M.A. /M. Sc. GEOGRAPHY
SEMESTER - I (2023-25)

M. A. /M. Sc. Geography Semester I shall consist the following papers:

S. No.	Sub Code	Paper	Title	M. M.		
				Written	Inte. Asse.	Total
1.	Geog 101	I	Geomorphology	80	20	100
2.	Geog 102	II	Climatology	80	20	100
3.	Geog 103	III	Geographical Thought	80	20	100
4.	Geog 104	IV	Geography of India	80	20	100
5.	Geog 105	V	Practical-I : Map Projections, Toposheet Interpretation And Surveying	---	---	100

1. The M. A. /M. Sc. Semester I examination in Geography shall consist of 500 marks. There shall be four theory papers each of 100 marks and one practical of 100 marks as follows:

Paper I	Geomorphology
Paper II	Climatology
Paper III	Geographical Thought
Paper IV	Geography of India
Paper V	Practical-I: Map Projections, Toposheet Interpretation and Surveying

2. The theory papers shall be of three hours duration.

3. Candidates will be required to pass separately in theory and practical examinations.

4. (a) In the practical examination the following shall be the allotment of time and marks.

(i) Practical record	20%
(ii) Lab work (up to three hours)	40%
(iii) Field work (up to three hours)	30%
(iv) Viva on i, ii & iii above	10%

(b) The external and internal examiners shall jointly submit marks.

(c) All the candidates shall present at the time of the practical examination their practical record regularly signed by the concerned teachers.

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PAPER –I

GEOMORPHOLOGY

Objective:

- It being a course at the interface of geography with earth, the student has to be sensitized to background knowledge of geology and environmental science.
- The objective of the course is to familiarize the students with the need for understanding of geomorphology with reference to certain fundamental concept, focusing on the unity of geomorphology in the earth materials and the processes with or without an element of time. Process component of geomorphology is segmented into the internal and external processes of landscape evaluation.
- Finally a few selected applications of geomorphology to societal requirements and quality of environment are dealt with.

Course contents:

UNIT – I Nature and scope of Geomorphology; Fundamental concepts, Geological Structures and landforms, uniformitarians, multicylic and polygenetic evolution of landscapes, Environmental change and climatic change; geochronological methods with evidences and artifacts. Applied Geomorphology, Urban Geomorphology Environmental geomorphology Geomorphic Hazards.

UNIT – II Constitution of the Earth Interior, Theory of Isostasy, Earth Movement: Endogenetic forces; Diastrophic forces; Eperiogenic and Orogenic, Sudden Forces: Volcanicity, Earthquake, Plate tectonics, orogenic structures with reference to the evolution of the Himalaya.

UNIT – III Exogenic Processes: Concept of gradation, Agents and processes of gradation, causes, types of weathering, mass movement erosion, depositional processes and resultant landforms and soil formation. Slope evolution, down warping, parallel retreat and slope replacement models.

UNIT – IV Geomorphic processes; Normal Cycle of erosion: W.M. Davis, W. Penck, L. C. king. Dynamics of Fluvial, Glacial, Periglacial, Aeolian (Arid & Semi Arid), Marine and Karst processes and resulting landforms. Erosional surfaces.

Suggested readings:

1. Ahmed, E.: Coastal Geomorphology of India.
2. Chorley, R. J.: Spatial Analysis in Geomorphology, Methuen, London, 1972.
3. Cooke R.I.J. and Doornkamp, J.C. : Geomorphology in Environmental Management. An Introduction, Clarendon press, Oxford, 1974.
4. Dayal, P. : A Text book of Geomorphology, R.K. Books, New Delhi.
5. Dury, G.H.: The Face of the Earth, Penguin Hormondsworth 1959.
6. Fairbridge, R.W. Encyclopedia of Geomorphology, Reinholdts, New York, 1968.
7. Goudie, A.: The Nature of the Environment Oxford & Blackwell, London, 1993.
8. Gautam, Alka : Geomorphology, Sharda Pustak Bhawan, Allahabad.
9. Garner, H.F. : The Origin of landscape- A Synthesis of Geomorphology, Oxford University Press. London, 1974.
10. Holmes, A.: Principles of Physical Geology, Thomas Nelson, London.

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11. Jha, V.C. : Geomorphology, Vasundhara Publication, Gorakhpur.
12. Mitchell, C.W.: '1'erra.ii'i Evaluation. Longman, London, 1973.
13. Oilier, C.D. : Weathering, Longman, London, 1979.
14. Pitty, A.F.: Introduction to Geomorphology, Methuen, London, 1971.
15. Stoddart, D.R. (ed.) : Process and Form in Geomorphology, Roullcdge, New York, 1996.
16. Skinner, B.J. & Porter, S.C.: The Dynamic Earth John Wilely. New York, 1995.
17. Sparks, B.W. Geomorphology, Longman, London, 1960.
18. Sharma, H.S. (cd.): Perspective in Geomorphology, Concept, New Delhi, 1980.
19. Singh, S : Geomorphology, Prayag Publication, Allahabad, 1998.
20. Steers, J.A. : The Unstable Earth Methuen, London.
21. Thornbury, W.I.). Principles of Geomorphology, John Wiloy, New York, 1960.
22. Strahler, A.N.: Physical Geography, Willey, New York.
23. कौशिक, एस.डी. : भू–आकृति विज्ञान के सरल सिद्धांत, आर.के. बुक्स, नई दिल्ली
24. नेगी, बी.एस. : भू–आकृति विज्ञान, आर.के. बुक्स, नई दिल्ली
25. दयाल, परमेश्वर : भू–आकृति विज्ञान, आर. के. बुक्स, नई दिल्ली
26. यादव, रामसुरेश : भू–आकृति विज्ञान, ग्रन्थम, रामबाग, कानपुर, 1976
27. सिंह, सविन्द्र : भू–आकृति विज्ञान, शारदा पुस्तक भवन, इलाहाबाद
28. प्रसाद, गायत्री : भू–आकृति विज्ञान, शारदा पुस्तक भवन, इलाहाबाद
29. गौतम, अलका : भू–आकृति विज्ञान, रस्तोगी पब्लिकेशन, मेरठ
30. शर्मा, एच.एस. एवं प्रमीला कुमार : भू–आकृति विज्ञान, पंचशील प्रकाशन, जयपुर, 2011

Outcomes:

Geomorphology is essentially a field of science, therefore students can be taken to the field for effective understanding of geomorphology forms and processes. Department must have good geomorphic lab equipped with photographs of landforms of various climatic regions and toposheets of Survey of India.

On completion of the course, students are able to:

1. Understand the nature, scope and significance of geomorphology and fundamental concepts in subject.
2. To examining the Origin and Evolution of the earth primary relief features by different theories in subject.
3. Understand about Exogenous Processes considering weathering and mass wasting and nature and types of the slope.
4. Evaluate the fundamental Model of Davisian Cycle of Erosion to learn the function of river and its landforms development process.
5. Understand the formation, process and development of Fluvial and Karst Landforms.
6. To recognize and understand the formation, process and development of Glacial and Aeolian Landforms in geomorphology.

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PAPER - II

CLIMATOLOGY

Objective:

- The aim of the course is to provide an understanding of weather phenomena; dynamic of global climates and generating of climatic information and application.
- The objectives of the course are to familiarize the students with the need for understanding of climatology with reference to certain fundamental concept, scope and climatic changes.
- Finally a few selected applications of climatology to societal requirements and quality of environment are dealt with.

Course contents:

UNIT – I Nature and scope of climatology and its relationship with meteorology, composition and structure of atmosphere, Insolation, heat balance of the earth, stability and instability, vertical and horizontal distribution of temperature.

UNIT – II Jet stream, General circulation in the atmosphere: concept of air masses and Front, EL Nino and La Nina, Monsoon winds, cyclones, Clouds and Precipitation.

UNIT – III The application of general principles of elementary: physical and synoptic meteorology to the study and classification of climate. Climate classification: Koppen, Thornthwaite and Trewartha. Major climates of the world : tropical, temperate, desert and mountain climate.

UNIT – IV Climate changes during geological and historical times with evidences and possible causes, Green house effect, Acid rain, Global warming, Applied climatology.

Suggested Readings:

1. Barry, R.G. and Chorley P..1.; Atmosphere, Weather and Climate, Roulledge, London and New York, 1998.
2. Critchfield, J.H. : General Climatology, Prentico Hall, India, New Delhi, 1993.
3. Das, P.K. : Monsoons 'National Book Trust, New Delhi, 1987.
4. Fein, J.S. and Stephens, P.N. : Monsons. Wiley Interscience, 1987.
5. India Met. Deptt : Climatologically Tables of Observatories in India, Govt. of India 1968.
6. Lal, D.S. : Climatology, Chaitanaya Publications, Allahabad, 1986.
7. Lydolph, P.H. : The Climate of the Earth, Rowiman, 1985.
8. Menon, P.A. : Our Weather, N.B.T.., New Delhi, 1989.
9. Oliver, C. : Climatology : An Atmospheric Science, R.K. Books, New Delhi.
10. Peterson, S. : Introduction to Meteorology, Mc. Hill Book, London, 1969.
11. Robinson, P.J. and Henderson S. : Contemporary Climatology, Henlow, 1999.
12. Singh, Savindra : Climatology, R.K. Books, New Delhi.
13. Thompson, R.D. and Perry, A (ed.) : Applied Climatology, Principles and Practice. Raoutledge, London. 1997.
14. तिवाड़ी, अनिल कुमार : जलवायु विज्ञान, राजस्थान हिन्दी ग्रंथ अकादमी

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15. सिंह, सविन्द्र : जलवायु विज्ञान, प्रयाग पुस्तक भवन, इलाहाबाद
16. नेगी, बी.एस. : जलवायु तथा समुद्र विज्ञान.
17. लाल, डी.एस. : जलवायु विज्ञान
18. गौतम, अलका : जलवायु एवं समुद्र विज्ञान
19. शर्मा, बी.एल. एवं तिवाड़ी, अनिल कुमार : जलवायु विज्ञान के मूल तत्व, राजस्थान हिन्दी ग्रन्थ अकादमी, जयपुर
20. सिंह, रामाश्रय एवं उपाध्याय, डी.पी. : जलवायु विज्ञान और समुद्र विज्ञान, वसुन्धरा प्रकाशन, गोरखपुर
21. लाल, डी.एस. : जलवायु विज्ञान, आर.के. बुक्स, नई दिल्ली
22. सिंह, सविन्द्र : जलवायु विज्ञान, आर.के. बुक्स, नई दिल्ली

Outcomes:

Weather and climatic chart be made available to the students to explain weather conditions. Audio-visual aids be used for effective technique.

On completion of the course, students are able to:

1. Understand the difference between weather & climate, aims, nature and scope of Climatology.
2. Understand the origin, composition and structure of atmosphere
3. Getting facts about Heat Budget and factors effects Heat Budget.
4. Understand the concept of horizontal, vertical temperature and inversion of temperature.
5. Identify the Atmospheric pressure, winds, humidity and concept of precipitation and its types.
6. Understand the Air masses and Fronts and the Weather Forecasting.

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PAPER – III

GEOGRAPHICAL THOUGHT

Objective:

- To introduce the students to the philosophical and methodological foundations of the subject and its place in the world of knowledge.
- To familiarize them with the major landmarks in development of geographic thought at different periods of time.
- Geographical Thought provides a clear and accessible introduction to the key ideas and figures in human geography.

Course contents:

UNIT – I Definition, scope and functions of Geography ; The Field of geography; its place in the classification of science, Geography as a social science and natural science, Geography as science of relationship, as science of areal differentiation, as spatial science. Spatial Organization, Geography and environmentalism: forms of man-nature relationship and current view; Dualism in geography; Regional Concept.

UNIT – II The growth of Geographical knowledge from earliest times up to the 15th century. Contributions of Greek and Roman thinkers, Arab Geographers and their contributions. Geographical information in Ancient Indian literature, The Dark age in Geography, The Great Age of Maritime Discovery and Exploration.

UNIT – III Contributions of various schools of thought in modern Geography:

(i)	German School	(ii)	French School
(iii)	British School	(iv)	American Schools
(v)	Russian School	(vi)	Indian scholars

UNIT – IV Scientific explanations: routes to scientific explanation (inductive/deductive); Type of explanation: cognitive description, cause and effect, temporal, functional/ecological and systems, Laws, theories and models in Geography, Quantitative revolution and philosophy of positivism. Behaviourlism, relevance movement and radical geography changing paradigms.

