

DEPARTMENT OF GEOGRAPHY

PG 2 YEAR PROGRAMME

The proposed structure of P. G. Programmes in NEP at the University of Lucknow, would be as follows:

Year	Semester	Course Type	Credits	Total
1	Semester 1	Core Course-1 : Geographical Thought	4	20
		Core Course-2 : Geomorphology and Morphometric Analysis	4	
		Core Course-3 : Settlement Geography	4	
		Core Course-4 : Political Geography	4	
		Core Course-5 : Cartographic Techniques (Practical)	2	
		Value Added Credited Course (Intradepartmental) : Integrated Watershed Management	2	
	Semester 2	Core Course-6 : Climatology	4	20
		Core Course-7 : Geography of Resources	4	
		Core Course-8 : Population Geography	4	
		Core Course-9 : Research Methodology	4	
		Core Course-10 : Statistical Techniques of Mapping (Practical)	2	
		Interdepartmental Course : Geography of Uttar Pradesh	2	
2	Semester 3	Core Course-11 : Advance Geography of India	4	20
		Core Course-12 : Social and Cultural Geography	4	
		Core Course-13 : Oceanography	4	
		Elective Course-14 'A' : Agriculture Geography	4	
		Elective Course-14 'B' : Natural Resource Management		
		Elective Course-14 'C' : Geo Informatics		
		Elective Course-15 'A' : Geography of Rural Development	2	
		Elective Course-15 'B' : Land, Ocean and Atmosphere		
		Elective Course-15 'C' : Hydrology		
		Internship / Field Work : (Practical)	2	
	Semester 4	Core Course-16 : Regional Planning and Development	4	20
		Elective Course -17 'A': Disaster Mitigation and Management	4	
		Elective Course -17 'B': Demography and Migration Geography		
		Elective Course -17 'C': Bio Geography		
		Elective Course -18 'A': Tourism Geography	4	
		Elective Course -18 'B': Medical Geography		
		Elective Course -18 'C': Military and Security Geography		
		Dissertation (Master Thesis)	8	

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-1

CORE COURSE-1 : GEOGRAPHICAL THOUGHT

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. This course aims to provide knowledge of disciplinary developments ancient to till now.
2. It aims to enable students to contextualize the conceptual traditions within geography along with the major philosophical influences.
3. It promotes an understanding of the fluidity, expansion and inclusivity of Modern Geographical Thought as against imperial underpinnings and latent Euro centricity.

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. A thorough knowledge of the growth, development, philosophical influences and relevance of geography from ancient to the present time.
2. Knowledge of emerging areas and new theorisations within the discipline.
3. An appreciation of the discipline's dynamic and inclusive nature.

COURSE CONTENTS:

UNIT-I : Meaning and Scope of Geography, Nature of Geography, Branches of Geography, Fundamental Concepts of Geography, Approaches of Geography, Geography as a Natural as well as Social Science.

UNIT-II : Historical Development of Geographical Knowledge, Contribution of Greeks, Roman, Arabs, Indian and Renaissance period.

UNIT-III : Modern Geographical Thoughts; Contribution of German, French, British and American School of Thoughts, Man-Environment Relationship-Determinism, Possibilism, Neo-Determinism and Probabilism.

UNIT-IV : Conceptual and Methodological Development During 20th Century, Dualism and Dichotomies in Geography, Quantitative Revolution, Paradigms of Geography, Models in Geography, Scientific explanation and System Analysis.

UNIT-V : Recent Trends and Modern Themes; Positivism, Radicalism, Behaviouralism, Humanism, Post Modernism and Feminist Geography.

SUGGESTED READINGS:

1. Benko, Georges, Strohmayr, Ulf, 1997. Space and Social Theory, Blackwell Publishers.
2. Bonnett, Alastair, 2008. What is geography? Sage Publications.
3. Castree, R, A. Rogers and D. Sherman, 2005. Questioning Geography: Fundamental Debates, Blackwell.
4. Crang, Mike and Nigel Thrift, 2000. Thinking Space, Routledge.
5. Cresswell, Tim, 2013. Geographic Thought: A Critical Introduction, Wiley Blackwell.
6. Dictionary of Human Geography, Wiley-Blackwell.
7. Holt Jensen Arid, 1999. Geography: History and Concepts, Sage Publications.
8. Hubbard, Phil., Kitchin, Rob, and Gill Valentine, 2008. Key Texts in Human Geography, Sage
9. Hubbard, Phil., Kitchin, Rob., Bartley Brendan and Duncan Fuller, (eds) 2002.
10. Thinking Geographically: Space, Theory and Contemporary Human Geography, Continuum Nayak, Anoop & Jeffrey Alex, 2011.
11. Geographical Thought: An Introduction to Ideas in Human Geography, Peet, Richard, 1998. Geographical Thought, Blackwell, Publications.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-1

CORE COURSE-2 : GEOMORPHOLOGY AND MORPHOMETRIC ANALYSIS

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. An understanding of the linkages between landscape form and processes.
2. Familiarity and experience applying fundamental concepts in physical systems.
3. Practice in using models, data and logical reasoning to critically evaluate and connect information about geomorphic processes.

COURSE LEARNING OUTCOME:

After completion of this course the student will be able to:

1. Explain basic principles for development of landforms through time.
2. Make an initial geomorphological fieldwork.
3. To provide the fundamental and advanced level knowledge of the subject.

COURSE CONTENTS:

UNIT-I : Methods and Approaches to the Study of Landforms; Fundamental concepts in Geomorphology: Theories of landscape development, W. M. Devis, W. Penck, & M. Morisawa.

UNIT-II : Isostasy – Doctrine of Isostasy; Views of Airy and Pratt, Mass Movement of Rock Waste and Resultant Landforms; Concept, Evolution and Classification slopes; Theories of slope Development- W. M. Devis, L. C. King.

UNIT-III : Fluvial (Process) Geomorphology– Morphometry of Drainage Basins; Profile of Equilibrium; Channel Morphology; Climatic Geomorphology and Morphogenetic Regions. Drainage Pattern of River.

UNIT-IV : Structural Geomorphology– Fold, Fault and Domal Structures and Landforms; Palaeo and Neo–Geomorphology–Denudation Chronology of Peninsular India and Himalayas, Continental Drift Theory– Concept of Wegener, Mountain Building Theories– Concepts of Kober, Daly and Holmes

UNIT-V : Geomorphic Hazards and Mitigation Measures; Geomorphology and Economic Deposits; Geomorphology in Groundwater Studies; Soils and Geomorphology. Terrain Classification and its Applications.

SUGGESTED READINGS:

1. Allison, Robert (ed.) 2002. *Applied Geomorphology: Theory and Practice*, John Wiley & Sons Ltd., Chichester, U.K.
2. Anderson, R.S. and Anderson, S.P. 2010. *Geomorphology: The Mechanics and Chemistry of Landscapes*, Cambridge University Press, Cambridge.
3. Bierman, P.R. and Montgomery, D.R. 2014. *Key Concepts in Geomorphology*, Macmillan Education, New York.
4. Bloom, A.L. 2003. *Geomorphology: A Systematic Analysis of Late Cenozoic Landforms*, Prentice-Hall of India, New Delhi.
5. Bridges, E.M. 1990. *World Geomorphology*, Cambridge University Press, Cambridge, U.K.
6. Huggett, R.J. 2011. *Fundamentals of Geomorphology*, Routledge, New York.
7. Freeman Company, San Francisco.
8. Schumm, S.A. 1977. *The Fluvial System*, John Wiley & Sons, Inc., New York.
9. Singh Savindra. 2014. भू-आकृतिविज्ञान का स्वरूप. PrayagPustak Bhawan, Allahabad.
10. Summerfield, M.A. 1991. *Global Geomorphology*. Pearson Prentice Hall, U.K.
11. Thornbury, W.D. 1969. *Principles of Geomorphology*, John Wiley and Sons, New York.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-1

CORE COURSE-3 : SETTLEMENT GEOGRAPHY

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. This course attempts to acquaint the students with urban issues and components.
2. The course examines the questions related to urban poverty and slums in India.
3. It also critically evaluates the infrastructure development and programmes & policies aimed at sustainable urban development and management strategies.

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. The students will be able to understand the concepts and components of urban development and management.
2. The students will be able to analyse the urban poverty and slums at different scales.
3. The students will be able to get updated knowledge of urban infrastructure development management and urban governance.

COURSE CONTENT

- UNIT-I** : Settlement Geography: Meaning, Definition and Scope, Approaches to Study; Settlement Hierarchy : Christaller and Losch, Hierarchy of Settlement in India.
- UNIT-II** : Rural Settlement; Types and Pattern, Site and Situation, Morphological Characteristics of Rural Settlement; Fold Housing; Folk Architecture and Traditional Building Material.
- UNIT-III** : Urban Settlements; Their Site and Situation; Size and Spacing of Urban Settlement; Morphological Characteristics of Urban Settlement; Problems of Urban Housing and Emergence of Slums.
- UNIT-IV** : Urbanization and Urban Functions; Concept of Urbanization; Factors of Urbanization; Trends of Urbanization in India, Functional Classification of Towns and Cities.
- UNIT-V** : Development of Settlement Geography in the World and India, Rural–Urban Fringe; Green Belt; Urban Planning and Management.

