Department of Geography

Faculty of Natural Sciences

JAMIA MILLIA ISLAMIA
NEW DELHI – 110 025
(A Central University by an Act of Parliament)

M.A. /M.Sc. Geography

Syllabus (w.e.f. 2010-2011)

Course Structure of M.A./M.Sc.

I-Semester

		Credits
Theory Papers		
1.	Advanced Geomorphology	4
II.	Geography of Settlements	4
III.	Economic & Resource Geography	4
IV.	Regional Geography of India	4
Practicals		
I.	Cartographic Methods	2
II.	Quantitative Methods	2

II-Semester

Theory Papers		
V.	Human Ecology	4
VI.	Climatology & Oceanography	4
VII.	Social Geography	4
VIII.	Remote Sensing, GIS & GPS	4
Practicals		
III.	Remote Sensing and Image Processing	2
IV.	Socio-Economic Survey	2

III-Semester

Theory Papers		**Credits**
IX.	Evolution of Modern Geographical Thoughts	4
X.	Hydrology and Water Resources	4
XI.	Urban Geography	4
XII.	Agricultural Geography	4

Practicals

V.	Advanced Statistical Techniques	2
VI.	Digital Cartography	2

IV-Semester

Theory Papers		**Credits**
XIII.	Regional Development and Planning	4
XIV.	Population Geography	4
XV.	Political Geography	4

Optional: **(Any one of the followings**)

XVI (a)	Geography of Urban Environment	4
XVI (b)	Environmental Planning and Management	4
XVI (c)	Gender Geography	4
XVI (d)	Rural Development	
XVI (e)	Geography of Transport and Trade	4
XVI (f)	Land Evaluation	4
XVI (g)	Geography of Tourism	4
XVI (h)	Geography of Health & Well-being	4

Practicals

VII.	Geographical Information Systems & GPS	2
VIII.	Project	2
IX.	DIP Training	2

Paper: I (GGM-101)

ADVANCED GEOMORPHOLOGY

Credits: 4

UNIT I: FUNDAMENTAL CONCEPTS

Fundamental concepts in Geomorphology: Concept of time and space; Concept of morphogenetic regions; Concept of dynamic equilibrium; Models in Geomorphology; Recent trends in Geomorphology.

UNIT II: EVOLUTION OF LANDFORMS

Significance of geological structures, climatic factors and the geomorphic processes in the evolution of landforms; Interruption in the evolution of landforms: Tectonic, climatic and base level changes; Slope Form, Processes and Evolution.

UNIT III: GEOMORPHIC PROCESSES AND FORM

Drainage basin as geomorphic unit; Morphometric Laws; Morphometric analysis; Denudation and Morpho chronology; Soil erosion and its measurement.
Fluvial : Evolution of river valley; Glacial : Glaciations & Forms.
Aeolian : Evolution of arid landscapes ; Coastal Geomorphology : Recession of shorelines and evolution of coastal landforms

UNIT IV: APPLIED GEOMORPHOLOGY

Geomorphic hazards and mitigation; Geomorphology and Soils; Geomorphology in mineral and Groundwater prospecting; watershed management.

Books Recommended:

1. Dury, G.H. Ed. 1966, Essays in Geomorphology, Heinmann Educational Books Ltd., London.
2. Fairbridge, R.W., (ed.), 1968, Encyclopedia of Geomorphology, Rein-hold Book Corp., New York.
3. Garner, H.F., 1974, The Origin of Landscape : A Synthesis of Geomorphology, Oxford Univ. Press, New York.
4. Jhon, R. Hails., 1977, Applied Geomorphology, Elsevier.
5. Way,D.,1978,Terrain Analysis: A Guide to Site Selection using Aerial Photo Interpretation, Dowden, Hutchinson & Ross, Stroudsburg.

Paper-II (GGM-102)

GEOGRAPHY OF SETTLEMENTS

Credits: 4

UNIT 1: CONCEPTUAL FRAMEWORK

Significance and scope of settlement geography; Development of settlement geography, Methodological advances in the study of settlement geography; Approaches to the study of settlements: Evolutionary, spatial, and ecological; Types of settlement: Clustered and dispersed.

UNIT II: RURAL SETTLEMENT

Rural Settlements: Definition and characteristics; Site and situation. The evolution of field boundaries and field patterns. Types and materials of farm fencing; Folk housing and folk architecture; Traditional building materials.