Suggested Readings:

1. Abler, Ronald; Adams, John S. Gold, Peler : Spatial Organization : The Geographer's view of the world. Prentice Hall, N.J. 1971.
2. Adhikari, S. : Fundamental of Geographical Thought, R.K. Books, New Delhi.
3. Ali S.M. : The Geography of Puranas, Peoples Publishing House, Delhi, .1968.
4. Amedeo, Douglas : An Introduction to Scientific Reasonign in Geography, John Wiley, U.S.A. 1971.
5. Dikshit, R.D. (ed.): The Art & Science of Geography Rand Me Nally & Co., 1959.
6. Hartshorne, R.: Perspectives on Nature of Geography Rand Me Nally & Co., 1959.
7. Hussain, M. : Models in Geography, R.K. Books, New Delhi.
8. Husain, M. : Evolution of Geographic Thought, Rawat Pub., Jaipur, 1984.
9. Johnston, R.J.: Philosophy and Human Geography, Edward Arnold, London, 1983.

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10. Johnston, R.J.: The Future of Geography, Methuen, London, 1988.
11. Minshull, R.: The Changing Nature of Geography, Hutchinson University Library, London, 1970.
12. Ali, S. M.- Arab Geography.
13. Taylor, G.: Geography in the 20th Century.
14. Dikshit, R.D.: Geographical Thought : A Contexual History of Ideas, Prentice Hall of India, New Delhi.
15. Harvey D. : Explanation in Geography.
16. सिंह उजागर : भौगोलिक चिन्तन का विकास
17. त्रिपाठी एवं बिरले : भौगोलिक चिंतन का विकास एवं विधितंत्र
18. कौशिक , एस.डी. : भौगोलिक विचारधाराएं एवं विधितंत्र, आर.के. बुक्स, नई दिल्ली, 2010
19. सिंह , जगदीश : भौगोलिक चिंतन का क्रम विकास, आर.के.बुक्स, नई दिल्ली, 2010
20. हुसैन, माजिद : भौगोलिक चिंतन का इतिहास, रावत पब्लिकेशन, नई दिल्ली, 2004
21. सिंह, देवेन्द्र प्रसाद : भौगोलिक चिन्तन की समीक्षा, शारदा पुस्तक भवन, इलाहाबाद
22. बंसल, सुरेश चन्द्र : भौगोलिक चिन्तन के मूल तत्व, आर.के. बुक्स, नई दिल्ली
23. श्रीवास्तव, वी.के. : भौगोलिक चिन्तन के आधार, आर.के. बुक्स, नई दिल्ली
24. दीक्षित, रमेश दत्त : भौगोलिक चिन्तन का विकास : एक ऐतिहासिक समीक्षा, आर.के. बुक्स, नई दिल्ली
25. जाट, बी.सी. : भौगोलिक विचारधाराएँ तथा विधितंत्र, मलिक एण्ड कंपनी, जयपुर एवं दिल्ली, 2013

Outcomes:

1. Students of geography may be encouraged to interact with their counterparts from other disciplines and discuss the nature of their subject.
2. The students may be encouraged to collect information on any theme amenable to geographical interpretation.
3. To study and understand the founding concepts of human geography in the nineteenth century academy, the authors examine the range of theoretical perspectives that have emerged within human geography over the last century from feminist and Marxist scholarship, through to post-colonial and non-representational theories.

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PAPER – IV

GEOGRAPHY OF INDIA

Objective:

- To understand Physiographical and biological scope and prosperity of India and state of Chhattisgarh.
- The objective of the course is to familiarize the students with the need for understanding about natural resources of India and Chhattisgarh.
- To sensitize the students with development issues and policies and programmers' designed for regional development.

Course contents:

UNIT – I Physical and Biological elements in the Geography of India: Geological structure, relief, climate, drainage, vegetation and soils.

UNIT – II Agriculture: Major characteristics and problems, Impact of infrastructural and institutional factors on agriculture. Important crops; wheat, rice, cotton, sugarcane, oil-seeds, tea and coffee, Agricultural regions. Green revolution, Agro-climatic regions.

UNIT – III Sources of power: Coal, Petroleum, Natural gas. Hydroelectricity and Atomic energy. Mineral resources with special reference to iron ore, manganese and bauxite. Industrial development with special reference to iron and steel, cement, cotton, sugar and paper industries; Industrial regions.

UNIT – IV Regional division of India: Purpose and Methodology. Major schemes of regions of India: O.H.K. Spate and R.L. Singh. Physical and cultural geography of Chhattisgarh State.

Suggested Readings:

1. Centre for Science & Environment (1988) State of India's Environment, New Delhi.
2. Desphande C.D. India. : a Regional Interpretation ICSSR & Northern Book Centre 1992.
3. Dreza, Jean & AMartya. Sen (ed.) India Economic Development and Social opportunity Oxford University Person, New Delhi. 1996.
4. Gautam, Alka : Advanced Geography of India, Sharda Pustak Bhawan Allahabad.
5. Khullar, D.R. : India : A Comprehensive Geography, R.K. Books, New Delhi.
6. Kundu A. Raza Moonis : lndian Economy : the Regional Dimension Speclaum Publishers, New Delhi, 1992.
7. Robinson, Francs : The Cambridge Encyclopedia of India, Pakistan, Bangladesh, SriLanka, Nepal, Bhutan & Maldives Cambridge University Press, London, 1989.
8. Singh R.L. (ed.) : India - A Regional Geography National Geographical Society, India Varanasi, 1971.
9. Spate OHK & ATA Learnont-India & Pakistan Methuen, London. 1967.

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10. Tirtha R. & Gopal Krishna, Emerging India Reprinted by Rawat Publications, Jaipur 1996.
11. Sharma T.C. and O. Coutinho : Economic and Commercial Geography of India.
12. अग्रवाल पी.सी. भारत का भौतिक भूगोल, एशिया प्रकाशन कं.,रायपुर 2003
13. बंसल सुरेशचंन्द, भारत का भूगोल, मिनाक्षी प्रकाशन, मेरठ.
14. वर्मा रामविलास, भारत : एक भौगोलिक विवेचन, भवदीय प्रकाशन श्रृंगारघाट–अयोध्या, फैजाबाद, 2007.

Outcomes:

On completion of the course, students are able to:

1. Understand the about the physiographic division of India and the geography of Chhattisgarh State.
2. Understand the India Drainage system of India Rivers.
3. Understand the climatic variation in India and climatic region of India and Chhattisgarh State.
4. Examine and understand the types of vegetation of India and Chhattisgarh.
5. Understand the variation in industrial development in India and Chhattisgarh State.
6. Examine and understand the developed and underdeveloped states in India.

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PAPER – V

PRACTICAL I:

MAP PROJECTIONS, TOPOSHEET INTERPRETATION AND SURVEYING

Objective:

- To apprise the student with latest trends in the development of cartography as a map projections.
- To provide training in application of modern methods of topographical surveying involving the use of Dumpy level and Theodolite.
- To attempt regional synthesis by the use of cartographic and quantitative techniques of topographical information.

Course contents:

Map Projections: Mathematical construction of world projections.

Interpretation of Maps: Geological Maps.

Principles and methods of topographical surveying, use of Dumpy level and Theodolite. Solution of problems in surveying.

Topographical Information – International series, Southeast Asia Series, Indexing, Classification & Interpretation of topographical sheets.

Suggested Readings:

1. Davis, R. C. & E. S. Forte : Surveying : Theory and Practical.
2. Kanetkar, T.R. & S.V. Kulkarni: Surveying and leveling part I & IJ A.V.G. Prakashan, Poona.
3. Monkhouse F.J. & H.R. Wilkinson: Maps and Diagrams, Methuen, London.
4. मॉक हाउस तथा विलकौन्सन (अनु.प्रो.प्रेमचन्द अग्रवाल) : मानचित्र तथा आरेख, म.प्र. हिंदी ग्रंथ अकादमी.
5. हीरालाल : प्रयोगिक भूगोल, किताब घर, कानपुर
6. मिश्र, पी.एल. : प्रयोगात्मक भूगोल, विश्वभारती पब्लिकेशन, नई दिल्ली, 2013

Outcomes:

The students need to be trained in the use of conventional vis-à-vis modern tools and techniques of cartographic analysis.

On completion of the course, students are able to:

1. Understand the map projections definitions, method, techniques and the types of prospective and non prospective, conventional and classification of Map Projections.
2. Understand the Principles and methods of different topographical surveying techniques.
3. Use the topographical data and understand of thematic maps.

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M.A./M. Sc. GEOGRAPHY (2023-25)

SEMESTER – II

M. A. /M. Sc. Geography Semester II shall consist the following papers:

S. No.	Sub Code	Paper	Title	M. M.		
				Written	Inte. Asse.	Total
1.	Geog 201	VI	Economic and Natural Resource Management	80	20	100
2.	Geog 202	VII	Oceanography	80	20	100
3.	Geog 203	VIII	Regional Development and Planning	80	20	100
4.	Geog 204	IX	Social Geography	80	20	100
5.	Geog 205	X	Practical-II : Advance Cartography	---	---	100

The M. A./M. Sc. Semester II examination in Geography shall consist of 500 marks.

1. There shall be four theory papers each of 100 marks and one practical of 100 marks as follows:

Paper VI	Economic and Natural Resource Management.
Paper VII	Oceanography
Paper VIII	Regional Development and Planning
Paper IX	Social Geography
Paper X	Practical-II : Advance Cartography.

2. The theory papers shall be of three hours duration.
3. Candidates will be required to pass separately in theory and practical examinations.
4. (a) In the practical examination the following shall be the allotment of time and marks.

(i)	Practical record	20%
(ii)	Lab work (up to three hours)	70%
(iii)	Viva on i. ii.	10%

(b) The external and internal examiners shall jointly submit marks.

(c) Candidates shall be examined in survey individually. They will however be allowed to take the help of a laborer each at their own expense.

(d) All the candidates shall present at the time of the practical examination their Practical record regularly signed by the teachers concerned.

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PAPER- VI

ECONOMIC AND NATURAL RESOURCE MANAGEMENT

Objective:

1. The economy of the world is changing in recent times. The changes in primary, secondary and tertiary stage is dynamic in nature. In view of this, the objectives of this course are to integrate the various factors of economic development to acquaint the students about dynamic aspects of economic geography.
2. To understand the concept and approaches of natural resource. To examine use and misuse of various resources and to analysis future prospect.
3. To analyze the natural resource scenario through use of different techniques, especially Remote Sensing and GIS. To understand the concept of sustainable and integrated resource management and its application.

Course contents:

UNIT – I Nature and scope of economic Geography; fundamental concepts in economic geography; classification of economies, sectors of economy (primary, secondary, tertiary). Meaning, nature and classification of resources, Resource appraisal: Human want and social objectives, technological status and resources. resource adequacy and scarcity, limits to growth.

UNIT – II World pattern of major natural resources: land and soils, biotic resources, water resources mineral and energy resources, oceanic resources.

UNIT – III Classification of Industries, Theories of industrial location: A. Weber, August Losch, E.M. Hoover. Case studies of selected industries: Iron and Steel, Aluminum, Chemical, Textile. Means of transport, International trade, trade blocks, globalization and Indian economy.

UNIT – IV Conservation and management of resources; evolution of the concept, principles, resource conservation and management methods. Policy making and resource management; sustainable development of resources.

Suggested Reading:

1. Ahemd, J - Natural Resources in Low Income countries
2. Bennet, II.II. - Elements of Soil Conservation.
3. Ciriacy, Wantrup,S.V.& - Natural resources: Quality & Quantity
4. Persons (eds.)
5. Betall,R.C. & R.O.Buehanan - Industrial Activity and Economic Geography.
6. Edvard and Rosers - Agricultural Resources.
7. Freeman, T.W. - Geography and Planning.
8. Fryer, D.M. - World Economic Development.
9. Isard, Walter - Method of Regional Analysis.
10. Mehta, M.M. - Human Resource Development Planning.
11. Owen, O.S. - Natural Resource Conservation.