SUGGESTED READINGS:-

1. Dickinson, R.E. 1968 :City and Region: A Geographical Interpretation, Routledge and Kegan Paul Ltd. London.
2. Ghosh, S. 1998:Introduction to Settlement Geography, Orient Longman Ltd., Calcutta: 158p.
3. Hardy, J .E., Mitten, D. & Satterthwaite, D. 1992 : Environmental Problems in the World Cities,Earthscan Pub. Ltd. London.
4. Hudson, F.S. 1970: Geography of Settlements, Macdonald and Evans Ltd., Plymouth: 3-12,61-70, 79-101.
5. Hussain, M. 1994: Human Geography, Rawat Pub. Co., New Delhi: 485p.
6. Mandal, R.B. 1988 : Systems of Rural Settlements in Developing Countries, Concept Pub. Co.,New Delhi.
7. Misra. H.N. (ed) 1987 :Contributions to Indian Geography, Volume 9: Rural Geography,Heritage Pub., New Delhi.
8. Racine, J. (ed) :Calcutta 1981, Concept Pub. Co., New Delhi.
9. Ramachandran R. 1989 :Urbanisation arid Urban Systems in India, Oxford University Press, New Delhi.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-1

CORE COURSE-4 : POLITICAL GEOGRAPHY

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. This course aims to provide knowledge of Political Geography
2. It aims to enable students to contextualize the conceptual traditions and recent techniques in understanding neighbours and boundary
3. It promotes an understanding of the fluidity, expansion and inclusivity of Geo-politics

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. A thorough knowledge of the growth, development, philosophical influences and relevance of political theories in geography from ancient to the present time.
2. Knowledge of emerging areas and new theorisations within the discipline.
3. This course provides students with an overview and fundamental understanding of the ways in which political issues are dealt with through geographical and spatial perspectives.

COURSE CONTENTS:

UNIT-I : Meaning and Scope of Political Geography, Approaches to the study of Political Geography, Recent Trends and Development in Political Geography, Distinction between Geo-Politics and Political Geography.

UNIT-II : Definition and Components of State, Definition of Nation and Nation State, Nationalism and Nation Building, Geographical Factors of State, Boundary and Frontiers: Definition and Classification.

UNIT-III : Mackinder's Geographical Pivot and Heartland Theory, Spykman's Rimland Theory, Geostrategic idea of A.T. Mahan, Critical Assessment of Heartland and Rimland Theory and their Relevance to World's Geo politics.

UNIT-IV : India as a Federal Country, India as a Unitary or Union of States, Electoral Geography; Concept and Definition, Approaches to Study of Electoral Geography, Geography of Voter Participation.

UNIT-V : Geopolitical Significance of the Indian Ocean; Role of Third World Countries; Political Geography and Regional Co-operation; Geopolitical study of South-East Asia and South Asia, Politics of World Resources.

SUGGESTED READINGS:

1. Agnew, J.A. (1987), Place and Politics, Boston : Allen and Unwin.
2. Blacksell, Mark (2003), Political Geography, London Routledge.
3. Cox, Kevin R. (2008) The Sage Handbook of Political Geography, New Delhi sage.
4. Dicken, Peter (2003), Global Shift, New Delhi : Sage.
5. Dikshit, R.D. (2000) Political Geography: The Spatiality of Politics, New Delhi : Tata Mc Graw Hill.
6. Jones, Martin Rhys Jones and Michael Woods (2003), An Introduction to Political Geography, London : Routledge.
7. Khor, Martin (2001) Rethinking in Globalization, London : Zed Books.
8. Painter J. (1995) Politics, Geography and Political Geography, London : Arnold.
9. Taylor, P.J. and Colin Flint (2001), Political Geography, New Delhi : Pearson.
10. Taylor, P.J. and R.J. Johnston (1979), Geography of Elections Hammonds worth : Penguin.
11. Adhikari, Sudepto (2008), Political Geography of India, Allahabad: Sharda Pustak Bhandar.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-1

CORE COURSE-5 : CARTOGRAPHIC TECHNIQUES (PRACTICAL)

Credits	: 2	Total Marks	: 100
		Practical Exam.	: 60
Duration (Hours per week)	: 2	Record File	: 20
		Viva – Voce	: 20

COURSE OBJECTIVES:

1. To make the students aware of basic tools and techniques in the field of map-making.
2. To enhance the overall Knowledge of Cartography and its implementations.
3. Students prepare maps for educational and environmental purpose in digital or graphic forms.

COURSE LEARNING OUTCOME:

After completion of this course the student will be able to:

1. The students will be able to have a clear understanding of the place under study with respect to location, side and situation.
2. The students will be equipped with techniques of projection and map designing, Learning different types of maps and their compilation.
3. Students gain a general understanding of map scale and contents for topographical maps.

COURSE CONTENTS:

UNIT-I : Introduction to Cartography; Scale, Slope Analysis: Wentworth Method, Profile, Definition, Importance and Uses, Methods of Drawing Profiles, Types of Profiles, Map Projection; Bonne's, Polyconic, Mercator, Zenithal Equal Area, (Polar Case) Zenithal Stereographic (Equatorial case), Gnomonic Projection (equatorial case).

UNIT-II : Analysis and Interpretation of Geological Maps, Weather Maps and Topographical Maps. Mapping organization and services in India; SOI, NATMO and NRSC.

SUGGESTED READINGS:

1. Dent B. D., 1999: Cartography: Thematic Map Design, (Vol. 1), McGraw Hill.
2. Gupta K. K and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
3. Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept Publishing.
4. Robinson A., 1953: Elements of Cartography, John Wiley.
5. Sharma J. P., 2010: Prayogic Bhugol, Rastogi Publishers.
6. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
7. Singh R. L., 1998: Prayogic Bhoogol Rooprekha, Kalyani Publications.
8. Steers J. A., 1965: An Introduction to the Study of Map Projections, University of London.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-1

VALUE ADDED CREDITED COURSE (INTRADEPARTMENTAL) : INTEGRATED WATERSHED MANAGEMENT

Credits	: 2	Total Marks	: 100
Duration (Hours per week)	: 2	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. The course focuses on the improvement and restoration of soil quality and thus raising productivity rates.
2. It important aim is reducing the impacts of the natural hazards (especially in the context of climate change)
3. Also give attention to human health related like improvement of physical health (like supported by clean drinking water, access to sanitation, improve nourishment).

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. Improved water quality and quantity, IWM can help reduce erosion and flooding.
2. Conserved biodiversity where IWM can promote the conservation of flora and fauna.
3. Reduce pollution in which IWM helps in reduction of addition of pollutants in different forms (like water, land, air, etc.).

COURSE CONTENT

UNIT-I : Sources of Water, atmospheric Relationship of Water: Rainfall and Temperature, Evaporation, Rainfall and Runoff Relationship, Hydrological Cycle. Rain Water Harvesting as Strategies of Water Resource Conservation, other Strategies of Water Conservation; Water Recycling, Hydrological, Hydro-Morphological and Hydro-Pedagogical Assessment, Assessment of Surface and Sub Surface (ground water) Discharge and Recharge Condition and Water Table Relationship.

UNIT-II : Watershed Management, Concept of Watershed; Morphological Units, Morphogenetic Classification, Morphometric Analysis, Importance of Watershed Protection and Approaches to Watershed Protection, Watershed Management. Impact of Modern Development on Water Resource: Need of Water for Domestic and Non-Domestic use. Watershed Management Problems in India. Demand and Supply Position of Water Resource, Contemporary Water Crisis.

SUGGESTED READINGS:

1. Bruce J.P. & R.H. Clerk, Introduction to hydrometeorology, pergamon press, Oxford, 1996.
2. David Keith todd, Ground water bydrology, John Willy and sons, New York, 1959.
3. Robert J. Reimold, watershed management, practice, policies and co-Ordination, McGraw-Hill, New Delhi, 1998.
4. B. D. Dhawan, Indian water resource management for Irrigation: Issues Critiques reiews, Common wealth publishers, New Delhi, 1993,
5. Ravi Misra, Fresh water Environment, Anmol publication Pvt. LTD, New Delhi, 2002.
6. Ramaswamy R. Iyer, water perspective, issues, concerns, SAGE publications, New Delhi, 2003.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-2

CORE COURSE – 6 : CLIMATOLOGY

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. This course aims to provide knowledge of Earth's atmosphere
2. It aims to enable students to contextualize the conceptual traditions and recent techniques in climatologically understanding.
3. It promotes an understanding of the fluidity, expansion and inclusivity of Modern Research in Earth Science.

Course Learning Outcomes:

After completion of this course the student will be able to:

1. A thorough knowledge of the growth, development, philosophical influences and relevance of climatology in geography from ancient to the present time.
2. Knowledge of emerging areas and new theorisations within the discipline.
3. An appreciation of the discipline's dynamic and inclusive nature.

COURSE CONTENTS:

- UNIT-I** : Definition and Scope of Climatology, Composition and Structure of the Atmosphere; Insolation, Heat-balance of the Earth, Distribution of Temperature and Pressure, Adiabatic Temperature Change.
- UNIT-II** : Atmospheric Equilibrium Stability and Instability, Clouds, Humidity, Precipitation Types and Theories.
- UNIT-III** : Winds and its Classification. Air masses - Origin, growth, Classification and Distribution. Fronts and Frontogenesis, Cyclones and Anticyclones - Tropical Cyclones and Temperate Cyclones, Origin of Indian Monsoon, Upper air Circulation and Jet Stream.
- UNIT-IV** : Climatic Classification Thornthwaite's, Koeppen's and Major Climate Types and Biomes.
- UNIT-V** : Climatic Change - Ozone Depletion, Acid Precipitation, Tornadoes, Thunderstorms and Cloud-Bursts, El-Nino, La-Nina, Walker Circulation, Southern Oscillation. Applied Climatology and Urban Climate.