UNIT III: URBAN SETTLEMENT

Urban Settlements: Site and situation; Size and spacing of urban settlements; Theory of Christaller; Functional classification of urban centers Harris and Nelson; Morphological characteristics of urban settlements; Theories explaining internal structure of cities: Sector, concentric zone and multiple-nuclei.

UNIT IV: SETTLEMENT IN INDIA

Indian Village: Nature and characteristics; A model of Indian village by Spate; Study of rural settlements in India with special reference to their morphological characteristics; Approaches to the morphogenesis of Indian villages. Orientation and segregation of castes in villages; Dichotomy in built environment: Mohammad Habib and Budha Prakash Debate; Study of landscape as a text.

Books Recommended:

Ahmad, E. 1979. Social and Geographical Aspects of Geography of Human Settlements. New Delhi: Classical Publications.

Ambrose, P. 1970. Concepts in Geography; Settlement Patterns. London: Longmans.

Census of India, 1961. House Types and Settlement Patterns of Villages in India. New Delhi.

Chisholm, M. 1969. Rural Settlements and Land Use. London: Hutchinson.

Christaller, C. W. 1966. Central Places in Southern Germany. Englewood Cliffs N. J: Prentice Hall.

Clout, H. D. 1972. Rural Geography: Introductory Survey. Oxford: Pergamon.

Cox, K. R. 1972. Man, Location and Behavior: An Introduction to Human Geography. New York: John Wiley and Sons.

Duncan, J. S. 1990. The City as Text: The Politics of Landscape Interpretation in the Kandya Kingdom. Cambridge: Cambridge University Press.

Eidt, R. C., K. N. Singh, and R. P. B. Singh, 1977. Man, Culture and Settlement. Varanasi: Kalyani Publishers.

Hudson, R. S. 1970. A Geography of Settlements. Estover, Plymouth: Macdonald and Evans.

James, P. E. and C. F. Jones, 1954. American Geography: Inventory and Prospects. Syracuse: Syracuse University Press.

John E. Bush. 1962. The Morphology of Indian Cities. In Roy Turner (Ed.) India's Urban Future. Bombay: Oxford University Press.

King, A. D. (ed.) 1980. Building and Society: Essays on the Social Development of the Built Environment. London: Routledge and Kegan Paul.

Mayer, H. M. and C. F. Kohn. 1959. Readings in Urban Geography. Chicago: University of Chicago Press.

Mukerji, A. B. 1976. Rural Settlements of the Chandigarh Siwalik Hills (India): A Morphogenetic Analysis. Geografiska Annaler, 58(2): 95-115.

Mukerji, A. B. 1984. Progress in Rural Settlement Geography. In A Survey of Research in Geography 1972 – 75. New Delhi: Concept Publishing Company.

Mukherji, R. K. 1968. Man and His Habitation: A Study in Social Ecology. Bombay: Popular Prakashan.

Noble, W. A. 1969. Approaches toward an Understanding of Traditional South Asian Peasant Dwellings. Professional Geographer, 21(4): 264-272.

Noble, A.G. 2007. Traditional buildings: A Global Survey of Structural Forms and Cultural Functions. London: I.B. Tauris

Rapoport, A. 1965. House, Form and Culture, Englewood Cliff JN: Prentice Hall.

Ray, A. 1964. Villages, Towns and Secular Buildings in Ancient India. Calcutta: Firma K. L. Mukhopadhyaya.

Singh, J. P. and Khan, M. 2002. Mystical Space, Cosmology and Landscape: Towards a Cultural Geography of India. New Delhi: Manak Publication.

Singh, K. N. 1968. The Territorial Basis of Medieval Town and Village Settlement in Eastern Uttar Pradesh. Annals of the Association of American Geographers, 58(2):218-226.

Singh, R. L. and K. N. Singh (eds.) 1975. Readings in Rural Settlement Geography. Varanasi: The National Geographical Society of India, B. H. U.

United Nations Centre for Human Settlements (HABITAT), 1966. An Urbanising World, Global Report on Human Settlements. Oxford: Oxford University Press.

Smailes, A. E. 1969. The Indian City: A Descriptive Model. Geographische Zeitschrift. September, pp181 – 182.

Spate, O. H. K. 1952. The Indian Village. Geography, 37: 142-152.

Verma, L. N. 2008. Adhiwas Bhugol (4th Edition). Jaipur: Rajasthan Hindi Granth Academy.

Wagner, P. L. and Mikesell, M. W. (Eds.). 1962. Readings in Cultural Geography. Chicago: University of Chicago Press.