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12. Peach, W.N.& James, A. - Zimmerman's World Resources Contenting and Conservation.
13. Parkin's,E.A. & J.R. Whitakr - Our Natural Resource and their conservation.
14. Renner, G.T. - Conservation of National Recourses.
15. Stamp, L.D. - Land of Britain Its use and Misue.
16. Smith, G.H.(ed.) - Conservation. of Natural Recourses.
17. Symoos, L. - Agriculture Geography.
18. Thomas W.L.(et.al.reds.) - Man's Role in Changing the face of the Earth.
19. Wales, H.& H.O. Lathrop - The Conservation of Natural Recourses.
20. Wheeler, T.O. et al - Economic Geography, John Wiler New York 1995.
21. गौतम, अलका : आर्थिक भूगोल के मूल तत्व, शारदा पुस्तक भवन, इलाहाबाद
22. मौर्य, एस.डी. : संसाधन एवं पर्यावरण, प्रयाग पुस्तक भवन, इलाहाबाद, 2006
23. राव, बी.पी. : संसाधन और पर्यावरण, वसुंधरा प्रकाशन, गोरखपुर, 2010

Outcomes:

The students should be acquainted with the different branches of economic geography with examples. They should be motivated to interact with the teacher to identify economic activities of the people residing in different parts of the world.

On completion of the course, students are able to:

1. Students understand about the Nature and Scope, approaches of Economic Geography and recent trends of economic geography.
2. Understand about the basic Economic Processes- Production, Exchange, Consumption and its applications.
3. Understand the fundamental theories in economic geography.
4. Review, understand and apply the modes of economics development by various models.
5. Compare the economic environment and economic development in the world.
6. Understand the economies scale, transportation and communication and nature and role of international trade in economic development of India.
7. To Students understand about the definition, types and Forms of energy and classified material based and process based energy resources.
8. To study the locations of industry and their activities primary and secondary and its factors responsible for same.
9. To review on world distribution of some industries and selected countries and understand the global nature of industrialization and related problems,
10. Study the physical, economic, social and political factors influencing on national and international trade
11. Understand the types, characteristics, merits and demerits of modes of transportation at state, national and international level.
12. Understand the various problems of transportation in urban areas.

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PAPER – VII

OCEANOGRAPHY

Objective:

The objective of the course are to introduce students to the many facts of oceans, such as, evaluation of the oceans, physical and chemical properties of sea water, atmospheric and oceanographic circulation, the fascinating world of marine life and the characteristics of marine environment and the impact of man on the marine environment.

Course contents:

UNIT – I Nature and scope of Oceanography; Distribution of land and water; Major features of ocean basins; Marine sediments. Physical and chemical properties of ocean: temperature, salinity, density.

UNIT – II Interlink between atmospheric circulation and circulation pattern in the oceans, surface currents, waves and tides.

UNIT – III Marine biological environment: Bio-geochemical cycle in the ocean. biozones, types of organisms; plankton, nekton and benthos, food and mineral resources of the sea. Major marine environments; coastal: estuary, deltas, barrier island, rocky coasts. Relief of ocean: continental shelf, continental slope and deep sea plane. Bottom relief of ocean basin: Pacific, Atlantic and Indian.

UNIT – IV Impact of Humans on the marine environment. Law of the sea; exclusive economic zone; marine deposits and formation of coral-reefs.

Suggested Readings:

1. Davis Richard J.A.: "Oceanography-An Introduction to the Marine Environment". Wm. C. Brown Iowa, 1986.
2. Duxbury, C.A. and Duxbury B. : An Introduction to the world's Oceans-C. Brown. Iowa 2nd ed., 1986.
3. Garrison, T. : "Oceanography - An Introduction to Marine Science" Books/Cole, Pacific Grove, USA, 2001.
4. Gross, M. Grant : Oceanography, a View of the earth, prantice-Hall inc, New Delhi, 1987.
5. King C.A.M. Oceanography for Geographers 1962.
6. Lal, D.S. : Oceanography, Sharda Pustak Bhawan, Allahabad
7. Sharma, R. C. "The Oceans" Rajesh N. Delhi, 1985.
8. Urnmerkutty, A.N.P. Science of the Eceans and Human life, NBT, New Delhi, 1985.
9. Ornmany, F.D. : The Ocean.
10. Sharma, R. C. & M. Vital : Oceanography : A Brief Introduction kislaya Pub. New Delhi.
11. Siddartha, K.. : Oceanography : A Brief Introduction, Kislya Pub. New Delhi.
12. नेगी, बी.एस. : जलवायु तथा समुद्र विज्ञान, केदारनाथ, रामनाथ प्रकाशन, मेरठ, 1996
13. सिंह, सविन्द्र : समुद्र विज्ञान, प्रयाग पुस्तक भवन, इलाहाबाद

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14. सिंह, डॉ. रामाश्रय एवं उपाध्याय, डॉ. डी.पी. : जलवायु विज्ञान और समुद्र विज्ञान, वसुन्धरा प्रकाशन, गोरखपुर

15. लाल, डी.एस. : जलवायु विज्ञान, शारदा पुस्तक भवन, इलाहाबाद

Outcomes:

Detailed charts and maps showing oceanic relief, currents and circulation of water be used for teaching. Audio visual aids be provided for teaching.

On completion of the course, students are able to:

1. Understand the meaning, nature and scope, modern trends in Oceanography.
2. Understand the ocean floor and relief of the ocean bottom.
3. Understand the properties like temperature, density, salinity of ocean water.
4. Understand the characteristics and properties of factors affecting on formation of sea waves.
5. Understand the tides, tide generating forces, types of tides and tidal effects in coastal areas.
6. Get knowledge about distribution of lithogenous, biogenous, and hydrogenous sediments on ocean floor.

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PAPER – VIII

REGIONAL DEVELOPMENT AND PLANNING

Objective:

- To understand and evaluate concept of region in geography and its role relevance in regional planning.
- To identify the issues relating to the development of the region through the process of spatial organization of various attributes and inters relationship.
- To identify the causes of regional disparities in development, perspective and policy imperatives.

Course contents:

UNIT – I Regional Planning: Definition, Scope, evolution and Objectives. Region and Regionalism, Planning Regions: Concept and Delineation. Type of Regions. Central Place Theory, Concept of core and periphery Friedman's Model of Spatial Organization and Economic Growth.

UNIT – II Regional Development Theories: Development Theories of Myrdal and Hirschman, Economic and Export Base model, Frank's Theory of Under development.

UNIT – III Approaches and Strategies of Regional Development: Growth Pole Theory Agropolitan Development, Community Development, River Basin Planning, Metropolitan Planning (with reference to India)

UNIT – IV Regional Planning in India. Regional Imbalances and Inequalities, Indicators of Regional Development; Regional Policies in Five Year Plans, Centre State Relations and Multilevel Planning, Planning for special problem Regions: Hill area, Tribal areas, Drought prone areas and Command areas. Regional development and planning in India, NITI Aayog.

Suggested Reading:

1. Daysch, C.H.J. & others: Studies in Regional Planning.
2. Deckinsonm R.E. : City Region and Regionalism.
3. Freeman, E.W. : Geography arid Planning.
4. Golksin A. : Regional Planning and Development.
5. Keeble, L. : Principle and Practice of Town and Country Planning.
6. Stamp L.D. : The Land of Britain : Its use and Misure.
7. Sdasyuk. Gatina and Dengupta, P. : Economic Regionalization of India problems and Approaches.
8. Desai, P.B. & others : Regional Perspective of Industrial and Urban Growth the case of Kanpur, Bombay, 1969.
9. Prakash, Rao V.L. & S.P. : Regional Planning.

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10. Censuts of India : Economic and Socio Cultural Dimensions of regionalization (An Indo-USSR Collaborative Study)
11. Friedmann J. & Alonsow : Regional Development and Planning, M.I.T. Press.
12. Mishra R.P. (ed.) : Regional Planning : Concept; Techniques, Policies and cade studies Mysore 1969.
13. Mishra, R.P. & others : Regional Development and Planning in India.
14. Timbergen : Essays on World Regional Planning.
15. Lord, W. : Methods of Regional Analysis, M.I.T., I960.
16. Zimmerman, E.W. : World Resources and Industries.
17. Burton & Kates : Reading in Resource Management Conservation.
18. Burton & Kates : Regional Planning in India.
19. Ahamed, Enayet : Regional Planning with particular Reference to India. Vol. I and li New Delhi.
20. Bhatt L.S. and others: Micro level planning - A Case Study of Karnal Area, Hyryana (K.B. Publishing, New Delhi)
21. Bhatt LS : Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.
22. Gosal G.S., and G. Krishanan : Regional Disparities in levels of Socio-economic Development in Punjab, Vishal Publications Kurukshetra, 1984.
23. Chandna, R.C. : Regional Planning : A comprehensive 'Text-Kajyani Publishers.
    a. Chand, Puri; Regional Planning in India, 2009, RK Books, New Delhi.
    b. Chandna, RG. Regional development and Planning 2009, RK Books, New Delhi.
24. Ray Choudhari, Jayasri : An Introduction to Development and Regional Planning Orient Longman.
25. Sundaram, KV (ed) Geography and Plann8ing, Essaya in houour of VLS Prakasa Rao, Concept Publishing Co., New Delhi, 1985.
26. Raza, Meomis (ed) Regional Development, Hefitage Publishiers, Delhi, 1988.
27. Mishra R.P. et al : Multilevel Planning, Heritage Phulishers Delhi,1980
28. श्रीवास्तव व्ही.के. एवं अन्य : प्रादेशिक नियोजन एवं संतुलित विकास, वसुन्धरा प्रकाशन, गोरखपुर
29. ओझा, रघुनाथ : प्रादेशिक नियोजन का भूगोल, किताब घर, कानपुर, 1986
30. शर्मा, राजीवलोचन : प्रादेशिक एवं नगरीय नियोजन, किताब घर, कानपुर, 2005
31. चाँदनी, आर.सी. : प्रादेशिक नियोजन तथा विकास, आर.के. बुक्स, नई दिल्ली, 2010.
32. सिंह एवं दुबे, प्रादेशिक विकास नियोजन, आर.के. बुक्स, नई दिल्ली, 2009.
33. देहरे, टी.आर. क्षेत्रीय नियोजन एवं समान्वित विकास, वसुन्धरा प्रकाशन, गोरखपुर 2006.
34. जाट, बी.सी. : प्रादेशिक भूगोल, पंचशील प्रकाशन, जयपुर

Outcomes:

1. The students should be made to do seasonal assignments based on diverse data to formulate region at the local, regional levels, and identify the regional differentiations.
2. They should be made conversant with the trends in development of the regional concepts, using 'space' in the multi disciplinary approach to regional development.

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PAPER – IX

SOCIAL GEOGRAPHY

Objective:

- To familiarize the students with the understanding of the society through concepts and social theory, philosophical approaches and spatial processes.
- To examine the process of social region formats in India with the help of social cultural and historical factors.
- To examine social distortion and regionalize the various components of social well-being in India; to review problems and suggest alternatives to improve the well-being in environmentally problematic areas.

Course contents:

UNIT – I Definition, meaning and scope of Social geography and it's Nature and relationship with other Social sciences. Development of Social Geography, Approaches to the study of Social Geography.

UNIT – II Concept of Society – Social Environment, Geographic bases of Social Formation. Social Geography of India - Social Stratification, Caste and Class. Social organization and groups, Social transformation and change in India, Religion and linguistic group of India. Evolution of Socio-Cultural Regions of India.

UNIT – III Social well being: meaning and indicators of Social well being. Quality of life, Factor, Pattern and bases of rural and urban society. Deprivation and discrimination issues relating to women and under privileged groups. Cultural Realms and Cultural Region of the World.

UNIT – IV Social development planning – meaning and importance. Public policy and Social planning in India : Review of Five year Plans strategies to improve Social well being.

Suggested Readings:

1 Ahmad Aijazuddin, Social Geography, Rawat Publication, New Delhi, 1999.
2 De Blij. H.D. Human Geography. John Wiley and son, New York.
3 Dreze Jean, Amariya Sen,Economic Development and Social opportunity. Oxford University Press. New Delhi. 1996
4 Dubey. S.C : lndian Society. National Book Trust, New Delhi, 1991.
5. Gregory. D . and J. Larry (Eds.) Social. relations and spatial structures. MCMillan. 1985.
6. Haq. Mahbubul : Reflections on Human Development. Oxford University Press, New Delh6.