SUGGESTED READINGS:

1. Menon, P.A. (1989), Our Weather, N.B.T., New Delhi.
2. Das, P.K. (1987), Monsoons, National Book Trust, New Delhi.
3. Fein, J.S. and Stephens, P.N. (1987), Monsoons, Wiley, London.
4. Peterson, S. (1969), Introduction to Meteorology, McGraw Hill Book, London.
5. Thompson, R.D. and Perry, A. (ed.) (1997), Applied Climatology: Principles and Practice, Routledge, London.
6. Barry, R.G. and Chorely, R.J., (2004), Atmosphere, Weather and Climate, Methuen, London.
7. Bhutani S., (2000), Our Atmosphere, Kalyanai Publishers, New Delhi.
8. Critchfield, H.J. (1987), Climatology, Prentice Hall, New Delhi.
9. Griffith, J.F. and Driscell, D.M. (1982), Survey of Climatology, Charles Merrill, New York.
10. Lal, D.S. (1993), Climatology, Chaitanya Publishing House, Allahabad.
11. Riehl, H. (1968), Introduction to Atmosphere, McGraw Hill, New York.
12. Robinson, P.J. and Sellers, H. (1986), Contemporary Climatology, Longman, London.
13. Trewartha, G.T. (Latest edition) Introduction to Climate, McGraw Hill, New York.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-2

CORE COURSE – 7 : GEOGRAPHY OF RESOURCES

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. This course give a holistic view of the water environments i.e., hydrology seen as a water carrier in nature with human influence.
2. To know diverse methods of collecting the hydrological, biological information, which is essential to understand surface and groundwater hydrology?
3. To develop an understanding of how this knowledge may be applied in practice in an economic and environmentally sustainable manner.

COURSE LEARNING OUTCOME:

After completion of this course the student will be able to:

1. Understanding Resource distribution and world organisation
2. Describe how renewable and non-renewable resources are influenced by human activities.
3. Analyse resource data in order to evaluate water resource management in an area

COURSE CONTENTS:

- UNIT-I** : Concept and Scope of Resource Geography; Resource: Concept and Types; Distinction Between Diversity and Disparity; Resource Appraisal, Human Resources.
- UNIT-II** : Soil Formation and Characteristics, Classification of Soil and Soil Conservation. Forest Resources: Types and Distribution, Forest Decay and Conservation. Livestock and Marine Resources.
- UNIT-III** : Mineral Resources: Classification of Major Minerals, their Distribution and Production- **Iron Ore, Bauxite, Copper and Gold**; Mineral Conservation, Energy Resources- Conventional Energy Resources- Coal, Petroleum; Non-Conventional Sources of Energy; Nuclear Energy.
- UNIT-IV** : The Limits to Growth; Resource Scarcity Hypothesis; World Energy Crisis; Resource Conservation and Management; Sustainable Development of Resources and International Issues.
- UNIT-V** : Resource Regionalisation; World Economic Development; Concept of Developed and Developing Nations; Concepts of North-South and First, Second, Third and Fourth Worlds.

SUGGESTED READINGS:

1. Cutter S. N., Renwick H. L. and Renwick W., 1991: Exploitation, Conservation, Preservation: A Geographical Perspective on Natural Resources Use, John Wiley and Sons.
2. Gadgil M. and Guha R., 2005: The Use and Abuse of Nature: Incorporating This Fissured Land: An Ecological History of India and Ecology and Equity, Oxford University Press. USA.
3. Holechek J. L. C., Richard A., Fisher J. T. and Valdez R., 2003: Natural Resources: Ecology, Economics and Policy, Prentice Hall, New Jersey.
4. Jones G. and Hollier G., 1997: Resources, Society and Environmental Management, Paul Chapman, London.
5. Klee G., 1991: Conservation of Natural Resources, Prentice Hall, Englewood.
6. Mather A. S. and Chapman K., 1995: Environmental Resources, John Wiley and Sons, New York.
7. Mitchell B., 1997: Resource and Environmental Management, Longman Harlow, England.
8. Owen S. and Owen P. L., 1991: Environment, Resources and Conservation, Cambridge University Press, New York.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-2

CORE COURSE – 8 : POPULATION GEOGRAPHY

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. This course intends to orient the students towards interdisciplinary perspectives on population issues at different geographical scales.
2. It will acquaint the candidate to appreciate the role of spatial perspectives towards showcasing population changes and its impact on the economy, society, environment and politics at diverse geographical spheres.

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. After taking this course, a candidate should be able to appreciate the active role of population geography as a distinct field of human geography.
2. She should be conversant with different sources of demographic data, and well versed with debates on population-development linkages.
3. Students should be able to examine the different components of population change, its drivers, and their consequences upon contemporary socio-economic, environmental, and political changes

COURSE CONTENT

- UNIT-I** : Nature, Scope and Significance of Population Geography, Source of Population Data, Recent Trends in Population Geography, Development of Population Geography in India.
- UNIT-II** : Population Dynamics; Growth, Fertility and Mortality Measurement; Migration Cause and Types, National and International Patterns, Rural and Urban; Demographic Transition Theory; Migration theory of Ravenstein.
- UNIT-III** : Population and Resource:- Concept of Over Under and Optimum Population; Ackermans Scheme of Population Resource Regions; National Population Policy (2000) and Population Planning.
- UNIT-IV** : Population Composition:- Sex Ratio and its Determinants; Age Composition, Various System of Age Grouping Determinants and Distribution; Occupational Structure.
- UNIT-V** : Population Distribution and Density in the World; Human Development Index; Problems and Expectation of Developed and Developing Countries from Demographic Point of View.

SUGGESTED READINGS:

1. Bhende, A. A. & Kanitkar, (2014), Principles of Population Studies, Himalayan Pub. H., Mumbai.
2. Bogue, D. J., Principles of Demography, New York, 1969.
3. Chandna, R.C., Geography of Population: Concepts Determinants and Pattern, Kalyan Pub. Ludhiana, 2014.
4. Clarke, J.I. Population Geography, Oxford, 1981.
5. Coontz, S.H. Population Theories and the Economic Interpretation.
6. Jones, H.R., A Population Geography, London, 1981.
7. Jhingan M.L. Bhatt B.K. and Desai, J.N. Demography, Vrid Pub. Delhi, 2006.
8. Khan, J.H. Socio-Economic and Structural Analysis of Internal Migration, New Delhi, 2010.
9. Khullar D.R., India: A comparative Geography, Kalyan Pub. Ludhiana, 2014.
10. Shamshad, Houseless: People on the Road, Academic Publication, 2015.
11. Siddiqui. F.A. Regional Analysis of Population Ststructure, new Delhi, 1984.
12. Smith, T., Fundamentals of Population Study, New York, 1960.
13. Trewartha, G.T., A Geography of Population: World pattern, New York, 1969.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-2

CORE COURSE – 9 : RESEARCH METHODOLOGY

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. This course attempts to introduce the students to the basic knowledge related to geographical field research design.
2. The course examines the questions related to data collection, methods and its analysis.
3. It also critically evaluates the dissertation based on field survey

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. The students will be able to understand basic concepts of field research methods and research design in geography.
2. The students will be able to do field work through practical experience and get skills of data collection methods and processing and analysis of obtained data.
3. The students will be able to write dissertation based on field work on given topic

COURSE CONTENT:

- UNIT-I** : Introduction to Geographical Research: Concept, Significance, Types and Approaches to Research in Geography; Literature survey; Research Ethics; Limitations.
- UNIT-II** : Research Design: Steps, Identification and Formulation of Research Problem; Research Questions; Aims and Objectives; Hypothesis and Variables.
- UNIT-III** : Data Sources and Methods of Data Collection: Nature of Data: Qualitative and Quantitative, Primary Data: Field survey, Selection of Sample, Questionnaire, Interview, Observation, PRA; Secondary Data.
- UNIT-IV** : Data Analysis: Processing of Data; Tabulation, Graphic Presentation and Analysis of Data; Referencing; Structure of Dissertation.
- UNIT-V** : Interpretation of Data and Paper Writing – Layout of a Research Paper, Journals in Computer Science, Impact Factor of Journals, When and Where to Publish? Ethical Issues Related to Publishing, Plagiarism and Self-Plagiarism.

SUGGESTED READINGS:

1. Black, James A. and Champion, D.J. 1976. Methods and Issues in Social Research, John Wiley and Sons, New York.
2. Bonnett, Alastair, R. 2008. What Is Geography? Sage, London.
3. Creswell, J. W. 2009. Research Design: Qualitative, Quantitative and Mixed Methods Approaches, Sage, California, USA.
4. Gopal, Krishan and Singh, Nina, 2016. Researching Geography: The Indian Context. Routledge, Delhi.
5. Harris, C. 2001. Archival Fieldwork, Geographical Review, 91 (1-2), 328-334.
6. Hart, C. 1999. Doing Literature Review: Releasing the Social Science Research Imagination, Sage, London.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-2

CORE COURSE - 10 : STATISTICAL TECHNIQUES OF MAPPING (PRACTICAL)

Credits	: 2	Total Marks	: 100
		Practical Exam	: 60
Duration (Hours per week)	: 2	Record File	: 20
		Viva Voce	: 20

COURSE OBJECTIVES:

1. This course studies the concept of statistics and its geographical applications.
2. It lays the foundation of quantitative techniques to the students for spatial analysis.
3. It will enhance the ability to interpret data statistically.

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. The students will learn various statistical skills.
2. The students will know how the statistical theories and functions will be applied in geography.
3. The students will learn about the significance test to strengthen their argument with facts and represent data.

COURSE CONTENTS:

UNIT-I : Measure of Central Tendency- Mean, Median, Mode, Representation of Statistical Data, Diagram and Graph, Bar Diagram, Pyramid Diagram, Wheel or Pie Diagram, Scatter Diagram. Statistical Methods : Histogram, Frequency Polygon, Ogive,

UNIT-II : Simple Linear Graph, Ergograph, Climograph, Hythergraph, Distribution Maps: Qualitative and Quantitative Maps, Choropleth, Isopleth and Choro-Schematic Map; Dot Method.