Paper: III (GGM-103)

RESOURCE AND ECONOMIC GEOGRAPHY

Credits: 4

UNIT I: FUNDAMENTAL CONCEPTS

Definitions and Scope of Economic Geography: its place in Human Geography, Development of the discipline after Second World War with special reference to New Economic Geography (NEG)

UNIT II: THEORIES AND MODELS

A) Agricultural Land Use – Ricardian Rent theory, Von Thunen's rent theory with modern interpretations.
B) Basic concepts in location problems; Demand, Scale, Agglomeration and Time dimension in Economic location; Locational Models of Weber and Isard
C) Christaller's Central Place Theory and modifications by Losch

UNIT III: RESOURCE BASE OF THE ECONOMY

Resource base of the Economy; Concept of Resources, Classification of Resources; Factors of Resource Creation; Resources and Environment – scarcity and sustainability, conversation of resources; Sectors of the Economy: agriculture, manufacturing and tertiary activities.

UNIT IV: TRADE AND EXCHANGE

Concepts of trade and exchange – opportunity costs, absolute, comparative and competitive advantage; Movements of capital and labour; Core-periphery concept in trade; Commodities in world trade; Trade Blocs; The Information Economy – Spatial and transportation implications of e-commerce.

Books Recommended

1. Conkling, E. C. and Yeates, M. (1976) 'Man's Economic Environment', McGraw – Hill Book Company, New York.
2. Friedmann, J. and Alonso, W. (1964) Regional Development and Planning: A Reader', The M.I.T Press, Cambridge.
3. Gore, C. (1984) 'Regions in Question: Space, Development Theory and Regional Policy', Methuen, London.
4. Hartshorne, T. A. and Alexander, J. W. (1988) 'Economic Geography', Prentice Hall, New Delhi
5. Hurst, E. M. (1972) 'The Geography of Economic Behaviour: An Introduction', Duxbury Press, California
6. Peat, W.N. and Constant, J. A. (1972) 'Zimmermann's World Resources and Industries', Harper and Row Publishers, London
7. Wheeler, J.O, Muller, O. M, Thrall, G.I. and Timothy, J. F. (1998) 'Economic Geography', John Wiley and Sons Inc., New York.

Paper: IV (GGM-104)

REGIONAL GEOGRAPHY OF INDIA

Credits: 4

UNIT I: REGION AND REGIONALIZATION

India as a Geographical Unit; Concept of Region: Scheme of Regionalization : O.H.K. Spate and R.L. Singh, Agro-climatic Regions, Watershed as a Planning Region.

UNIT II: GEOGRAPHY OF INDO-GANGETIC PLAIN

Introduction to Indo-Gangetic Plain; Regional Geography of Rajasthan, Upper Ganga and Lower Ganga Plains: Physiography, Drainage, Climate, Soil; Population and Economy

UNIT III: GEOGRAPHY OF HIMALAYAS

Introduction to Himalayas; A Regional Study of Western and Easten Himalayas: Physiography, Drainage, Climate, Soil, Natural Vegetation, Population and Economy

UNIT IV: GEOGRAPHY OF PENINSULAR INDIA

Introduction to Peninsular India; A Geographical account of Chotanagpur and Deccan plateau: Physiography, Drainage, Climate, Soil; Population and Economy

Books Recommended

1. Deshpande C.D.: Indian-A Regional Interpretation, Northern Book Centre, New Delhi. 1992.
2. Farmer, B.H.: An Introduction to South Asia, Methuen, London, 1983.
3. Govt. of India: India-Reference Annual, 2001 Pub. Div., New Delhi.
4. Govt. of India: National Atlas of India NATMO Publication, Calcutta.
5. Govt. of India: The Gazetteer of India. Vol. I & III Publication Division.
6. Learmonth A.T.A et.al (ed) Man and land of South Asia, Concept;
7. Mitra, A: Levels of Regional Development of India, Census of India, Vol. I, Part I-A (i) and (ii) New Delhi, 1967.
8. Routray, J.K.: Geography of Regional Disparity, Asian Institute of Technology, Bangkok, 1993.
9. Shafi, M: Geography of South Asia, McMillan & Co., Calcutta, 2000.
10. Singh, R.L. (ed). : India A Regional Geography, National Geographical Society. India, Varanasi, 1971.
11. Spate, O.H.K. and Learmonth, A.T.A. India and Pakistan – Land, People and Economy Methuen & Co., London. 1967.
12. Valdiya, K.S. : Dynamic Himalaya, University Press, Hyderabad, 1998.
13. Singh, Gopal, 1988. Geography of India, Atma Ram, Delhi.
14. Tirth Ram, 1996. Geography of India, Rawat, Jaipur.
15. Gopal Krishnan, R., 1996. Geography of India, Jawahar Pub. & Dist., New Delhi.