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7. Jones, Emrys, Reading in Social Geography, Oxford University Press, Ely House, London, 1977.
8. Jones, Emrys and John Eyles, An Introduction to Social Geography, Oxford University Press, London,1977.
9. Maioney. Clarence: People of South Asia, Winston, New York, 1974.
10. Planning Commission, Government of India: Report on Development of Tribal areas, 1981.
11. Rao, M.S.A.. Urban Sociology in India, Orient longman, 1970.
12. Schwartzberg Joseph : An Historical Atlas of South Asia, University of Chicago Press, (Chicago, 1978.
13. Sen, Amartya & Dreze Jean. Indian Development : Selected Regional Perspectives. Oxford University Pres-s, 1996
14. Sharma, K.L.: Indian Social Structure and Change, Rawat Publication, Jaipur, 2011
15. Smith, David: Geography : A welfare Approach, Edward Arnold, London, 1977.
16. Sopher, David. An Expoloration of Inda, Cornell University Press, 1980.
17. Subba. Rao. Personality of India : Pre and Proto Historic foundation of India and Pakistan, M.S. University Baroda. Vadodai'a, 1958
18. मौर्य,एस.डी., सामाजिक भूगोल शारदा पुस्तक भवन,11,युनिवर्सिटी रोड, इलाहाबाद–2 , 2004.
19. आहूजा, राम, भारतीय समाज, आर.के. बुक्स, नई दिल्ली, 2004.
20. शर्मा, के.एल. : सामाजिक स्तरीकरण, रावत पब्लिकेशन, जयपुर, 2011

Outcomes:

The students should familiarize themselves with different areas to understand the patterns of socio-economic differentiation/ segregation and social and cultural habitants. They should also interact with other disciplines like sociology/ psychology and demography for understanding the social issues.

On completion of the course, students are able to:

1. Understand the nature, scope and concept, relationship between culture and social Environment and right of information act.
2. To examining the cultural complex and traits of culture and its concepts.
3. Evolution to civilization and various cultural development and cultural system according to religion, language and geography and global cultural changes.
4. To study the origin and growth of culture and agriculture and its basic concepts. Understand the concept of space and social process and present status.
5. Understand difference in rural and urban social and cultural life style with reference of settlement patterns.

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PAPER – X

PRACTICAL II - ADVANCED CARTOGRAPHY

Objective:

- To apprise the student with latest trends in the development of cartography as a tool in mapping thematic and quantitative data to facilitate spatial analysis and synthesis.
- To provide training in application of modern tools and techniques to data in a variety of topical and regional studies at local, regional and national levels.
- To attempt regional synthesis by the use of cartographic and quantitative techniques.

Course contents:

Graphs and Diagrams: Triangular graph. scatter graphs, climatograph, Logarithmic and semi logarithmic graphs, Proportional circles, spheres and cubes.

Thematic maps: Class intervals, Choropleth maps, Isolines, Flow maps, isochrones and. **Morphometric Analysis**: Profiles, Slope Analysis (G.H. Smith, C. K. Wentworth, Robinson); Altimetric, and Clinographic curves; Block Diagrams.

Suggested Reading:

1. Monk house F.J. & H.R. Wilkinson: Maps and Diagrams, Methuen, London.
2. मॉक हाउस तथा विल्किन्सन (अनु.प्रो.प्रेमचन्द अग्रवाल) : मानचित्र तथा आरेख, म.प्र. हिंदी ग्रंथ अकादमी.
3. हीरालाल : प्रायोगिक भूगोल, किताब घर, कानपुर
4. चौहान, पी.आर. एवं वी.के. श्रीवास्तव : प्रयोगात्मक भूगोल, वसुन्धरा प्रकाशन, गोरखपुर
5. सिन्हा, एम.पी. : कार्टोग्राफी, शारदा पुस्तक भवन, इलाहाबाद
6. चौहान, पी.आर. : प्रयोगात्मक भूगोल, वसुन्धरा प्रकाशन, गोरखपुर, 2009

Outcomes:

The students need to be trained in the use of conventional vis-à-vis modern tools and techniques of cartographic analysis.

On completion of the course, students are able to:

1. Understand the types and scales of Data measurement.

2. Use data representation by various techniques of maps and Diagrams.

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M.A./M. Sc. GEOGRAPHY
SEMESTER III (2023-25)

M.A. /M. Sc. Geography Semester III shall consist the following papers:

S. No.	Sub. Code	Paper	Title	M. M.		
				Written	Inte. Asse.	Total
1.	Geog 301	XI	Population Geography	80	20	100
2.	Geog 302	X II	Settlement Geography	80	20	100
3.	Geog 303(A)	XIII (A)	Remote Sensing Techniques	80	20	100
	OR	**OR**	**OR**			
	Geog 303(B)	XIII (B)	Biogeography and Ecosystem	80	20	100
4.	Geog 304	XIV	Research Methodology	80	20	100
5.	Geog 305	XV	Practical-III : Remote Sensing and Quantitative Techniques	---	---	100

1. The M.A. /M. Sc. Semester III examination in Geography shall consist of 500 marks. There shall be four theory papers each of 100 marks and one practical of 100 marks as' follows:

Paper XI	:	Population Geography
Paper XII	:	Settlement Geography
Paper XIII (A)	:	Remote Sensing Techniques
		OR
Paper XIII (B)	:	Biogeography and Ecosystem
Paper XIV	:	Research Methodology
Paper XV	:	Practical – III: Remote Sensing and Quantitative Techniques

2. The theory papers shall be of three hours duration.
3. Candidates will be required to pass separately in theory and practical examinations.
4. (a) In the practical examination the following shall be the allotment of time and marks.
   - (i) Practical record : 20%
   - (ii) Lab work (up to Four hours) : 70%
   - (iii) Viva on i. & ii. above : 10%

   (b) The external and internal examiners shall jointly submit marks.

   (c) All the candidates shall present at the time of the practical examination their practical record regularly signed by the teachers concerned.

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SEMESTER – III

PAPER - XI

POPULATION GEOGRAPHY

Objective:

- To introduce the students to the complex dimensions of population.
- To understand and evaluate the association between demographic and socio-economic attributes of population and the resultant levels of social well-being and economic development.
- To understand the role and relationship between population and environment in an ever changing space – time continuum.

Course contents:

UNIT – I Definition and scope of Population Geography. Relation of Population Geography with other subjects of social sciences. Historical development of Population Geography in western countries and in India. Sources of population data, Census and its history.

UNIT – II Distribution of Population: The concept of population density and its types. Factors affecting population distribution. Distribution & Density of population in the world with special reference to Europe, Asia and India. Growth of population: Measure of decennial and annual rates of population growth, prehistoric and modern trends of population growth in the world. Regional aspect of population growth in India. Population theories. Demographic transition.

UNIT – III Population composition in terms of age and sex, rural, urban residence, educational status and occupational structure. Significance of these elements in population analysis, factors affecting their composition in population, broad world patterns and detailed spatial patterns in India. Fertility and Mortality of population: Significance and factor. Indices and rates. World pattern and pattern in India. Human Development Index and its Components.

UNIT – IV Migration of population: Causes, characteristics and types. Methods of estimating value of internal migration. Important international migrations of the world, internal migration in India: Population and Resources: Population-Resource regions. Population Regions: Concept and methods, population regions of India, population policies of India.

Suggested Readings:

1. Bilasborruw, Richard Ii and Daniel Hogan, Population and Deforestation in the Humid Eropics, International Union for the Scientific Study of Population, Belgium 1999.
2. Boglia, D.J. Principles in Demography, John Wiley, New York 1969.
3. Bose, Ashish el at. : Population in India's Development (1947-2000); Vikas Publishing House, New Delhi, 1974.

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4. Census of India, India : A State Profile, 1991.
5. Chandna, R. C. Geography of Population, Concept, Determinants and Patterns. Kalyani Publishers, New York, 2000.
6. Clarke, John 1. Population Geography, Pergamon Press, Oxford, 1973.
7. Crook, Nigel Principles of Population and Development Pergmaon Press. New York 1997.
8. Daugherty, Helen Gin, Kenneth C.W. Kammeyir, An Introduction to Population (Second Edition), The Guilford Press, New York, London, 1998.
9. Garnicr, B.J. Geography of population Longrrian, London. 1970.
10. Koclihar, Ra)esh, The Veclic People : Their History and Geography Orient I ongman Ltd., New Delhi, 2000.
11. Mamoria, C.B. India's Population Problem, Kitab Mahal New Delhi, 1981.
12. Mitra, Ashok India's Population : Aspects of Quality and (control Vol I & 11. Abhiman Publications, New Delhi, 1978.
13. Premi, M.K. India's Population : Heading Towards a Billion, B.R.., Publishing Corporation 1991.
14. Srinivasan, K. and M. Vlassoff, Population Development Nexus in India :Challenges for the New Millennium Lata Me Graw-Hill, New Delhi, 2001.
15. Srinivasan K. Basic Demographic Techniques and Applications Sage, Publications, New Delhi, 1998.
16. Sunda.ra.m K. V. a.nd Sudesh Nangia., (ed.) Population Geography, Henlage Publications, Delhi, 1986.
17. UNDP : Human Development Report, Oxford University Press, Oxford, 2000.
18. United Nations, Methods for Projections of urban and Rural Population No. VIII, New York, 1974.
19. Woods R.. Population Amalysis' in Geography Longman, London, 1979.
20. Zeiinsky Wilbur, A Prologue to Population Geography, Prentic Hall, 1966.
21. बघेल, अनुसुइया : अनुसूचित जातियों एवं अनुसूचित जनजातियों में प्रजननता प्रतिरूप : छत्तीसगढ़ राज्य के रायपुर संभाग के विशेष संदर्भ में', पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर, 2002.
22. बघेल, अनुसुइया : शिशु मर्त्यता : सिंघई पब्लिशर्स एण्ड डिस्ट्रीब्यूटर, रायपुर, 2004.
23. शर्मा, सरला : औद्योगिक नगरों में जनसंख्या आप्रवास (भिलाई एवं कोरबा नगर के विशेष संदर्भ में), पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर, 2002.
24. शर्मा, सरला : छत्तीसगढ़ बेसिन में ग्रामीण शिशु मर्त्यता प्रतिरूप, पं. रविशंकर शुक्ल वि.वि., रायपुर, 2007
25. पंडा, बी.पी. : जनसंख्या भूगोल, मध्यप्रदेश हिन्दी : ग्रंथ अकादमी, भोपाल, 2007
26. ओझा, रघुनाथ : जनसंख्या भूगोल, प्रतिभा प्रकाशन, कानपुर, 1992
27. हीरालाल : जनसंख्या भूगोल, वसुन्धरा प्रकाशन, गोरखपुर, 1996
28. चन्दना, आर.सी. : जनसंख्या भूगोल, आर.के. बुक्स, नई दिल्ली, 2009
29. त्रिपाठी, रामदेव : जनांकिकी और जनसंख्या अध्ययन, आर.के. बुक्स, नई दिल्ली, 2008
30. शर्मा, सरला : नगरीय शिशु मर्त्यता. होरीजन बुक्स, नई दिल्ली, 2015.
31. मौर्य, एस.डी. : जनसंख्या भूगोल, शारदा पुस्तक भवन, इलाहाबाद
32. त्रिपाठी, रामदेव : जनसंख्या भगोल, वसुन्धरा प्रकाशन, गोरखपुर, 2006

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Outcomes:

Classroom discussion may focus on population and development linkage. Students may also be encouraged to consider various quantitative attributes of population from census 2011, India. Discussion may be arranged on the implication of population policies announced from time to time.

On completion of the course, students are able to:

1. Understand the nature, scope and significance of population geography and fundamental concepts in subject.
2. To review the demographic pattern of national and international level.
3. To understand the composition in terms of age and sex, rural, urban residence, educational status and occupational structure of population.
4. To examine the Fertility and Mortality of population.
5. Understand the concept and methods, population regions of India, population policies of India.

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SEMESTER III

PAPER - XII
SETTLEMENT GEOGRAPHY

Objective:

- To familiarize the students with the conceptual theoretical and empirical development in settlement studies in geography, and the current settlement scenario in India.
- To sensitize the students with the problems of population growth and environmental degradation in human settlement.
- To provide the students an idea about international and national concern on settlement issues.