SUGGESTED READINGS:

1. Bart James E. and Gerld M. Barber, 1996. Elementary Statistics for Geographers, The Guieford Press, London.
2. Briggs, W. 2016. Uncertainty: The soul of modeling, probability & statistics. Springer International Publishing. doi:10.1007/978-3-319-39756-6.
3. Eldon, D. 1983. Statistics in Geography: A Practical Approach, Blackwell, London.
4. Cressie, N.A.C. 1991. Statistics for Spatial Analysis, Wiley, New York.
5. Gregory, S. 1978. Statistical Methods and the Geographer (4th Edition), Longman, London.
6. Davis, John C. (2002). Statistics and Data Analysis in Geology (third edition), John Wiley & Sons.
7. Mathews, J.A. 1987. Quantitative and Statistical Approaches to Geography: A Practical Manual, Pergamon, Oxford. 8. McGrew, Jr. J.C. and Monroe, C.B. (2000). An Introduction to Statistical Problem Solving in

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-2

INTERDEPARTMENTAL COURSE: GEOGRAPHY OF UTTAR PRADESH

Credits	: 2	Total Marks	: 100
Duration (Hours per week)	: 2	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. This course on the Geography of UP assumes that the students are familiar with the basic landforms, climate, soil, vegetation and population characteristics of UP
2. It is a course designed to enable students to broaden and deepen their understanding of UP.
3. Students prepare for competitive exams for central and state services.

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. Students would gain understanding of 'new' geography of their country.
2. The spatial variations of dimensions of vitality and vulnerability would help them see the strength and weakness of the country.
3. The course would help students to contextualize much of their further learnings, teaching and research on India within the contents of this course.

COURSE CONTENT

UNIT-I : Locational Set-up of Uttar Pradesh in India and its Changing Map. Relief and Physical Divisions, Structure, Drainage, Ground Water Resource, Soils and their Types, Climate and Climatic Regions and Vegetative Cover; Surface Water Resource Utilities, Drinking Water and Power Shortage, Flood and Drought Affected Parts.

UNIT-II : Agricultural production; Development of Irrigational Facilities Including Canals and Dams, Agricultural Productivity and Crop-Combination; Power Generation; Agro-Processing Industry and their Problems with Special Reference to Sugar Industry; Demographic and Religious Composition; Transportation; Planning for Balanced Development: Planning for Sustainable Development Including Health, Education and Drinking Water.

SUGGESTED READINGS:

1. Deshpande C.D. (1992): India-A Regional Interpretation ICSSR, Northern Book Centre, New Delhi.
2. Singh R.L.(ed.) (1971): India-A Regional Geography, National Geographical Society, India, Varanasi.
3. Tiwari, A. R. Geography of Uttar Pradesh, N & T.
4. Tirtha, R. & Gopal Krishna (1966): Emerging India, Rawat Publications, Jaipur.
5. Kundu A., Raza Moonis (1982): Indian Economy: The Regional Dimension, Spectrum Publishers, New Delhi.
6. Marmora, C.B. : Advanced Geography of India.
7. Bansal, S.C. : Advanced Geography of India (Hindi), Meenakshi Prakashan, Meerut.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-3

CORE COURSE – 11 : ADVANCE GEOGRAPHY OF INDIA

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. This course on the Geography of India assumes that the students are familiar with the basic landforms, climate, soil, vegetation and population characteristics of India.
2. It is a course designed to enable students to broaden and deepen their understanding of India.
3. Students should understand landform and geomorphic process through physical field survey.

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. Students would gain understanding of 'new' geography of their country.
2. The spatial variations of dimensions of vitality and vulnerability would help them see the strength and weakness of the country.
3. The course would help students to contextualize much of their further learning's, teaching and research on India within the contents of this course.

COURSE CONTENTS:

- UNIT-I** : Making of India Through Geological Times, Structure and Relief; Drainage Systems and Watersheds; Physiographic Divisions; Climate Characteristics: Mechanism of the Indian Monsoon; Soil and Forests: Types, Distribution and Utilization.
- UNIT-II** : Population Growth: Trends and Pattern; Population: Distribution and Density; Ageing of Population; Sex and Literacy Differentials; Trends of Urbanization; National Population Policy - 2000.
- UNIT-III** : Agricultural Characteristic and Trends, Types of Agriculture and Agricultural Activity, Irrigation, Agro Climatic Region, Agro Ecological Region, Sustainable Agriculture. Green, Blue, White, Yellow and Rainbow Revolution. Relevance of Second Green Revolution.
- UNIT-IV** : Industrial development in Pre and Post Independence India, Iron and Steel, Cotton, Textile Industry, Regional Distribution and Development Potential of Minerals and Power Resources- Iron Ore, Bauxite, Copper; New Industrial Policy; Globalization, Liberalisation and Privatization.
- UNIT-V** : Contemporary Issue in India: Flood, Drought, Land Sliding, Deforestation, Soil Erosion, Regional Disparity, Unplanned Urbanization, Coastal Ecology, Ecological Imbalance, Poverty and Unemployment.

SUGGESTED READINGS:

1. *Deshpande, C. B.* 1992. India a Regional Interpretation. *New Delhi: Northern Book Center.*
2. *Dreze, Jean and Amartya Sen.* 1996. India: Development and Participation. *Oxford University Press*
3. *Jayaram, N.* 2004. The Indian Diaspora: Dynamics of Migration, *Sage publication*
4. *Kapur, Anu.* 2010. Vulnerable India: A Geographical Study of Disasters, *Sage publication*
5. *Kapur, Anu.* 2015. Made Only in India: Goods with Geographical Indications, *Routledge.*
6. *Khullar, D.R.* 2008. *India: A Comparative Geography*, *Kalyani Publishers, New Delhi.*
7. *Krishan, Gopal.* 2017. The Vitality of India: A Regional Perspective, *Rawat Publications.*
8. *Ramachandran, R.* 2018. A History of Hinduism: The Past, Present and Future. *Sage.*
9. *Singh, Jagdish,* 2003. India: A Comprehensive Geography, *Radha Publications, Gorakhpur.*
10. *Shukla, Sandhya.* 2003. India Abroad. Hyderabad, *Orient Longman.*
11. *Tharoor, Shashi.* 2016. An Era of Darkness: The British Empire in India, *Aleph Book Company.*

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-3

CORE COURSE – 12 : SOCIAL & CULTURAL GEOGRAPHY

Credits	: 4	Total Marks	: 100
		Mid Semester Examination	: 15
Duration (Hours per week)	: 4	Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES :

1. To understand the social aspect of geography
2. To understand various races ,tribes and ethnicities and its importance
3. To understand the idea of human well being

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. Students will be able to understand the basic concept of Social Geography.
2. Students will be able to analyze the cultural diversity of India.
3. Students may learn how to evaluate geographical problems effectively.

COURSE CONTENTS:

UNIT-I : Social Geography: Nature, Meaning and Development; Philosophical Bases of Social Geography (Positivism, Structuralism); Social Structure and Social Processes; Concept of Social Space.

UNIT-II : Elements of Social Geography: Ethnicity, Tribe, Dialect, Language, Caste and Religion; Socio-Cultural Regions of India; Linguistic Elements in India.

UNIT-III : Cultural Geography: Nature, Meaning and Development; Culture: Definition, Elements and Components; Culture Areas and Cultural Realm.

UNIT-IV : Racial Elements in India's Population: Tribes of India (Jaunsari, Bhotia, Bhil, Gond, Toda, Naga).

UNIT-V : Racial Elements in World's Population: Tribes of World (Eskimo, Pigmy, Bushman, Masai).

SUGGESTED READINGS:

1. Aijazuddin Ahmad, Social Geography.
2. Gosal, G.S. & Mukherjee, A. B. Religious Groups in India
3. Kulkarni, K. M. Geographical Patterns of Social Well-being.
4. Gardern, J.F., Geography as a Social
5. Gregory, D &Urry, J. Social Relations.
6. Hammely, chris, (Ed.) Social Geography : A Reader
7. Harvey, D. Social Justice and the City.
8. John, E. (ed.) Social Geography in International Perspective
9. Jones, E. (Ed.) Readings in Social Geography
10. Jones. E. &Eyles, J., An Introduction to Social Geography.
11. Pacliona, A (ed.) Social Geography, Progress and Prospects.
12. Paul Knox, Social Well-being, A Spatial Perspective.
13. Rao, M.S.A, Urbanization and Social Change.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-3

CORE COURSE – 13 : OCEANOGRAPHY

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. This course will lay the foundation of the understanding of coupled dynamics between land and ocean, ocean and atmosphere, land and atmosphere.
2. It will enhance the understanding of relationship and linkages between land, ocean and atmosphere
3. It will enhance the understanding of ocean biome.

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. The students will understand the earth system sciences and impacts of climate variability.
2. The student shall be able to use different models for climate forecasting and understanding.
3. The students will understand the marine ecosystems

COURSE CONTENT

UNIT-I : Nature, Scope and Development of Oceanography; Distribution of Land and Water, Ocean Bottom Topography, Bottom Relief of Pacific, Atlantic and Indian Ocean.

UNIT-II : Characteristics of Ocean Water: Temperature Distribution, Salinity - Composition and Distribution, Density of Sea water.

UNIT-III : Movement of Ocean Water: currents - Causes and Character, Currents of Atlantic, Indian and Pacific Ocean, Waves, Tides and its Theories of Origin.

UNIT-IV : Ocean Deposits : Sources, Types and Distribution, Coral Reefs – Formation, Condition of Growth, Type and Theories of origin, Coral Bleaching.

UNIT-V : Sea Level Change: Causes and Consequences, Importance of EEZ and CRZ; Marine Pollution and Its Effects, Geopolitics of Oceanic Resources with special reference to Asia-Pacific Region.

