415.3. create independent project with use of GIS technology. M24-GEO-415.4. acquaint with the techniques and errors while integrating and processing data with GIS.		
Credits	Theory	Practical	Total
	0	4	4
Teaching Hours per week	0	8	8
Internal Assessment Marks	0	30	30
End Term Exam Marks	0	70	70
Max. Marks	0	100	100
Examination Time	0	4 hours (or as decided by PGBOS)	

Part B- Contents of the Course

Instructions for Paper-Setter

Note for Paper Setters: The examiner shall set four questions. All questions are compulsory.

Distribution of Marks for Evaluation

Exercise= 10x4 **File Record=10** **Viva-voce=20**

Practicals		Contact Hours
Unit		120
I	1. Introduction to GIS, GIS software and Data. GCS and PCS and generation of geographic framework: Georeferencing of Topographic maps with Projection, (Spheroids local & spheroids). 2. Generation of geodatabase/ spatial data base: vectorization (point, line and polygon), 3. Editing and building topology	30
II	4. Entering non-spatial data and linking non-spatial data and preparing layout. 5. Displaying of non-spatial data using various methods of symbolization: chorochromatic, choropleth and point proportional. 6. Spatial Analysis: overlay, query, buffer etc.	30
III	7. Working Principle of GPS. 8. Pages of GPS and way point marking. 9. Mobile mapping.	30

IV	10. Preparation of Project report by taking any state or part of state with tahsils etc. or satellite imagery where all the exercises are being performed in the form of maps of that area.	30

Suggested Evaluation Methods			
Internal Assessment: 30		**End Term Examination: 70**	
➢ **Practicum**	**30**	➢ **Practicum**	**70**
• Class Participation:	5	Lab record, Viva-Voce, write-up and execution of the practical	
• Seminar/Demonstration/Viva-voce/Lab records etc.:	10		
• Mid-Term Exam:	15		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Burrough, P.A. and McDonnell, R. (1998). Principles of Geographic Information Systems. Oxford University Press, Oxford.
2. Bhatta Basudeb (2014). Remote Sensing and GIS. Oxford University Press, Oxford.
3. Chang, K.T. (2003). Introduction to Geographic Information Systems. Tata McGraw Hill Publications Company, New Delhi.
4. Demers, M. N. (2000). Fundamentals of Geographic Information Systems. John Wiley and Sons, Singapore
5. Heywood I, Cornelius S and Carver S. (2000). An Introduction to Geographical Information Systems, Longman, New York.

EEC			
Part A - Introduction			
Name of the Programme	MSc		
Semester	IV		
Name of the Course	Geo-spatial Technology in Geography		
Course Code	M24-GEO-416		
Course Type	EEC		
Level of the course (As per Annexure-I	500-599		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO) After completing this course, the learner will be able to:	M24-GEO-416.1. acquaint with the fundamentals of remote sensing satellites and its data. M24-GEO-416.2. enhance capability to differentiate the data types in geographical information systems. M24-GEO-416.3. understand the applications of RS data and geographical information systems in resource mapping. M24-GEO-416.4. gain knowledge about types and functioning of global positioning system		
Credits	Theory	Practical	Total
	2	0	2
Teaching Hours per week	2	0	2
Internal Assessment Marks	15	0	15
End Term Exam Marks	35	0	35
Max. Marks	50	0	50
Examination Time	3 hours		

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will consist at least 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question. All questions will carry equal marks.

Unit	Topics	Contact Hours
I	1. Geospatial technology: development and components 2. Major Indian Remote Sensing satellites 3. Spectral Signature Curve and elements of image interpretation.	7.5
II	4. GIS: definition, scope and geographic data: spatial and non-spatial; spatial data structure: raster and vector. 5. Data base management system, its type, advantages and limitations.	7.5
III	6. Application of remote sensing data in geographic research particularly in agriculture, urban and resource management. 7. Applications of GIS in resource mapping, monitoring and management.	7.5

IV	8. Fundamentals of Global Positioning System (GPS): concept and principles. 9. GPS devices; GPS system: NAVSTAR, GALILIO and IRNSS.	7.5
	Total Contact Hours	30

Suggested Evaluation Methods			
Internal Assessment: 15		**End Term Examination: 35**	
➢ **Theory**	**15**	➢ **Theory**	**35**
• Class Participation:	4	Written Examination	
• Seminar/presentation/assignment/quiz/class test etc.:	4		
• Mid-Term Exam:	7		

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Aggarwal C.S. and P.K. Garg (2000). Remote Sensing, A.H. Wheeler & Co. Ltd, New Delhi.
2. Campbell, J.B. (2002) Introduction to Remote Sensing, Taylor & Francis, New York, USA.
3. Jensen, J.R. (2000), Remote Sensing of the Environment: An Earth Resource Perspectives, Pearson Education.
4. Lillesand, TM. and Keffer R. (1994) Remote Sensing and Image Interpretation, John Willy & Sons, New York.
5. Meenakshi Kumar (2000), Text book on Remote Sensing; NCERT, New Delhi.
6. Nag and Kudrat (2002), Remote Sensing and Image Interpretation, Concept Publishers, Delhi.
7. Reddy, A. (2000) Remote Sensing and Geographical Information System (An Introduction), Hyderabad.
8. Burrough, 2010. Geographic Information System Oxford.
9. P.A. and McDonnell, R. (1998). Principles of Geographic Information Systems. Oxford University Press, Oxford.
10. Bhatta Basudeb (2014). Remote Sensing and GIS. Oxford University Press, Oxford.
11. 11.Chang, K.T. (2003). Introduction to Geographic Information Systems. Tata McGraw Hill Publications Company, New Delhi.
12. Demers, M. N. (2000). Fundamentals of Geographic Information Systems. John Wiley and Sons, Singapore
13. Heywood I, Cornelius S and Carver S. (2000). An Introduction to Geographical Information Systems, Longman, New York.