Course contents:

UNIT – I Meaning, Objectives and Scope of Settlement Geography; Evolution, Distribution, Types and Patterns of Rural Settlements; Rural House Types; Rural Service Centers. Definition, objective and scope of urban geography.

UNIT – II Evolution and growth of urban settlements; The Geographical setting of Urban Centers: Site, Situation and Location. Rank-size relationship; Cities as Central Places, Central Place Theory, Growth Pole Theory. City-Country Relationship: Umland, Rural-Urban Fringe.

UNIT – III Internal structure morphology and land use. theory of Urban structure. General Name of city structure: the Concentric zone Theory, The Sector Theory, the Multiple Nuclei Theory. Commercial Structure of Cities; The Central Business District (CBD). Centrifugal and Centripetal forces in Geography, Economic Base of Towns; Basic, Non-basic concept.

UNIT – IV Urban Functions; Functional Classification of Towns: Webb, Harris, and Nelson Contemporary Urban Planning; Types and elements, Urban problems; Blight and Renewal, Landuse Planning, Urban and Metropolitan Planning in India.

Suggested Readings:

1. Alam, Shah Manzoor : Hyderabad Secundrabad (Twin Cities) : A. Study in Urban Geography)
2. Alam, S.M. & V.V. Pokshishevesky : Urbanization in Developing Countries.
3. Berry Brain J. L. : Geographic Prospective on Urban .Systems.
4. Bresse, C. & D.F. Whiteman : An approach to Urban Planning
5. Dickinson, R.E, : City, Religion and Regionalism.
6. Gallion and Fisher : The Urban Pattern.
7. Grifitth, , J.P : A study of Urban Constructions in India.
8. Gibbs : Urban Research Methods.
9. Mayor, H.M. & C.F. Kohn : Readings in Urban Geography.
10. Morgan, F.W. : Ports and Harbours.

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11 Mumford L. : Culture of cities.
12. Robson, W.A. : Great cities of world.
13. Robson, B.T. : Urban Growth : An approach, Methuen, London.
14. Carter, Harold : Study of Urban Geography, London, Edward Arnold, 1979.
15. Singh R.L. & K.N. Singh : Readings in Rural Settlement Geography, NGSI Varanasi, 1975.
16. सिंह, उजागिर : नगरीय भूगोल, उत्तरप्रदेश हिन्दी ग्रन्थ अकादमी, लखनऊ, 1974
17. सिंह, ओ.पी., नगरीय भूगोल, तारा पब्लिकेशन, वाराणसी, 1979
18. तिवारी, आर.सी., अधिवास भूगोल, आर.के. बुक्स, नई दिल्ली, 2009
19. यादव, रामसुरेश, अधिवास भूगोल
20. करण एवं यादव, अधिवास भूगोल, किताब घर, कानपुर, 2002
21. मौर्या, एस.डी. अधिवास भूगोल, शारदा पुस्तक भवन, इलाहाबाद, 2009
22. त्रिपाठीए आर.डी. रू जनसंख्या भूगोलए, वसुन्धरा प्रकाशन, दाउदपुरए, गोरखपुर, 2011
23. वर्मा, लक्ष्मीनारायण : अधिवास भूगोल, राजस्थान हिन्दी ग्रंथ अकादमी, जयपुर, 2008

Outcomes:

1. The students should be trained in the interpretation of settlement pattern from the topographical sheets.
2. They should be encourage to use census and allied data sources to understand hierarchy/ centrally/ functional organization of settlements in space.
3. The students should be taken for the field visits to identify the exact from of relationship between population growths. Changes in morphological structure and environmental degradation and the settlement and should be encourage to write field report based on their observation.
4. Understand the Nature and Scope of Settlement Geography and their evolution, significance and approaches for the study.
5. Understand the settlement types, pattern and nature and process of urban settlement And some basic concept related to settlement geography.

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SEMESTER – III

PAPER – XIII (A)
REMOTE SENSING TECHNIQUES

Objective:

- To introduce to the students the basic principles of remote sensing.
- To introduce the method of visual and digital interpretation of satellite imageries.
- To outline the application value of remote sensing.

Course contents:

UNIT – I Historical development of remote sensing as a technology - Relevance of remote sensing in Geography - Concepts and basics: Energy source, energy and radiation principles, energy interactions in the atmosphere and earth surface features, remote sensing systems: platform sensors and radiation records. Microwave sensing interpretation of SLAR imageries, thermal imageries. Data Products.

UNIT – II Remote Sensing Satellite: platforms LANDSAT, SPOT, NOAA, RADARSAT, IRS, INSAT: principles and geometry of scanners, orbital characteristics and data products - MSS, TM, LISS, SLAR. Recent trends in Satellite (World & India), IKONOS and QuickBird.

UNIT – III Image Processing: Types of imagery, techniques of visual interpretation, ground verification transfer of interpreted thematic information to base maps, Digital image processing: rectification and restoration, image enhancement - contrast manipulation, Digital Image Classification: Supervised and Unsupervised, post-classification analysis and accuracy assessment. Selection of appropriate data for different applications.

UNIT – IV Applications of Air photo and image interpretations: mapping land use and land cover, land evaluation, urban land use, landform and its processes, weather studies and studies of water resources : integration of Remote Sensing and GIS. Remote sensing and hazard management, Remote sensing and environmental management.

Suggested Readings:

1. American Society of Photogrammetry: Manual of Remote Sensing. ASP, Falls Church V.A., 1983.
2. Barrett E.C. and L.F. Curtis : Fundamentals of Remote Sensing and Air Photo Interpretation on, Memillan, New York, 1992.
3. Compbell J.: Introduction to Remote Sension, Guilford, New York, 1989.
4. Curran, Paul J.: Principles of Remote Sensing. Longman, London, 1985.
5. Hord R.M : Digital Image Processing of Remotely Sensed Date, Academic, New York, 1983.
6. Luder D Aerial Photography Interpretation: Principles and Application, CcGraw Hill, New York, 1959.

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7. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
8. Rao D. P. (eds.): Remote Sensing for Earth Resources, Association of Exploration Geophysicist, Hederabad, 1998.
9. Thomas M. Lollesand and Ralph W. Kefer, Remote Sensing and Image Interpretation, Wiley & sons, New York, 1994.
10. Aronoff S. Geographic Information Systems : A. Management Perspective, Publication Offiawa, 1989.
11. Burrough P.A. Principles of Geographic Information Systems for Land Reson Assessment Oxford University Press, New York, 1986.
12. Fraser Taylor D.R. Geographic information Systems. Pergamor Press, Oxford 1990.
13. Maquire D.J.M.F. Goodchild and D.W. Rhind (eds.). Geographic information System 'Principles arid Application. Taylor & Francis, Washingron, 1991.
14. Mark S. Monmonier. Computer - assisted Cartography, Prentice-Hall, Englewood Cliff, Jersey, 1982.
15. Peuquet D. .1. and D.F.- Marble, Introductory Reading in Geographic. Information System Taylor & Francis, Washington, 1990.
16. Star J. and J. Estes, Geographic Information Systems : An Introduction, Prentice Englewood Cliff, New Jersey, 1994.
17. चौनियाल, देवी दत्त : सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली, शारदा पुस्तक भवन, इलाहाबाद
18. शर्मा, राजकुमार : वायु फोटो निर्वचन ,सुदूर संवेदन एवं भौगोलिक सूचना तंत्र, हिमांशु पब्लिकेशंस, उदयपुर, 2020
19. खत्री, हरीश कुमार : सुदुर संवेदन तकनीकी, कैलाश पुस्तक सदन, भोपाल, 2019

Outcomes:

- Students may be taken to any nearby remote sensing organization to observe different equipments, techniques, and products.
- Students may be asked to look into weather satellite photographs being published in the daily news papers and to prepare some quick report of weather.
- Students may be asked to visit any nearby ground area with its imagery and to compare the ground reality and the corresponding reality in the imagery.

On completion of the course, students are able to:

1. Understand the modern techniques in geography under this course such as remote sensing and aerial photography.
2. Examining the history, basic theories of EMR, and other concepts.
3. Understand and get the knowledge about fundamental concept, types of aerial photography characteristics of aerial photographs and aerial camera.

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4. Review on development of Indian remote sensing and functions of IRS.
5. To understand the types of remote sensing, and types of platforms in remote sensing.
6. To get an knowledge about satellite sensor and types of sensors, and their functions and Characteristics
7. Understand the data product, types of data product and its applications and uses in remote Sensing.

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PAPER – XIII (B)

BIOGEOGRAPHY AND ECOSYSTEM

Objective:

To introduce the student the concept of biology and its, interpretation, information and their application; interaction between living organisms with climate and physical environment, with special reference to India.

The basic objective the course are to appraise the students with the interrelationship between man, the environment within which he lives and his linkage with other organisms. Such linkages from ecosystem, which varies in different biomes. The important of course biodiversity to maintain ecological balance has also been emphasis in the course. Examples of the some man induced ecological change have been highlight and restoration measures suggested.

Course contents:

UNIT – I Definition and scope of Biogeography Environment, Habitat and Plant-animal association, Biome Types.

UNIT – II Elements of plant geography, distribution of forests and major communities. Plant successions in newly formed land forms. Zoogeography and its Environmental Relationship. Pale botanical and Palaeo climatological records of environmental change.

UNIT – III Ecosystems: concept and components, Ecosystem-form and function: tropic level, ecological pyramids, ecological niche, energy and nutrients in the ecosystem, hydrological cycle, food chains and food webs. Major terrestrial ecosystems of the world: agriculture, forests, grassland and desert. Population growth and environment.

UNIT – IV Biodiversity and its Conservation. Preservation and conservation of the ecosystem through resource management, Environment legislation. The Stockholm conference, the Earth summit, Environmental laws in India (the Wild Life Act, Water Act, Forest Act, Environment Protection Act and National Environment Tribunal Act).

Suggested Readings -

1. Agrawal D.P. : Man and Environment in India through Ages, Book & Books, 1992.
2. Bradshaw, M.J. : Earth and Living Planet, ELBS. London, 1979.
3. Cox, C.D. and Moore, P.D. : Biogeography : An Ecological and Evolutionary Approach 5th edn. Blackwell, 1993.
4. Gaur, R. : Environment and Ecology of Early Man in Northern India R. B. Publication Corporation 1987.
5. Hoyt, J.B. Man and the Earth, Prentice Hall, U.S.A. 1992.
6. Huggett. R.J. : Fundamentals of Biogeography, Routledge, U.S. A. 1998.

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7. Illes, J. : Introduction to Zoogeography, Mcmillan, London, 1974.
8. Khoshoo, T. N. and Sharma. M. (eds) : Indian Geosphere-Biosphere Har-Anand Publiction, Delhi 1991
9. Lapedes, D.N.(ed) : Encyclopedia of Environmental Science, McGraw Hill, 1974.
10. Mathur H.S. : Essentials of Biogeography, Anuj Printers, Jaipur, 1998.
11. Pears, N. : Basic Biogeography, 2nd edn. Longman, London, 1985.
12. Simmons, I.G. Biogeography, Natural and Cultural, Longman, London, 1974.
13. Tivy J. : Biogeography: A Study of Plants in Ecosphere 3rd edn. Oliver and Boyd, U.S. A., 1992.
14. Ackerman, E.A. : Geography as a Fundamental Research Discipline, University of Chicago Research Papers, 1958
15. Agarwal, A. and Narain, S. : The Citizens Fith Report. Centre for Science and Environmental, New Delhi, 1999.
16. Bertalanffy, L. : General Systems Theory, George Bragiller, New York, 1958.
17. Bodkin, E. : Environmental studies, Charles E Merril Pub. Co., Columbus, Ohio, 1982.
18. Chandana, R.C. : Environmental Awareness, Kalyani Publishers, New Delhi, 1958.
19. Chorley, R.J. : Geomorphology and General Systems Theory, U.S.G.S. Professional Paper, 500B, 1962.
20. Eyre, S.R. and Jones, G.R.J. (eds) Geography as Human Ecology, Edwares Arnold, London, 1966.
21. Kormondy, E.J. : Concepts of Ecology, Prentice Hall, 1989.
22. Manners, I.R. and Mikesell, M.W. (eds.) Prespectives on Environment, Commission on College Geography, Publ. No. 13 Washington, D.C., 1974.
23. Nobel and Wright : Environmental Science, Prentice Hall, New York, 1996.
24. Odum, E.P.: Fundamentals of Ecology, W.B. Saunders, Philadelphia, 1971.
25. Russwurm, L.H. and Sommerville, E. (eds.) : Man's Natural Environment-A Systems Approach, Duxbury, Massachuselts, 1985.
26. Sharma, H.S. : Ranthambhore Sanctuary – Dilemma of Eco-development, Concept, New Delhi, 2000.
27. Simmons, I.G. : Ecology of Natural Resources, Edward Arnold, London, 1981.
28. Singh S. : Environmental Geography, Prayag Publications, Allahabad, 1991.
29. Smith, R.L. : Man and his Environment : An Ecosystem Approach, Harper & Row, London, 1992.
30. U.N.E.P. : Global Environmental Outlook, U.N. Pub. , New ork, 1998.
31. World Resources Institute : World Resoources, (Latest Report) Washington.
32. कुलश्रेष्ठ, कामता प्रसाद : जैव भूगोल, किताब घर, कानपुर 1964
33. होता, जीतेन्द्र कुमार : जैव भूगोल एवं पारिस्थितिक तंत्र, शताक्षी प्रकाशन, समता कालोनी, रायपुर द्वितीय संस्करण 2014,
34. सिंह, सविन्द्र रू पर्यावरण भूगोल, प्रयाग पुस्तक भवन, इलाहाबाद, 2015

Outcomes:

1. The students should be taken on field visit to the local floral fauna zones; they should be acquainted with the local biogeography of the areas.