SUGGESTED READINGS:

1. Davis, R.J.A. 1986, Oceanography – An Introduction of the Marine Environment, Win C. Brown, Iowa.
2. King, C.A., Oceanography for Geographers, Edward Arnold Pub.
3. Murray, S.J., 1913, Ocean, A General account of the Science of the sea, Thorton Butter Worth, London.
4. Siddhartha, K. 1999, Oceanography, A Brief Introduction, Kisalaya Pub. Pvt. Ltd., New Delhi.
5. Singh, S. 2002, Physical Geography, Prayag Pub., Allahabad.
6. Stahler, A. N. Stahler A.M., 1997, Geography and man's Environment, John Wiley and Sons, New York.
7. Thurnman, H.V., 1978, Introduction to oceanography, Charles E. Merrill Pub. Co., London.
8. Weyl, P.K. 1970, Oceanography an Introduction of the Marine Environment, John Wiley and Sons Ltd., London.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-3

ELECTIVE COURSE - 14 'A' : AGRICULTURE GEOGRAPHY

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. This course attempts to introduce the students to the nature and origin of agriculture and its regions.
2. The course examines the questions related to agricultural development and productivity in India.
3. It also critically evaluates the environmental consequences and emerging perspective and policies and interventions aimed at sustainable agriculture

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. The students will be able to understand and analyse the historical perspective of agriculture.
2. The students will be able to analyse the agriculture development and productivity and its impacts on various sectors
3. The students will be able to get updated knowledge of contemporary issues and strategies.

COURSE CONTENTS:

- UNIT-I** : Definition and Scope of Agriculture Geography, Approaches to the Study of Agriculture Geography, Regional, Systematic, Ecological and Commodity Approach, Origin and Dispersal of Agriculture, Development of Agriculture Geography.
- UNIT-II** : Factors Affecting Agriculture: Physical, Social, Economic and Technical, Land Capability and Land Use Classification with Special Reference to India, Major Agricultural Regions of The World. Theory of Agriculture Location : Von Thunen, OLOF Johansson.
- UNIT-III** : Method of Agriculture Productivity Measurement: Ranking Coefficient and Land Carrying Capacity Method, Crop Combination Regions – Method of Delimitation Weber and Doi. Agriculture Intensity and Diversification.
- UNIT-IV** : Green Revolution: Impact and Regional Imbalances, Impact of Modern Agriculture on Environment, Planning of Agriculture Land Use. Food Security Policy in India.
- UNIT-V** : Role of Agriculture in Economic Development, Recent Agriculture Policies in India, New Dimensions in Agriculture: Agri-Business, Social Forestry and Sustainable Agriculture.

SUGGESTED READINGS:

1. Bryant, C.R., Johnston, T.R. 1992. Agriculture in the City Countryside, Belhaven Press, London.
2. Burch, D., Gross, J. and Lawrence, G. (eds.), 1999. Restructuring Global and Regional Agriculture, Ashgate Publishing Company, Burlington.
3. Cakmak, I. and Welch, R. M. (eds), 2009. Impacts of agriculture on Human Health and Nutrition, EOLSS Publications, UK.
4. Ferroni, Marco, 2013. Transforming Indian agriculture- India 2040: Productivity, Markets and Institutions, Sage Publications, New Delhi.
5. Grigg, D.B. 1984. Introduction to Agricultural Geography, Hutchinson, London.
6. Mohammad, N. 1992. New Dimension in Agriculture Geography, Vol. I to VIII, Concept Publishing Company, New Delhi.
7. Mohammad, N. and Rai, S.C. 2014. Agricultural Diversification and Food Security in the Mountain Ecosystem, Concept Publishing Company, New Delhi.
8. Roling, N.G., and Wageruters, M.A.E. (eds.) 1998. Facilitating Sustainable Agriculture, Cambridge University Press, Cambridge.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-3

ELECTIVE COURSE - 14 'B' : NATURAL RESOURCE MANAGEMENT

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. Awareness about resource availability, accessibility, utilization, its use and misuse.
2. Spatial distribution of natural resources.
3. Resource management and governance.

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. At the end the course student should learn importance of natural resources.
2. Conservation methods and awareness about community participation.
3. Assessment of role of national and international efforts to mitigate resource problems.

COURSE CONTENT

UNIT-I : Introduction: Concept, Approaches and Appraisal to Natural Resource Management.

UNIT-II : Natural Resources: Land, Water, Forest.

UNIT-III : Problems in Resource Management: Issues and Constraints in Resource Management, Environmental, Political and Socio-Economic Challenges.

UNIT-IV : Integrated Resource Management: Case Studies (any one) From Himalayan, Coastal and Desert Regions, Use of Techniques of RS and GIS.

UNIT-V : Governance: Policy, Planning and Institutional Advancement in Natural Resource Management.

SUGGESTED READINGS:

1. Berkes, F. (ed.), 1989. Common Property Resources: Ecology and Community Based Sustainable Development, Belhaven Press London.
2. Mather, A.S. and Chapman, K. 1995. Environmental Resources, Longman, Harlow, England.
3. McClay, K.R. 1995. Resource Management Information System: Process & Practice, Taylor Francis, London.
4. Mitchell B. 1988. Geography and Resources Analysis, 2nd edition, Longman, London.
5. Mitchell, B. 1997. Resource and Environmental Management, Longman, Harlow, England.
6. Newson, M.D. 1991. Land, Water and Development: River Basin Systems and Management, Routledge, London.
7. Owen, S. and Owens, P.L. 1991. Environment, Resources and Conservation, Cambridge University Press, New York.
8. Pandey, B. W. (ed.) 2000. Natural Resource Management, Mittal Publication, New Delhi.
9. Rees, J. 1990. Natural Resources: Allocation, Economics and Policy, Routledge, London.
10. Singh, Jagdish, 2006. Sansadhan Bhoogol, Radha Publications, New Delhi (Hindi).

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-3

ELECTIVE COURSE - 14 'C' : GEO INFORMATICS

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

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

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. Overall understanding of potential of Remote Sensing, GIS and GPS.
2. Understanding of image interpretation.
3. Understanding of GIS analysis workflow and integrated applications in various domains of Geography.

COURSE CONTENT

- UNIT-I** : History and Development of Remote Sensing, Stages of Remote Sensing, Active and Passive Remote Sensing, Remote Sensing Platforms, Geo-Stationary and Polar Orbiting Satellites.
- UNIT-II** : Electromagnetic Spectrum and Characteristics of Different Wavelength Regions. EMR Interaction Mechanisms, Spectral Signature, Spatial, Spectral, Radiometric and Temporal Resolutions. Principles of Thermal and Microwave Remote Sensing.
- UNIT-III** : Aerial Photographs: Types, Scale, Resolution, Geometric Properties Of Aerial Photos, Stereoscopy, Stereoscopic Parallax, Relief Displacement. Image Processing (IP); Visual (VIP) And Digital (DIP); Image Rectification, Image Enhancement, Image Classification: Supervised And Unsupervised.
- UNIT-IV** : GIS; Definition, Development and Applications, Elements of GIS, Geographic Objects; Point, Line and Area, Coordinate Systems, Map Projections and Transformations, Georeferencing , Geographic Data, Input, Storage and Editing; Spatial and Attribute Data, Vector and Raster Based Models, Digitization; Storage and Manipulation of GIS Data Bases, Presentation of GIS Output, Digital Elevation Model (DEM), Application of Remote Sensing & GIS in Disaster Management, Urban Planning and Agriculture.
- UNIT-V** : Introduction to Global Positioning System: Definition; History and Development; GPS Satellite Constellations; GPS Segments: Space; Control; User; Signals & Codes; GPS Receivers; Operating Principle and Sources of Errors in GPS; Modes of Measurements And Post Processing of Data; Accuracy of GPS Observation; GPS Applications in Various Fields; Concept of DGPS And WAAS; GNSS and Types (NAVSTAR; GLONASS; GALILEO); IRNSS, GAGAN, NovIC.

SUGGESTED READINGS:

1. Sabins, Floyd F, 1986, Remote Sensing: Principles & Interpretation, Freeman, New York.
2. Lillesand, T.M. & Klefer, R.W. 1987, Remote Sensing and Image Interpretation, John Wiley & Sons, New York.
3. Curran, Paul J; 1985, Principles of Remote Sensing, Longman, London.
4. Estes, J.E. and LW Senger, 1974, Remote sensing Techniques for environmental Analysis, Hamilton, Santa Barbara, California.
5. Slater, PN, 1980, Remote Sensing: Optics and Optical System, Addison-Wesley, Reading.
6. Jamles, B. Camp bell, Introduction to Remote Sensing-2nd Edi. Taylor & Francis, London.
7. Fazal, S. (2009), Remote Sensing Basics, Kalyani Publishers, New Delhi.
8. Reddy, A. (2001), Textbook of Remote Sensing and Geographical Information Systems, B.S. Publication Hyderabad.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME

SEMESTER-3

CORE COURSE-15 'A' : GEOGRAPHY OF RURAL DEVELOPMENT

Credits	: 2	Total Marks	: 100
		Mid Semester Examination	: 15
Duration (Hours per week)	: 2	Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. Students learn about rural poverty and migration and measures to overcome it.
2. Students learn about developmental schemes and programmes.
3. Students may conduct independent research and document their findings.

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. It introduces basic concept of rural development and its approaches.
2. Appraise problems of rural areas and change in rural livelihood.
3. Able to analyse policy planning and integrated rural development.

COURSE CONTENTS:

UNIT-I : **Introduction-** Concept, Approach and Need of Rural Development, Sectoral Imbalance in Rural Development, **Spatial Linkages-** Panchayati Raj: Structure and Role in Rural Development Rural-Urban Divide and Continuum, Core and Periphery Relations, Backward and Forward Linkages of Rural Economy. **Major Issues-** Issues and Problems of Rural Areas, Causes & Consequences of Rural Population Migration in India, Transition of Rural Livelihood: Risk and Opportunities.

UNIT-II : Gandhian Philosophy of Rural Development, Scope of Food Processing Industry in Rural Development, Sugarcane, Jute, Khadi Gramodyog, One District One Product, Skill Development Centre. **Policies & Programmes-** Area Based Approach to Rural Development:, DPAP PMGSY, Target Group Approach to Rural Development: SJSY, MNREGA, Jan Dhan Yojna, IRDP, PURA.