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2. Seminars/lecture should be organized where speakers from the allied disciplines environmental science, ecology, biosciences etc. should be invited to discuss with the students various issues of biogeography with a multidisciplinary approach.

3. There must be more interaction between teacher and students on different aspects of ecology with the help of models, charts and pictures. Emphasis should be given on environmental problems faced by Indian recent years.

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SEMESTER – III

PAPER - XIV
RESEARCH METHODOLOGY

Objective:

- To familiarize the students with the conceptual theoretical and empirical development in scientific Research in geography, and find out the different geographical problems and formulate hypothesis in research design.
- To sensitize the students with the research problems and use different method to data collection of research areas.
- To provide the students an idea about Processing and Analysis of Data
- Finally students should be preparing to research report.

Course contents:

UNIT – I	Research Methodology-An Overview; Procedure of scientific Research, Defining Research Problem; Formulating Hypothesis; Research Design.
UNIT – II	Methods of Data Collection: Observation, Questionnaire, Schedule and Interview; Sampling: Sampling Methods, Size of Sample;
UNIT – III	Processing and Analysis of Data: Processing- Editing, Coding, Classification and Tabulation, Analysis ; Measurement of Central Tendency, Dispersion, Correlation.
UNIT – IV	Preparation of Research Reports: Steps, Layout and Types of Reports

Suggested Reading:

1. Selltiz, C.M. Jahoda, M. Deutsch and others. Research Methods in Social Relations, Holt, . New York, 1961.
2. Goode, W and P.K, Hatt Methods in Social Research, Mc Graw Hill, .Tokyo, 1962.
3. Harvey, David . Explanation in Geography, Edward Arnold, London, 1971
4. Chorley, R.J. and P. Haggett (ed) Models in Geography, Methuen, London, 1967.
5. Minshull, R. Introduction to Models in Geography. Longman London, 1975.
6. Sheskin, I.M. Survey Research for Geographers Scientific Publisher, Jodhpur, 1987.
7. Kothari, C. R. Research Methodo!ogy : Methods and Techniques, Wishwa Prakashan, 1994.
8. Misra H.N. and V.P. Singh Research Methodology in Geography: Social, Spatial and Policy Dimensions, Rawat Publications

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9. Har Prasad — New Delhi, 1998.
Research Methods and Techniques in Geography, Rawat Publications, New Delhi. 1992.
10. आहूजा राम — सामाजिक अनुसंधान, रावत पब्लिकेशन, जयपुर, 2015.
11.शुक्ला संतोष (संपादक) — शोध विधितंत्र एवं भौगोलिक विश्लेषण, वर्धमान महावीर खुला विश्वविद्यालय, कोटा (राजस्थान) 2009
12. शर्मा, वीरेन्द्र प्रकाश — रिसर्च मेथेडोलाजी, पंचशील प्रकाशन, जयपुर, 2008
13. यादव, हीरालाल, — शोध प्रविधि एवं मात्रात्मक भूगोल, 2008, दिल्ली
14.त्रिवेदी, आर.एन. एवं डी.पी. शुक्ला, — रिसर्च मेथेडोलाजी, कालेज बुक डिपो, जयपरु, 2013
15. जैन, बी.एम., — रिसर्च मेथेडोलॉजी, रिसर्च पब्लिकेशन, जयपुर, 2012
16. त्रिवेदी, आर.एन. — रिसर्च मेथेडोलॉजी, कालेज बुक डिपो, जयपुर

Outcomes:

On completion of the course, students are able to:

1. Examining the introduction of research, motivation in research, types of research significance of research, research process and criteria of good research.
2. To understand the research problems, selecting research problems, literature review and to study the hypothesis, its types, sources, formation of hypothesis and utility of hypothesis in scientific research.
3. To understand the research design, need, features basic principal and developing of research plan, and sampling design and its basic types, steps, characteristics of sampling design.
4. Study about type"s data and methods of data collection and study the processing and analysis of data using different statistical methods.
5. Understand the interpretation and report writing, techniques, precaution of interpretation, layout of research report, types of reports and oral presentation mechanics of writing a research report.

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SEMESTER – III

PAPER - XV

PRACTICAL –III: REMOTE SENSING AND QUANTITATIVE TECHNIQUES

Objective:

- To introduce to the students the basic principles of Photogrammetery in remote sensing.
- To introduce the method of visual and digital interpretation of aerial photography and satellite imageries.
- To outline the application value of remote sensing.
- To introduce some basic statistical procedures to the students to be applied to various themes in geography.
- To indicate the assumptions, limitations and interpretation of these procedures and results.
- To train the student to handle these statistics towards analyzing the geographical problems.

Course contents:

Remote Sensing, Interpretation of Topographical Sheets:

- **Principles of Photogrammetery:** - Air Photo- Stereo test, Orientation of stereo model under mirror stereoscope, Preparation of photo/line index and determination of photo scale, Use of parallax bar and determination of heights, Identification of features on aerial photo graph, Tracing of details from stereo pair, Interpretation of physical and cultural details, Preparation of Land use map pre field interpretation, Field visit for ground truthing.
- **Remote Sensing:**– Study of satellite Image – Annotation Identification of features on FCC imageries, Tracing of details from satellite imageries, Basic Principles of Image interpretation, Interpretation of Physical and Cultural details and preparation of land use and land cover map using IRS Images. Pre field visit.
- **Land use Processing System:-** Familiarization and startup procedure, Visualization of satellite image data, importing data, Creating a subset image, Identification of object on video display, Display of Histogram and image information, Image rectification and registration, Image to image registration, Image Enhancement techniques, Filtering techniques, Band Rationing, Principal component Analysis, Image classification.

Statistical Techniques:

Product moment and Rank Correlation Coefficients, Linear Regression. Hypothesis Testing: Chi-Square test, 't'-test & 'F' test, Sampling Techniques, Point, Line and Area Sampling, Functional classification of Towns, Sex-Age snail diagram.

Suggested Readings:

1. American Society of Photogrammetry : Manual of Remote Sensing. ASP, Falls Church V.A. 1983.
2. Barren E.C. and I...F. Clirtis : Fundamentals of Remote Sensing and Air Photo Interpretation 'on, Memillan, New York, 1992.

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3. Conipbell .1. : Introduction to Remote Sension, Glinford, "New York, 1989.
4. Clirran, Paul J. : Principles of Remote Sensing. Longman, London, 1985.
5. Hord R.M. : Digital Image Processing of Remotely Sensed Date, Academic, New York,1983
6. Luder D., Aerial Photograpliy Interpretation : Principles and Application, Cc Graw Hill, New York, 1959.
7. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
8. Rao D. P.. (eds.) : Remote Sensing for Earth Resources, Association of Exploration Geophysicisi, Hederabad, 1998.
9. Thomas M. Lollesand and Ralph W. Keler, Remote Sensing and Image Interpretation, Wiley & sons. New York, 1994.
10. Aronoff S. Geographic Information Systems: A Management Perspective, Publication Offawa, 1989.
11. Burroligh P..A. Principles of Geographic Information Systems for Land Reson Assessment Oxford University Press, New York, 1986.
12. Fraser Taylor D.R. Geographic information Systems. Pergamor Press, Oxford 1990.
13. Maquire D.J.M.F. Goodchiln and D.W. Rhind (eds.). Geographic information System Principles and Application. Taylor& Francis, Washingron, 1991.
14. Mark S. Monrnonicr. Computer-assisted Cartography, Prentice Hall, Englewood Cliff, Jersey, 1982.
15. Peuquer D.J. and D.F. Marble, Introductory Reading in Geographic Information System Taylor & Francis, Washington, 1990.
16. Star J. and J. Estes, Geographic Information Systems; An Introduction, Prentice Eaglewood Cliff, New Jersey. 19

Outcomes:

On completion of the course, students are able to:

1. Understand the modern techniques in geography under this course such as remote sensing and aerial photography.
2. Examining the history, basic theories of EMR, and other concepts.
3. Understand and get the knowledge about fundamental concept, types of aerial photography characteristics of aerial photographs and aerial camera.
4. Review on development of Indian remote sensing and functions of IRS.
5. To understand the types of remote sensing, and types of platforms in remote sensing.
6. To get an knowledge about satellite sensor and types of sensors, and their functions and characteristics
7. Understand the data product, types of data product and its applications and uses in remote sensing.
8. Students are able to known the Product moment and Rank Correlation Coefficients of sample data.

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M.A./M. Sc. GEOGRAPHY
SEMESTER IV (2023-25)

M.A./M.Sc. Geography Semester IV shall consist the following papers:

S. No.	Sub. Code	Paper	Title	M. M.		
				Written	Int. Ass.	Total
1.	Geog 401	XVI	Geography of Health	80	20	100
2.	Geog 402	X VII	Agricultural Geography	80	20	100
3.	Geog 403(A) **OR** Geog 403(B)	XVIII (A) **OR** XVIII (B)	Geographical Information System **OR** Environmental Geography	80 80	20 20	100 100
4.	Geog 404	XIX	Field Work (Physical and Socio-Economic) Report	---	---	100
5.	Geog 405	XX	Practical-IV: Geographical Information System and Quantitative Techniques	---	---	100

1. The M.A./M.Sc. Semester IV examination in Geography shall consist of 500 marks.

There shall be three theory papers and one Field Work report each of 100 marks and one practical of 100 marks as follows.

S. No.	Paper		Title
1.	XVI	:	Geography of Health
2.	XVII	:	Agricultural Geography
.3.	XVIII (A)	:	Geographical Information System
			OR
	XVIII (B)	:	Environmental Geography
4.	XIX	:	Field Work (Physical and Socio-Economic) Report
5.	XX	:	Practical-IV: Geographical Information system and Quantitative Techniques

2. The theory papers shall be of three hours duration.
3. Candidates will be required to pass separately in theory and practical examinations.
4. Candidates will be required to submit their Field Report in three copies in hard bound at least one hundred pages for Valuation.
5. (a) In the practical examination the following shall be the allotment of time and marks.
   (i) Practical record 20%
   (ii) Lab work (up to Four hours) 70%
   (iii) Viva on i. & ii. above 10%
   (b) The external and internal examiners shall jointly submit marks.
   (c) All the candidates shall present at the time of the practical examination their practical record regularly signed by the teachers concerned.

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PAPER XVI

GEOGRAPHY OF HEALTH

Objective:

- To acquaint the students with the role of geographical factors, viz., physical, demographic, social and economy, influence the spatial distribution of diseases;
- To highlight the relation of health with nutrition, environmental degradation and urbanization.
- To decipher the causes of the changing disease pattern.
- To make the students abreast of existing health care facility, so as to train them with better health care planning for the country.