SUGGESTED READINGS:

1. Amra, R.C. (1999): Integrated Rural Development, S. Chand & Company, New Delhi.
2. Bhadauria, B.P.S. (1988): Rural Development Strategy and Perspective, Anmol Pub. Delhi.
3. Chauhan, P.R. (1996). Regional Disparities in the Levels of Development, AMGI, Gorakhpur.
4. Dak, T. M. (1987): Social Inequalities and Rural Development, National Publishing House, New Delhi.
5. Desai. Basant (1988): Rural Development VI Vols., Himalaya Publishing House, Mumbai.
6. Dubey, Bechan (1990): Integrated Rural Development (Hindi), Mishra Trading Company, Varanasi.
7. Mishra, R.P. (1987): Rural Development-Capitalist and Socialist Paths, Concept, New Delhi.
8. Misra, R.P. & Sundaram, K.V. (1988): Rural Area Development: Perspective and Approaches, Sterling Publishers, New Delhi.
9. Sharma, S.K. (1990): Integrated Rural Development: Approaches. Strategy and Perspectives, Abhinay Publication, New Delhi.
10. Singh, Katar (1990) Rural Development: Principles, Policies and Management, Sage Publications. New Delhi.
11. Singh. S.K. (2002); Rural Development Policies & Programmes, Northern Book Centre. New Delhi.
12. Srivastava, V.K., Sharma N. & Chauhan, P.R. (2002): Pradeshik Niyojan Avam Santulit Vikas, Vasundhara Prakashan, Gorakhpur.
13. Dikshit, S.K. (2012): Population and Regional Development, Radha Publication, New Delhi.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-3

ELECTIVE COURSE - 15 'B' : LAND, OCEAN AND ATMOSPHERE

Credits	: 2	Total Marks	: 100
Duration (Hours per week)	: 2	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. This course will lay the foundation of the understanding of coupled dynamics between land and ocean, ocean and atmosphere, land and atmosphere.
2. It will enhance the understanding of relationship and linkages between land, ocean and atmosphere.
3. Student may learn how to use mathematical tools and meteorological instruments to study atmospheric process and interpret weather systems.

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. The students will understand the earth system sciences and impacts of climate variability.
2. The student shall be able to use different models for climate forecasting and understanding.
3. The students learn about the mechanisms responsible for climate change.

COURSE CONTENT

UNIT-I : Introduction to Earth System Science: Definition and Scope of Earth System Science, Geographic Perspective to Earth System Science, Interaction Between Five Spheres; Land Ocean Interaction, Land Atmosphere Interactions.

UNIT-II : Sea Surface Warming and Climate Variability: Inter-Annual Variability and Decadal Variability, Tele-Connections of India Summer Monsoon With Southern Oscillation, Indian Ocean Dipole and ENSO Modoki. Global Impact of ENSO, IOD And ENSO Modoki, New Faces of Climate Variability; Ningaloo Nino, California Nino, Sub Tropical Dipoles.

SUGGESTED READINGS:

1. Brian, J. S., Barbara, W.M. 2010. The Blue Planet: An Introduction to Earth System Science, 3rdEdition, Wiley.
2. Ernst, W.G. 2000. Earth Systems: Processes and Issues, Cambridge University Press.
3. Garatt, J.R. 1992. The Atmospheric Boundary Layer, Cambridge University Press.
4. André Monaco, Patrick Prouzet (edt) 2014. The land- sea interactions, Willey Press.
5. Eric B Kraus, 2010. Atmosphere Ocean interactions, Oxford University Press
6. Sahu N., Behera SK, Yamashiki Y, Takara K and Yamagata T. 2012. IOD and ENSO impacts on the extreme stream-flows of Citarum river in Indonesia, Climate Dynamics, doi:10.1007/s00382-011-1158-2. Volume 39, Issue 7-8, pp 1673-1680.
7. Sahu N., Behera SK, Ratnam JV, Silva RV, Parhi P, Duan W, Takara K, Singh RB and Yamagata T. 2014. El Nino Modoki connection to extremely-low streamflow of the Paranaiba River in Brazil, Climate Dynamics, March, 42, 1509-1516, DOI 10.1007/s00382-013-2006-3.
8. Swadhin K. Behera and Toshio Yamagata, 2015. Indo-Pacific Climate variability and Predictability, World Scientific Press, Singapore.
9. Swadhin Behera and Toshio Yamagata, 2011. Dynamics of the Indian and Pacific Oceans, Chapter 4, (eds) Moffatt H.K., and Shuckburgh E., Environmental Hazards: The Fluid Dynamics and Geophysics of Extreme Events, vol.21, Lecture note series, IMS, NUS, Singapore.
10. Toshio, Y., Morioka, Y., & Behera, S., 2015. Old and New Faces of Climate Variations. In IndoPacific Climate Variability and Predictability (Vol. 7). World Scientific Co., Singapore

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-3

ELECTIVE COURSE - 15 'C' : HYDROLOGY

Credits	: 2	Total Marks	: 100
Duration (Hours per week)	: 2	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. This course give a holistic view of the water environments i.e., hydrology seen as a water carrier in nature with human influence.
2. To know diverse methods of collecting the hydrological information, which is essential to understand surface and groundwater hydrology?
3. To develop an understanding of how this knowledge may be applied in practice in an economic and environmentally sustainable manner.

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. Apply the water balance equation to various hydrological problems in time and space.
2. Describe how components of the water cycle are influenced by human activities.
3. Analyse hydrological data in order to evaluate water resource management in an area

COURSE CONTENT

UNIT-I : Bases of Hydrology. Meaning, Scope and Development of Hydrology; Hydrological Cycle; Man's Influence on the Hydrological Cycle; Precipitation Types, Characteristics and Measurements; Evaporation: Factors Affecting Evaporation From Free Water Surface and Soil; Evapotranspiration: Estimation and its Control.

UNIT-II : Water and its Disposition. Soil Moisture and its Zones; Infiltration; Groundwater: Occurrence, Storage, Recharge and Discharge; Runoff: its Sources and Components, Factors Affecting Runoff; River Regimes; Hydrograph: Components and Separation.

SUGGESTED READINGS:

1. Bernhard, H. and James, M. A. (1944): Climatology. McGraw Hill Company, New York.
2. Chorley, R. J. (1995): Atmosphere, Weather and Climate. Methuen and Company Ltd. and Company Ltd., London.
3. Chow, V. T. (ed.) (1954): Handbook of Applied Hydrology: A Compendium of Water Resources Technology. McGraw Hill, New York.
4. Critchfield, H. J. (2003): General Climatology. Prentice-Hall of India, New Delhi.
5. Rai, V.K. (1993): Water Resource Planning and Development, Deep and Deep Publication, New Delhi.
6. Bilas, R. (1988): Rural Water Resource Utilization and Planning. Concept Publishing 143, Company, New Delhi.
7. Reddy, J. P. (1988): A Textbook of Hydrology. Laxmi Publication., New Delhi. 4th edition.
8. Singh, M. B. (1999): Climatology and Hydrology. Tara Book Agency, Varanasi. (In Hindi).
9. Singh, M. B. (2002): Physical Geography. Tara Book Agency, Varanasi. (In Hindi).
10. Singh, S. (1998): Geomorphology. Prayag Pustak Bhavan, Allahabad.
11. Sparks, B.W. (1986): Geomorphology. Longman, London.
12. Thornbury, W.D. (2005): Principles of Geomorphology. John Wiley and Sons, New York.
13. Trewartha, G. T. (1980): An Introduction to Climatology. McGraw Hill Student edition, New York.
14. Ward, R.C. and Robinson, M. (2000): Principles of Hydrology. McGraw Hill, New York.
15. Weisberg, J. S. (1974): Meteorology. Houghton Mifflin Company, Boston.
16. Wooldridge, S.W. and Morgan, R.S. (1959): The Physical Basis of Geography- an Outline of Geomorphology. Longmans Green, London.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-3

INTERNSHIP / FIELD WORK : (PRACTICAL)

Credits : 2

Duration (Hours per week) : 2

COURSE OBJECTIVES:

After completion of the course students will be able-

1. To understand the importance of practical work in geography
2. To understand the relevance of surveying in geography
3. To understand the lithosphere through field work

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. Creativity will be developed in the students towards field survey.
2. Students will be familiar with various tools and techniques of cartography.
3. Field observation and report writing skills will be developed in Students.

A. INTERNSHIP

Internship Report : 70 marks, Viva-Voce 30 marks = 100 marks

OR

B. SURVEYING

Instrumental Surveying Exam : 60 marks, Record File 20, Viva-Voce 20 marks = 100 marks

Instrumental Surveying- Plain Table, Prismatic Compass, Indian Clinometer, Dumpy Level.

OR

C. SURVEY

Tour Report : 70 marks, Viva-Voce 30 marks = 100 marks

Geographical Tour and Report Writing: Mountain / Desert / Plateau / Coastal Region, Designing the Field Report: Aims and Objectives, Methodology, Analysis, Interpretation and Writing the Report Based on Field Observations, Photographs, Sketch Etc.

SUGGESTED READINGS:

1. Sharma, J. P. (2019), Proyogatmak bhoogol, Rastogi Publication Meerut.
2. Singh, R. L. and Singh, Rana P.B. (1993), Elements of Practical Geography. (Hindi and English editions), Kalyani Publishers, Ludhiana and New Delhi.
3. Davis, R.E. and Foote, F.S. (1953) : Surveying, 4th edition, McGraw Hill Publication, New York.
4. Jones, P.A. (1968): Fieldwork in Geography, Longmans, Green and Company Ltd. First Publication, London.
5. Kanetker, T. P. and Kulkarni, S. V. (1967); Surveying and Levelling, Vol-I and II V.G. Prakashan, Poona.
6. Natrajan, V. (1976), Advances Surveying, B.I Publication, Mumbai.
7. Pugh, J.C. (1975), Surveying for field Scientists, Methuen and Company Ltd. London, First Publication.
8. Punmia, B.C. (1994), Surveying, Vol. I, Laxmi Publication Private Ltd., New Delhi.
9. Shephard, F. A. (1968), Surveying Problems and Solutions, Edward Arnold (Publishers) Ltd. London.
10. Venkatramaiah, C. (1997), A Text Book of Surveying, Universities Press, Hyderabad.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-4

CORE COURSE – 16 : REGIONAL PLANNING AND DEVELOPMENT

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

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

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

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

UNIT-I : Definition of Region, Evolution and Types of Regional Planning: Formal, Functional, and Planning Regions and Regional Planning; Need for Regional Planning; Types of Regional Planning. Multilevel Planning.

UNIT-II : Choice of a Region for Planning: Characteristics of an Ideal Planning Region; Delineation of Planning Region; Regionalization of India for Planning (Agro Ecological Zones). Environmental issues in Regional Planning, Strategies of Rural and Urban Planning in India.

UNIT-III : Theories and Models for Regional Planning: Growth Pole Model of Perroux; Growth Centre Model in Indian Context; Myrdal, Hirschman, Rostow and Friedmann; Village Cluster.

UNIT-IV : Changing Concept of Development, Concept of Underdevelopment; Efficiency- Equity Debate. Development of Island Territories.

UNIT-V : Measuring Development: Indicators (Economic, Social and Environmental); Human Development, Role of Agriculture, Industries, Transport, Trade and Commerce in Regional Development in India, Strategies of Regional Development in India. Planning Commission, NITI Ayog.

SUGGESTED READINGS:

1. Bhat, L.S., 1973, Regional planning in India, Statistical Publishing Society, Calcutta.
2. Chandana, R.C., 2000, Regional Planning, Kalyani Publishers Ludhiana.
3. Chand, M., Puri, & V.K., 1983, Regional Planning in India, allied Publishers, New Delhi.
4. Friedman, J., & Alonso, W., 1967 Regional Development and Planning-A Reader, MIT Press, Cambridge Mass.
5. Glasson, 1980, Regional Planning, Hutchinson, London.
6. Glikson, A., 1955, Regional and Development, Netherlands, Universities Foundation of International Corp, London.
7. Mishra, R.P, 1969, Regional Planning Concepts, Techniques and Policies, University of Mysore, Mysore.
8. Mishra R.P, et.al., 1974, Regional Development and Planning in India, Institute of Development Studies, Mysore.
9. Rao, V.L.B., 1960, Regional Planning, Asia Publishing House, New Delhi.
10. Kant Surya et.al (eds): Reinventing Regional Development, Rawat Publication, Jaipur and N.Delhi.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-4

ELECTIVE COURSE-17 'A' : DISASTER MITIGATION AND MANAGEMENT

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. To create awareness about various disasters in context of India, their distribution over space and time of occurrence.
2. To equip students with various methods of prevention, mitigation and rehabilitation processes.
3. Students should understand Disaster Management guidelines.

COURSE LEARNING OUTCOME:

After completion of this course the student will be able to:

1. After undertaking this course the student will be aware of the types of disasters-natural and man-made.
2. The student will learn how to map and mitigate disasters.
3. The students will master the disaster studies in India and various government policies of disaster management.

COURSE CONTENTS:

- UNIT-I** : Disasters; Definition and Concepts: Hazards, Disasters; Risk and Vulnerability; Classification.
- UNIT-II** : Types of Environmental Hazards and Disasters: Natural Hazards and Disasters, Man Induced Hazards and Disasters-Earthquake, Tsunami, Landslides, Cyclones, Floods, Drought, Desertification Distribution and Mapping.
- UNIT-III** : Manmade Disasters: Causes, Impact, Distribution and Mapping, Response and Mitigation to Disasters: Mitigation and Preparedness, NDMA and NIDM; Indigenous Knowledge and Community-Based Disaster Management; Do's and Don'ts During and Post Disasters.
- UNIT-IV** : Harnessing Information and Technology: Application of G.I.S., G.P.S. and Remote Sensing in Disaster Management.
- UNIT-V** : Disaster in Indian Context: A Regional Survey of Land Subsidence, Coastal Disaster, Cyclonic Disaster and Disaster in Hills, Terror Attacks, Communal Clashes, Remedial Measures. National and International Policies of Disaster Management.

SUGGESTED READINGS:

1. Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
2. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Pub, New Delhi.
3. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
4. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi.
5. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
6. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
7. Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
8. Singh Jagbir (2007) "Disaster Management Future Challenges and Opportunities", 2007. Publisher I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-4

ELECTIVE COURSE – 17 ‘B’ : DEMOGRAPHY AND MIGRATION GEOGRAPHY

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. Student shall learn about the demographic transition models, its genesis, process and consequences from spatial perspectives.
2. This course endeavors to encourage the understanding of issues and challenges of human migration from spatial perspectives.
3. Different forms of human migration, its characteristics and regional patterns shall be highlighted

COURSE LEARNING OUTCOMES:

After completion of this course the student will be able to:

1. Students will be confident to visualise the consequences of demographic transition on the economy, society and politics.
2. They should be able to have a clear understanding of population policies and its vital role towards managing the population affairs on the path of sustainability.
3. Students should be able to appreciate the various dimensions of global environmental change and human migration.

COURSE CONTENTS:

- UNIT-I** : Historical Perspectives on Population and Development, Demographic Transition Origins: Processes and Effects, Regional Pattern, Population Composition.
- UNIT-II** : Consequences of Demographic Transition: Economic, Social, and Political, Population Policies and Planning.
- UNIT-III** : Migration Overview: Basic Concepts, Data Source, Measures and Historical Perspectives, Internal Migration Concepts: Characteristics, Typologies, Regional Pattern, Explanations, and Implications, Theory of Migration- Lee, G.Taylor.
- UNIT-IV** : International Migration Concepts: Characteristics, Typologies, Regional Patterns, Explanations, and Consequences; Migration Policies and Governance: Regional Models Across Global North and Global South.
- UNIT-V** : Migration, Environment and Climate Change Linkages; Floods, Droughts, Desertification, Natural Disasters, Migration; Development and Sustainable Development Goals.

SUGGESTED READINGS:

1. Birdsell, N., Kelley, A.C., and Sinding, S.W. 2001. Population matters: demographic change, economic growth, and poverty in developing world. Auckland: Oxford University Press.
2. Dyson, T. 2010. Population and development: the demographic transition London: Zed Books.
3. Ehrlich, P.R. and Ehrlich, A.H. 1996. Ecoscience. Population, Resources, Environment. 6th edition, W.H. Freeman and Company, San Francisco.
4. Gould, W.T.S. 2009. Population and Development, London: Routledge.
5. Graff, M., and Bremner, J. 2014. A practical guide to population and development, Washington DC: Population Reference Bureau.
6. James, K.S. 2011 India's demographic change opportunities and challenges. Science 333 (6042), 576-580.
7. Brettell, C. B., and Hollifield, J.F. (eds.) 2014. Migration Theory: Talking across Disciplines, 3d ed. New York: Routledge.
8. Castles, S., de Haas, H. and Miller, M.J. 2014. The Age of Migration: International Population Movements in the Modern World, 5th ed. New York and London: Guilford.
9. Hatton, T., and Williamson, J.G. 1998. The age of mass migration causes and economic impact, New York: Oxford University Press.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-4

ELECTIVE COURSE – 17 'C' : BIO GEOGRAPHY

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. Understanding the distribution of bio diversity.
2. Understanding the role of historical climate.
3. Modelling ecosystems Responses.

COURSE LEARNING OUTCOME:

After completion of this course the student will be able to:

1. Understanding ecosystems.
2. Predicting future ecosystem changes.
3. Identifying regions with high biodiversity.

COURSE CONTENTS:

UNIT-I : Meaning and Scope of Biogeography, Biogeography and Related Sciences, Approaches to the Study of Biogeography.

UNIT-II : Relevance and Significance of Biogeography, Environmental Factors Affecting Distribution of Flora and Fauna, Social Forestry, Agro Forestry.

UNIT-III : Soils as an Ecological Factor, Soil Forming Factors, Soil Components, Soil Properties, Soil Profile and Horizon, Soil Erosion and Conservation, Concept and Types of Ecosystem.

UNIT-IV : Biomes with Special Reference to Tropical Rain Forests, Tropical Monsoon Deciduous Forest, Tropical and Temperate Grass Lands Biomes, Zoo-Geographical Regions.

UNIT-V : Evolution, Dispersal and Distribution of Plants, Forest Conservation in India, Wildlife Conservation in India, Biodiversity: Concept Types and Importance, Endangered Species, Red Data Book.

SUGGESTED READINGS:

1. Simmon, I.G., Biogeography: Natural and Cultural, Longman, London 1974.
2. Watts, David, Principles of Biogeography, London.
3. Odum, Eugene P. Fundamentals of Ecology, Philadelphia.
4. Newbigin, M.1., Plant and Animal Geography, London.
5. Cloudsley Thompson, J.L., Terrestrial Environment, London.
6. Allee, W.C. & Schmidt, KP., Ecological Animal Geography, New York.
7. Jones, R.1., Biogeography: Structure, Process Pattern and Change within a Biosphere.
8. Mathur, M.S., Essentials of Biogeography, Jaipur
9. Darlington, P., Zoogeography, New York.
10. Huggett, RJ, Fundamentals of Biogeography, Routledge, U.S.A, 1998.
11. Cox, C.B. and More, P.D., Biogeography: An Ecological and Evolutionary Approach, London, 2000.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-4

ELECTIVE COURSE – 18 'A' : TOURISM GEOGRAPHY

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. To introduce various types of tourism to the students popular in the world and India in particular.
2. Give an applicable knowledge of use of Tourism in wealth making of a country.
3. Students learn the significance of Tourism and how to apply theoretical knowledge in the field.