Course contents:

UNIT – I Nature, scope and significance of Health Geography, Development, specialization and relation with other science. Geographical factors effecting human health and diseases; Physical factors, Social factors, Economics factors and Environmental factors.

UNIT – II Disease Ecology and epidemiology, Basis of Classification of disease; genetic, biological, occupational and deficiency diseases, International Classification of diseases (ICD); Communicable and non-communicable diseases, WHO Classification of diseases, pattern of world distribution of major diseases, transmission of major diseases: cholera, malaria, tuberculosis, hepatitis, leprosy, cardiovascular, Asthma, fever, jaundice, arthritis, diabetic, BP, eye disease, anemia, Mental Disease, Cancer, AIDS and STDS. Diffusion and Causes of diseases. disease differential by seasons.

UNIT – III Nutrition and deficiency disease: Food stuffs and their nutritional contents and human requirements, concept of balanced Diet, hunger and malnutrition. Deficiency disorders and problems of malnutrition in India, food aid Programmers, Changing pattern of food habits in India and originates new health problem, regional distribution of food habits in India.

UNIT – IV Health Care Planning: Role of Health Programmes in the eradication of various diseases, their preventive and promotive aspects. International level; WHO, UNICEF, Red Cross, National Level; Government and NGOs, Health care planning and polices; availability, accessibility and utilization of health care services, Primary Health Care (PHC); spatial inequalities in health care services in India, Family Welfare, immunization, Reproductive Child health programmes, AIDS/HIV control programme, Health Care Delivery Systems, Allopathic, Ayuvedic and Traditional health card systems of India.

Suggested Readings:

1. Banerjee, B. and Hazra J. : Geo-Ecology of Cholera in West Bengal, University Calcutta, Calcutta 1980.
2. Cliff, A and Haggett, P.: Atlas of Disease Distribution. Basil Blackwell, Oxford, 1989.
3. Digby, A, and Stewart. L. (eds.) : Gender, Health and Welfare. Routledge, NewYork 1996.

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4. Hazra, J. (ed.) Health Care Planning in Developing Countries. University of Calcutta, Calcutta 1996.
5. Learmonth A.T.A. : Patterns of Disease and Hunger. A Study in Medical Geography David & Charles, Victoria. 1978
6. May, J.M. Studies in disease Ecology. Hafner Pub., New York, 1961.
7. May. J.M. Ecology of Human Disease. M.D. Pub. New York 1959.
8. May, J.M. : The World Atlas of Diseases, Nat. Book Trust, New Delhi, 1970.
9. Mc. Glashan, N.D. : Medical Geography, Methuen, London. 1972.
10. Narayan, K.V.: Health and Development- Inter-Sectoral Linkages in India, Rawat Pub., Jaipur, 1997.
11. Phillps, D.R. : Health and Health Care in the Third world. Longman, London, 1990.
12. Pyle, G. : Applied Medical Geography. Winston Halsted Press, Silver Springs, Md, U.S.A.1979.
13. Rais, A. and Learmonth, A.T.A. (eds) : Geographical Aspects of Health and Diseases in India, Concept Publishing Company New Delhi, 1985.
14. Shannon, G.M. et. al : The Geography of AIDS, Guilford Press. New York. 1987.
15. Smith, D. : Human Geography - A Welfare Approach, Arnold Heinemann, London 1997.
16. Sochin, A. A. : Fundamentals of Medical Geography, Dept. of Army Tran, M.J. 5264, Washgington D.C. 1968.
17. Stamp, L.D.: The Geography of Life and Death. Cornell University, Ithaca, 1964.
18. सिंघई, जी.सी.: चिकित्सा भूगोल, वसुन्धरा प्रकाशन, गोरखपुर, 2010
19. चौहान, धर्मेन्द्र सिंह एवं मुकेश कुमार शर्मा : साहित्यागार, जयपुर, 2011
20. खत्री, हरीश कुमारः स्वास्थ्य भूगोल, कैलाश पुस्तक सदन, भोपाल, 2018
21. नारायणन् , सुधा : आहार विज्ञान, रिसर्च पब्लिकेशन्स, त्रिपोलिया, 2011

Outcomes:

On completion of the course, students are able to:

There should be interactions between the teacher and students. The teacher should cite examples from neighboring localities. Day trips to health centers may be of interest to the students. Video shows may be arranged where facilities are available.

On completion of the course, students are able to:

1. Understand fundamental concepts, approaches, development and challenges of health care in India.
2. Learn the geographical factors affecting on human health.
3. Get the knowledge of genetic, communicable, non-communicable and occupational diseases.
4. Understand diffusion of diseases and causes major diseases.
5. Understand rural environment and health and health problems of tribes in India.
6. Get the knowledge about urban environment and health; pollution.

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SEMESTER – IV

PAPER – XVII
AGRICULTURAL GEOGRAPHY

Objective:

To familiarize the students with the concept, origin, and development of agriculture; to examine the role of agricultural determinants towards changing cropping pattern, intensity, productivity, diversification and specialization. The course further aims to familiarize the students with the application of varies theories, models and classification schemes of cropping pattern and productivity.

Its objectives is also discuss environmental, technological and social issues in agricultural sector with special reference to India.

Course contents:

UNIT – I Nature, scope, significance and development of agricultural geography. Approaches to the study of agricultural geography: Commodity, systematic and regional systems. Origin and dispersal of agriculture. Sources of agricultural data.

UNIT – II Determinants of agricultural land use - Physical, economic, social, and technological Land holding and land tenure systems, Land reforms, land use Agriculture policy and planning. Selected agricultural concepts and their measurements; cropping pattern, crop concentration, intensity of cropping, diversification and specialization, agricultural productivity, agricultural development.

UNIT – III Theories of agricultural location based on several multi-dimensioned factors:-Von Thunen's theory of agricultural location and its recent modifications; Whittlesey's classification of agricultural regions; land use and land capability. Agro-climatic & Agriculture Ecological region.

UNIT – IV Contemporary Issues: Food, nutrition and hunger. Food aid Programmers; role of irrigation, fertilizers, insecticides and pesticides, technological know-how. Employment in the agricultural sector: landless labourers, woman, children: occupational and agricultural activities.

Suggested Readings:

1. Bayliss Smith, IP.: The Ecology of Agricultural Systems. Cambridge University London, 1987.
2. Berry, BJ.L et. al. : The Geography of economic Systems. Prentice Hall, New York, 1976.
3. Brown, L.R. : The Changing World Food Prospects - The Nineties and Beyond, World Watch Institute, Washington D.C., 1990.
4. Dyson, T. : Population and Food - Global Trends and Furure Prospects. Routledgle. London, 1996.

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5. Gregor, H.P. : Geography of Agriculture. Prentice Hall, New York, 1970.
6. Grigg, D.B. : The Agricultural Systems of the World. Cambridge University Press, New York 1974.
7. Hartshorn, T.N. and Alexander, J.W. : Economic Geography. Prentice Hall, New Delhi, 1988
8. Mannion, A.M. : Agriculture and Environment Change, John Wiley, London, 1995.
9. Mitra, Manju : Agriculture Geography of Chhattisgarh Basin, Sahitya Ratnalaya Kanpur,
10. 1980
11. Morgan W.B. and Norton , R.J.C. : Agricultural Geography. Mathuen, London, 1971.
12. Morgan, W.B.:Agriculture in the Third World - A Spatial Analysis. Westview Boulder, 1978.
13. Sauer, C.O. : Agricultural Origins and Dispersals,. M.I.T. Press, Mass, U.S.A., 1988.
14. Singh, J. and Dhillon, S.S. : Agricultural Geography. Tata McGraw Hill' Pub.; Delhi, 1988.
15. Tarrant, J.R. : Agricultural Geography. Wiley, New York, 1974.
16. बघेल, अनुसुइया : कृषि भूगोल, होरीजन्स बुक्स, नई दिल्ली, 2015
17. जोशी, वाय.जी. : नर्मदा बेसिन का कृषि भूगोल, मध्यप्रदेश हिन्दी ग्रंथ अकादमी, भोपाल, 1972
18. कुमार, प्रमिला : कृषि भूगोल, मध्यप्रदेश हिन्दी ग्रंथ अकादमी, भोपाल, 2008
19. हुसैन, माजिद : कृषि भूगोल, रावत पब्लिकेशन, जयपुर, 2000
20. कुमार, प्रमीला एवं श्री कमल शर्मा : कृषि भूगोल, मध्यप्रदेश हिन्दी ग्रंथ अकादमी, भोपाल, 1985
21. गौतम, अलका: कृषि भूगोल, शारदा पुस्तक भवन, इलाहाबाद, 2020

Outcomes:

On completion of the course, students are able to:

1. Understand about the introduction to agriculture, nature, scope, significance and Development of agriculture geography, study approaches applied in agriculture.

2. Understand the influence of physical, Economic and Technological factors on agriculture patterns.

3. To understand the agricultural system its meaning and concept, Von Thunen's theory of agricultural location, whittlesey"s classification of agricultural system, types of agricultural, study the types of agricultural in respect of area, salient features and their problems.

4. Understand the agricultural regionalization and modes in agricultural geography and their classification of agricultural models and some theories.

5. Understand definition and characteristics of arid and semi-arid regions and study about droughts and famines, role of irrigation and dry farming.

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SEMESTER – IV

PAPER – XVIII (A)
GEOGRAPHICAL INFORMATION SYSTEM

Objective:

- To introduce GIS (Geographical Information System) as a techniques of spatial science.
- To indicate the basic elements of GIS and mythology of GIS.
- To outline the steps and areas of application of GIS.

Course contents:

UNIT – I Spatial Science : Geography as a spatial science, maps and spatial information dynamics of spatial information, elements of information technology, Geographic objects and their relations definition and development of GIS, computer environment for GIS.

UNIT – II Spatial Data: Elements of spatial data: data sources: Primary and secondary census and sample data, quality and error variations Raster and vector data structures, data conversion comparison of raster and vector data bases, methods of spatial interpolation – GIS data formats for the computer environment.

UNIT – III GIS Technology: Coordinate system-basic principles of cartography and computer assisted cartography for GIS – remote sensing data as a data source for GIS integration of GIS and remote Sensing-GPS and GIS: technology, data generation and limitations – visualization in GIS-Digital Elevation Models (DEM and TINS).

UNIT – IV GIS Application: GIS as a Decision Support System –expert system for GIS-basic flow chart for GIS application – GIS standard legal system and national GIS policy application of GIS in Land Information System, Urban Management, Environmental Management and Emergency Response System.

Suggested Readings:

1. American Society of Photogrammetry : Manual of Remote Sensing. ASP, Falls Church V.A., 1983.
2. Barrett E.C. and L.F. Curtis : Fundamentals of Remote Sensing and Air Photo Interpretation on, Memillan, New York, 1992.
3. Compbell J. : Introduction to Remote Sension, Guilford, New York, 1989.
4. Curran, Paul J. : Principles of Remote Sensing. Longman, London, 1985.
5. Hord R.M.:Digital Image Processing of Remotely Sensed Date, Academic, New York, 1983.
6. Luder D,, Aerial Photography Interpretation : Principles and Application, CcGraw Hill, New York, 1959.
7. Pratt W.K. Digital Image Processing. Wiley, New York, 1978.
8. Rao D. P. (eds.) : Remote Sensing for Earth Resources, Association of Exploration Geophysicist, Hederabad, 1998.

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9. Thomas M. Lollesand and Ralph W. Kefer, Remote Sensing and Image Interpretation, Wiley & sons, New York, 1994.
10. Aronoff S.Geographic Information Systems: A. Management Perspective, Publication Offiawa, 1989.
11. Burrough P.A. Principles of Geographic Information Systems for Land Reson Assessment Oxford University Press, New York, 1986.
12. Fraser Taylor D.R. Geographic information Systems. Pergamor Press, Oxford 1990.
13. Maquire D.J.M.F. Goodchild and D.W. Rhind (eds.). Geographic information System 'Principles arid Application. Taylor & Francis, Washingron, 1991.
14. Mark S. Monmonier. Computer-assisted Cartography,Prentice-Hall, Englewood Cliff, Jersey, 1982.
15. Peuquet D. .1. and D.F.- Marble, Introductory Reading in Geographic. Information System Taylor & Francis, Washington, 1990..
16. चौनियाल, देवी दत्त, : सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली.
17. शर्मा, राजकुमार : वायु फोटो निर्वचन ,सुदूर संवेदन एवं भौगोलिक सूचना तंत्र, हिमांशु पब्लिकेशंस, उदयपुर, 2020
18. खत्री, हरीश कुमार : सुदुर संवेदन तकनीकी, कैलाश पुस्तक सदन, भोपाल, 2019

Outcomes:

On completion of the course, students are able to:

- Understand the all fundamental concept of GIS, potential of GIS, concept of space & time, objectives of GIS, elements of GIS, GIS tasks, history of GIS and GIS applications in different field.
- To examine and understand the spatial and non spatial data models and all its functions components and applications in geography.
- Extract the knowledge and information about geospatial analysis and database query and GIS data analysis the various concept and problems in analyzed in GIS environment.
- Understand the concept of map, projections, and coordinate systems and basic of the same for different purposes in geography.
- GIS applied in the various kinds of fields, agriculture, populations, watershed planning and land use planning.