COURSE LEARNING OUTCOME:

After completion of this course the student will be able to:

1. The student will understand different types of tourism and the geography associated with them.
2. The student will learn different aspects of tourism-market, demand & dimensions of tourism.
3. Student will learn tourism in India, its evolution and development in different tourist places.

COURSE CONTENTS:

- UNIT-I** : Basics of Tourism: Meaning, Definition, Concept; Approach of Tourism: Elements of Tourism, Forms of Tourism, Factors Influencing Tourism- Historical, Natural, Socio – Cultural and Economic; Motivating Factors For Pilgrimages- Leisure, Recreation; Tourism as an Industry.
- UNIT-II** : Geography of Tourism: - its Spatial Affinity; Areal and Locational Dimensions Comprising, Physical, Cultural, Historical and Economic; Tourism Types: Natural, Cultural, Adventure, Medical, National and International.
- UNIT-III** : Infrastructure and Support System:- Accommodation, Transport, other Facilities and Amenities; Impact of Tourism: Physical, Economic, Social and Perceptual Positive and Negative Impacts.
- UNIT-IV** : Tourism Packaging- Definition, Components, Types of Package Tour, Tour Package-Designing, Developing Process, Destination and Market, Demand and Dimensions of Tourism.
- UNIT-V** : Indian Tourism: Regional Dimensions of Tourist Attraction, Evolution of Tourism, Promotion of Tourism. Tourist Development In Himalayan Region, Indian Tourism Policy and Planning.

SUGGESTED READINGS:

1. Dhar, P.N. (2006) International Tourism: Emerging Challenges and Future Prospects. Kanishka, New Delhi.
2. Tourism Policy of India, Government of India.
3. Hall, M. and Stephen, P. (2006) Geography of Tourism and Recreation–Environment, Place and Space, Rout ledge, London.
4. Kamra, K. K. and Chand, M. (2007) Basics of Tourism: Theory, Operation and Practise, Kanishka Publishers, Pune.
5. Seth, P. N., Successful Tourism Management (Vol. 1, 2)
6. Page, S. J. (2011) Tourism Management: An Introduction, Butterworth Heinemann- USA. Chapter 2.
7. Raj, R. and Nigel, D. (2007) Morpeth Religious Tourism and Pilgrimage Festivals Management: An International perspective by, CABI, Cambridge, USA, www.cabi.org.
8. Tourism Recreation and Research Journal, Center for Tourism Research and Development, Lucknow
9. Singh Jagbir (2014) "Eco-Tourism" Published by - I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-4

ELECTIVE COURSE – 18 'B': MEDICAL GEOGRAPHY

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. Focuses on understanding of population health,.
2. Deals with improving health care.
3. Shaping medical research

COURSE LEARNING OUTCOME:

1. Understand the key concepts related to health and medical geography.
2. Identify the connection between health and the environment.
3. Understand how to promote equitable access to health care.

COURSE CONTENTS:

- UNIT-I** : Concepts and Traditions: Definition, Scope, Elements; Concept of Health; Geographical Approaches of Health; Methods and Techniques; Growth of Medical Geography.
- UNIT-II** : Health and Environment: Natural Environment and Health- Inorganic and Organic, Social Environment and Health: Food Intake, Perception of Diseases, Treatment of Diseases, Socio-Economic Conditions and Health.
- Unit-III** : Modernization, Population Change and Health: Disease Classification- Genetic, Communicable, Occupational, Deficiency Diseases, WHO Classification of Diseases.
- Unit-IV** : Diseases Diffusion: Meaning, Factors, Phases and Types, Epidemiological Transition- The Theory of Epidemiological Transition (Omran Theory) Factors of Transition- Demographic, Changes in Risk Factors, Practices of Modern Medicine.
- UNIT-V** : Global Inequalities in Health Care: Concept of Health Care, Levels of Health Care, Health Care Accessibility and Utilization, Health Care Delivery System Worldwide, Health Care Services in India, Health Care Policy in India.

SUGGESTED READINGS:

1. Husain Majid (1994): Medical Geography", Amol Publication Pvt. Ltd. New Delhi.
2. Learmonth ATA (1978): Patterns of diseases and hunger", a case study in Medical Geography. David and Charles, Victoria.
3. May, J. M. (1970): The world atlas of diseases National Book Trust, New Delhi.
4. Mc. Glashan N.D (1972) Medical Geography, Methuen, London.
5. Misra, R. P. (1970): Medical Geography" National Book Trust, New Delhi.
6. Rais, A. S. Learmonth ATA (1990) Geographical aspects of health and diseases in India" rawat Publication, Jaipur.
7. Stamp L D.(1964). Some aspects of Medical geography", Oxford University Press Oxford.
8. M. S. Meade and R.J. Erickson (2005), Medical Geography Guilford press

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-4

ELECTIVE COURSE – 18 'C' : MILITARY AND SECURITY GEOGRAPHY

Credits	: 4	Total Marks	: 100
Duration (Hours per week)	: 4	Mid Semester Examination	: 15
		Assignment	: 10
		Attendance	: 05
		End-Semester Examination	: 70

COURSE OBJECTIVES:

1. Students learn how Geography influences warfare, conflict dynamics, strategic planning and the Geo-political landscape.
2. Students learn how a military presence impacts culture and the economy.
3. Students learn how climate change and other environmental changes impact military strategy, Planning and training.

COURSE LEARNING OUTCOME:

After completion of this course the student will be able to:

1. Understand the concept, meaning and scope of geo-politics.
2. Understand the theories of land power, air power and sea power, propounded by strategic thinkers.
3. Understand the nature and scope of military geography of India and related defence problems.

COURSE CONTENTS:

- UNIT-I** : Meaning and Scope of Military Geography, Concept of Military Geography, Concept of Geo-Politics, Importance of Geo-Politics, Development of Geo-Politics
- UNIT-II** : Sea Power Theory: Mahan and Haushofer, Land Power Theory: Mackinder And Spykman, Air Power Theory: Seversky.
- UNIT-III** : Geography in Land Warfare, Geography in Sea Warfare, Geography in Air Warfare
- UNIT-IV** : Importance and Scope of Logistics- Resources, Industries, Supply Chain, Geopolitics of Indian Ocean.
- UNIT-V** : Indian Boundaries and Military Security, Defence Problems of India, Weather and Communication, Cross Border Terrorism.

SUGGESTED READINGS:

1. युद्ध के साधन और साध्य, मेजर आ० सी० कुलश्रेष्ठ, इलाहाबाद, 1965.
2. Dasgupta B. and W.H. Morris Jones, (1975): Patterns and Trends in Indian Politics, New Delhi, Allied Publishers.
3. De Seversky, A., (1942): Victory through Air Power, New York, Simon & Schueter.
4. Fairgrieve, j.. (1915): Geography and World Power, London University of London Press.
5. Fawcett, C.B., (1918): Frontiers: L A Study in political Geography, London, Oxford University Press.
6. Machinder, H.j., (1924): Nations of Modern World, London, George Philip and Son.
7. Mahan, A.T., (1900): The Problem of Asia, Boston, Little, Brown & Co.
8. Panikkar, K.M., (1955): Geographical Introduction to Indian History, Bombay, Bhawan's Book University.
9. Prescott, J.R.V., (1966): Boundaries and Frontiers, Croom Helm, London.

GEOGRAPHY POST GRADUATE 2 YEAR PROGRAMME
SEMESTER-4

DISSERTATION (MASTER THESIS)

Credits : 8

Total Marks : 200

Duration (Hours per week) : 8

COURSE OBJECTIVES:

1. The Students will be taught how to write a project report / dissertation.
2. Students should learn innovative methods and techniques to solve research problems.
3. Students should learn to critically interpret research material and analyse, simulate or experiment with it.

COURSE LEARNING OUTCOMES:

1. The Student will learn to write a project report / dissertation, after duly following all the steps in research methodology, which are taught in the course entitled Research Methods and Techniques in Geography.
2. Students can apply data analytical tools and library resources to solve research problems.
3. Students can communicate research concepts and contexts clearly and effectively.

COURSE CONTENT

1. The students of M.A. Geography 4th Semester may have to be selected a specific theme/topic for a Project work. The students may select some of the following themes for their project.
 - a. Land Evaluation
 - b. Land-use / Land cover Analysis
 - c. Water sources
 - d. Slope Studies
 - e. Climatic Change
 - f. Settlement Studies
 - g. Agriculture Studies
 - h. Health studies
 - i. Infrastructure Studies
 - j. Vegetation Studies
 - k. Social and Cultural Studies.
2. GIS, GPS & RS methods have to be used with appropriate primary and secondary data.
3. The students should follow the research guidelines by reading Research Methodology before taking up the Project work.
4. The project should no cross 50 pages including photos, references and tables.
5. Project work must include quality maps, diagrams and flowcharts.
6. The project report should include followings:
 - a. Title of the project
 - b. Introduction
 - c. Review of Literature
 - d. Study Area
 - e. Data sources
 - f. Main Objective
 - g. Materials and methods
 - h. Results & Discussion
 - i. Conclusion
 - j. Photos
 - k. References

SUGGESTED READINGS:

1. Archer J. E. & Dalton T.H. (1968):The fields work in Geography, E. T. Batsford Ltd., London.
2. Haring, Lloyed (1975) : Scientific Geographic Research W. C. Brow Company USA.
3. Johnes, P.A. (2008) : Field work in Geography, Longman.
4. Hari C. R. (1996) : Research Methods, Vishwas Prakashan, New Delhi.
5. Misra R. P. (1991) : Research Methodology in Geography, Concept Publication, New Delhi.