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SEMESTER – IV

PAPER – XVIII (B)

ENVIRONMENTAL GEOGRAPHY

Objective:

- To understand the concept, characteristics, classification and interrelation between man and environment.
- The basic objective the course are to appraise the students with the interrelationship between man, the environment within which he lives and his linkage with other organisms. Such linkages from ecosystem, which varies in different biomes.
- To be able to explain territorial diversity and complexity, and the interrelations of natural environmental phenomena with economical, social and cultural phenomena.
- To identify the cause of environmental management and policy, laws. Preservation and conservation of environment.

Course contents:

UNIT – I Environment: Meaning, definition, concepts and theories related to environment. Environment and its components: Classification, Characteristics and their interdependent relationship, Development of the environmental studies and their approaches: Development of environmentalism in Geography.

UNIT – II Environment and development. Ecological concepts; Geography as human ecology; Ecosystem: meaning definition, Concept and components. Main terrestrial ecosystems of the world-forests and agriculture.

UNIT – III Environmental hazards- natural and human made, environmental pollution : meaning definition, nature and types-air, water, noise and others. Ecological impacts of pollution. Resource use and ecological imbalance with special reference to soil, forests and water resources.

UNIT – IV Environmental Management : meaning, importance and approaches, need for environmental policy and laws. Preservation and conservation of environment through resource management (Green revolution, Chipko movement, National Parks). Environmental Actions: Concept, need and importance Stockholm Conference, Earth Summit, E.I.A. definition and methods and need for EM Environmental education and People's participation.

Suggested Readings :

1. Agrawal, Anil and Sunita Narain. Dying Wisdom : The Fourth citizen Report. Centre for Science and Environment, New Delhi, 1998.
2. Burton I.; R.W. Kates & G.F. Whiley. The Environment as Hazards. O. U.P. New York, 1978, Carledge, Bryen. Population and the Environment, O.U.P., New York, 1995.
3. Chandna, R.C. Environmental Awareness Kalyani Punlishers, New Delhi, 1998.

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4. Dawson, J. and J.C. Doornkamp, eds.: Evaluating the Human Environment. Edward Amold, London, 1975
5. Detwyler, J.R.: Man,s impact on Environment. Pelican, 1970.
6. Edington, J.M. & M.A. Edington : Ecology and Environmental Planning. Chapmap & Hall, London, 1977.
7. Goudie, Andrew. The Human Impact on the Natural Environment, Blackwell Oxford, U.K. 1994
8. Jain, R. K., L.V. Urban and G.S. Stacy; Environmental Impact Analysis-A New Dimension in Decision-Making. Van Norstrand Reinhold Co. New York, 1977.
9. Khoshoo, T.N. Environmental Concepts and Strategies. Ashish Publishing House, New Delhi.
10. Mohan, M. Ecology and Development. Rawat Publications; Jaipur, 2000.
11. Munn, R.E. Environmental Impact Assessment : Principles and Procdures. John Wiley & Sons, New York, 1979.
12. Narain, Sunita. The Citizen Fifth Report. Centre for Science and Environment, New Delhi 2003.
13. Mukherji, A and V. K. Agnihotri : Environment and Development. Concept Pu. Co. New Delhi, 1993.
14. Rudig Wolfgeng. Environmental Policy Edward Elger Publishing Ltd. UK. 1998.
15. Saxena, H.M. Environmental Management. Rawat Punlications, Jaipur, 2000
16. Sharma, B.L. & Puar P: Global Environmental Challenges. Rohini Books, Publishers & Distriburors, Jaipur, 2004.
17. Singh, K.N. and D.N. Singh : Population Growth, Environment and Development Issues, Impacts and Responds. Environment & Development Study Centre, Varanasi, 1991.
18. Singh, R. B. and S. Mishra : Environmental Law in India : Issues and responses, Concept Pub. Co. New Delhi, 1966.
19. Singh, S. Environmental Geography. Prayag Pustak Sadan, Allahabad, 2000.
20. Smith, R.L. : Man and his Environment: An Ecosystem Aproach. Harper & Row. London, 1992.
21. U.N.E.P.: Global Environmental Outlook. U.N. Pub. New York.
22. अवस्थी एन. एम. एवं आर.पी. तिवारी पर्यावरण भूगोल, मध्यप्रदेश ग्रथ अकादमीए भोपाल ।
23. नेगी, पी. एस. : परिस्थितिकीय विकास एवं पर्यावरण भूगोल, रस्तोगी एन्ड कम्पनी, मेरठ, 1995।
24. रघुवंशी अरूण और चन्द्रलेखा रघुबंशी : पर्यावरण तथा प्रदूषण, मध्यप्रदेश हिन्दी ग्रथ अकादमी, भोपाल, 1989 ।
25. सविन्द्र सिंह : पर्यावरण भूगोल, प्रयाग पुस्तक सदन इलाहाबाद, 1993 ।
26. शर्मा, बी एल : पर्यावरण : साहिन्य भवन, आगरा, 1992।
27. तिवारी, विजय कुमार : पर्यावरण और परिस्थितिकी, हिमालय पब्लिशिंग हाउस, दिल्ली 1998 ।
28. तिवारी, विजय कुमार, : पर्यावरण अध्ययन, हिमालय पब्लिशिंग हाउस, दिल्ली, 1998 ।
29. प्रसाद गायत्री, गौतम अल्का, पर्यावरण भूगोल
30. रामकुमार गुर्जर एवं जाट बी.सी., पर्यावरण अध्ययन, पंचशील प्रकाशन, जयपुर
31. व्यास, हरिशचन्द्र : पारिस्थतिकी एवं पर्यावरण, पंचशील प्रकाशन, जयपुर
32. आसरे, राम, पर्यावरण भूगोल, आर. के. पब्लिकेशन, नई दिल्ली, 2009
33. मौर्य, एस.डी. : संसाधन एवं पर्यावरण, प्रयाग पुस्तक भवन, इलाहाबाद, 2006
34. राव, बी.पी. : संसाधन एवं पर्यावरण, वसुन्धरा प्रकाशन, गोरखपुर, 2010

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Outcomes:

On completion of the course, students are able to:

- There must be more interaction between teacher and students on different aspects of ecology with the help of models, charts and pictures. Emphasis should be given on environmental problems faced by Indian recent years.
- The student should be made to do seasonal assignments on different environmental problems, policy and find out some suitable remedies for relevant topics.
- Students are able to known the different environmental policy which has been taken by national and international level.

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SEMESTER – IV

PAPER - XIX
FIELD WORK (PHYSICAL AND SOCIO- ECONOMIC) REPORT

Objective:

- The main objective of the field work is to conducted an extensive survey of a contiguous wider region and identify salient landforms; their generous and their impact on human life, flora and fauna.
- The aim of the field work is to provide the students with the understanding of ground reality of a chosen village/ town by observation. Mapping of land quality, land use and cropping pattern and conducting socio- economic survey of the households with the help of special prepared questionnaire.

Course contents:

Physical:

UNIT – I Trace the prominent features of area to be surveyed. Identify salient landform features of selected area on a topographical sheet, Identify the landforms on the surface, while in the field. Also note the agents of erosion, transportation and deposition associated with the landforms.

UNIT – II Identity and classify the Bio-diversity in the area (Flora & fauna). Observe the relationship of various landforms, flora and fauna with land-use, settlement structure and life style of people.

Socio – Economic:

UNIT – III Procure a cadastral map of the village/town for field mapping of the features of land-use and land quality. Procure/prepare the settlement –site map through rapid survey to map the residential, commercial, recreational (parks, playground), educational, religious and other prominent features. Conduct a socio-economic survey of the households with a structured questionnaire. Supplement the information by personal observations and perceptions.

UNIT – IV Based on observations of the land-use and results of the socio-economic enquiry of the households, prepare a critical field-survey report. Photographs and sketches, in addition to maps and diagrams, may supplement the report.

Outcomes:

On completion of the course, students are able to:

1. The practical exercises should aim at identification of micro-geomorphic features on the ground and their relationship to land-use/ settlement pattern.
2. The exercise should familiarize the students with basic-economic characteristics of the chosen area/ settlements through lab experiments. Followed by field visit and conducting enquiry at the village/town/household level.
3. This is also training report writing for the students.

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SEMESTER – IV

PAPER - XX

PRACTICAL-IV:

GEOGRAPHICAL INFORMATION SYSTEM AND QUANTITATIVE TECHNIQUES

Objective:

- To introduce of GIS is a modern scientific analysis in different branches of Geography.
- To indicate the basic elements and methodology of GIS.
- To outline the steps and areas of application of GIS.

Course contents:

Geographical Information System:

An overview of GIS software, Elements of GIS: Data capture-verification and preprocessing-data storage and maintenance of databases-Database Management Systems: Spatial data creation, Editing the layers and table creation, Creation of non Spatial data, data manipulation, analysis (integrated analysis of spatial and attribute data, overlay analysis, neighborhood operations and connectivity functions) and spatial modeling-output format and generation. Buffer analysis, Network Analysis, Creation of DEM & TIN Generation of thematic map.

GPS – Demonstration and handling of Hand held GPS receivers. Ground truthing. Checking and updating of existing map, Use of GPS to Check/update the existing topographical map.

Quantitative Techniques:

Running mean, Mean centre, Nearest Neighbor Analysis, Lorenz Curve, Normal distribution curve, Probability, Crop combination region, Agricultural efficiency.

pSugessted Readings:

1. Singh, R.L. & P.K. Dutt : Elements of Practical Geography Students trends.
2. Monkhouse, F.J. & H.R. Wilkinson; Maps and Diagrams Mathuen, London.
3. Mahmood, Aslam 1971 : Statistical Methods in Geographical studies Rajesh Pub., New Delhi.
4. Gregory, S. Statistical Methods and The Geographer.
5. Hammond & Mccullah 1977 : Quantitative Techniques in Geography, Clarendon Press,Oxford.
6. Fitz, Gomid, B.P. : Science in Geography, Developments in Geographical Method, Oxford University Press.
7. Yeaters, M. : An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.
8. मॉक हाउस तथा विल्किन्सन 1976 : मानचित्र तथा आरेख, म.प्र. केदारनाथ , रामनाथ, मेरठ.
9. नेगी, डी.एस. : भूगोल में आधारभूत सांख्यिकी, केदारनाथ , रामनाथ, सेठ.
10. हीरालाल : प्रायोगिक भूगोल, किताबघर, कानपुर.
11. आर.सी. तिवारी एवं सुधाकर त्रिपाठी : अभिनव प्रयोगात्मक भूगोल, प्रयाग पुस्तक भवन, इलाहाबाद.

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12. श्रीवास्तव, वी.के. : भूगोल की सांख्यिकीय विधियाँ, वसुन्धरा प्रकाशन, गोरखपुर, 2007

Outcomes:

On completion of the course, students are able to:

1. Understand the all fundamental concept of hardware, peripherals of GIS environment,
2. To examine and understand the spatial and non spatial data models and all its functions components and applications in geography through computerized GIS.
3. Extract the knowledge and information about geospatial analysis and database query and GIS data analysis the various concept and problems in analyzed in GIS environment.
4. Understand the concept of map, projections, and coordinate systems and basic of the same for different purposes through GIS.
5. The different modern techniques like GPS, DEM, TIN, and Network analysis are used in GIS for better understand of Physical Geography as well as human geography.
5. GIS applied in the various kinds of fields, agriculture, populations, watershed planning and land use planning.

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