Practical – I (GGM -105)

CARTOGRAPHIC METHODS

Credits: 2

UNIT I: FUNDAMENTALS OF CARTOGRAPHY

Maps and their significance; Classification of maps; Theory of communication; Elements of maps: Generalization, Symbolization and Classification; Techniques of mapping: dot, choropleth, isopleths and diagrammatic; Principles of map designing.

UNIT II: RELIEF MAPPING

Relative relief: GH Smith and Robinsons methods; Morphometric Analysis: Drainage Density, Stream order, Elongation ratio, Circularity ratio, Bifurcation ratio.

UNIT III: MAPPING OF SOCIO-ECONOMIC DATA

Population Density; Rural – Urban population; Patterns of irrigation, Location of Industries; Cartograms

UNIT IV: APPLIED CARTOGRAPHY

Any one of following:

1. Topographic mapping

2. Tourist mapping

3. Service and utility mapping

Note: Students will have to prepare a set of ten maps on selected theme

Books Recommended:

1. Dickinson.G.C. 1968: Statistical Mapping and Presentation of Statistics. Arnold, London
2. Lawrence. G.R.P,1971 : Cartographic Methods, Methuen , London
3. Monkhouse. F.J and Wilkinson.H.R.1972: Maps and Diagrams. Methuen , London
4. Misra. R.P.1969: Fundamentals of Cartography, Prasaranga. University of Mysore, Mysore.
5. Raisz.E. 1962: Principles of Cartography, McGraw Hill, New York.
6. Robinson.A.H.1978: Elements of Cartography, John Wiley, New York.

Practical -II (GGM -106)

QUANTITATIVE METHODS IN GEOGRAPHY

Credits: 2

UNIT I: MEASURES OF GEOGRAPHICAL PATTERNS

Nearest Neighbour Analysis; Gini's Co-efficient; Lorenz curves; Location quotient; Rank size rule.

UNIT II: NETWORK ANALYSIS

Indices of transport network efficiency; Compositing the indices of transport network efficiency; Indices of nodal accessibility; Local degree – Road Local degree – Rail. Weighed road capacity and tortousrity ratio; Compositing the indices of nodal accessibility.

UNIT III: METHODS OF PREDICTIONS AND LEVELS OF MEASUREMENT

Levels of measurement; Methods of sampling; Simple linear regression analysis; Plotting of regression line; Plotting of absolute and relative residuals; Explanation of residuals plotted on the maps.

UNIT IV: MEASURES OF DISPARITIES AND POTENTIAL MODELS

Gravity and potential models; Delimitation of hinterlands; Combinational analysis of Weaver,S.M.Rafiulla's method, Measures of Disparities: Kendall's ranking method. .

Books Recommended:

1. Berry, B.J.L. and Marble, D.R. (ed), 1968, Spatial Analysis: A Reader in Statistical Geography, Prentice Hall, New York.
2. Cole, J.P. and Kind, C.A.M. 1968. Quantitative Geography, John, Wiley, New York.
3. Ibrahim, R., 1984. Market Centers and Regional Development. B.R. Publisher, New Delhi.
4. Mahmood, A, 1986. Statistical Methods in Geographic Studies. Rajesh Publishers, New Delhi.
5. Smith, D.M., 1975. Patterns in Human Geography, Penguin Books, England.
6. Maurice, Yeats, 1974. An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.
7. Peter Hagget, Andrew. D. Cliff and Allen Frey, 1977. Locational Methods Vol. 1 and 11, Edward Arnold, London.

Paper: V (GGM-107)

HUMAN ECOLOGY

Credits: 4

UNIT I: INTRODUCTION

Human Ecology: Evolution & Development; Key Concepts: Anthropocentricism, cultural lag, the commons and theories; Environmental ethics.

UNIT II: HUMANS AND ENVIRONMENT

Humans and the Biosphere: Coevolution and coadaptation of human system and ecosystems; Resources, technolgics, environment and consumerism: Problems and consequences; Geographies of wealth, hunger and health.

UNIT III: HUMANS AND BIOPHYSICAL SYSTEM

Humans as persons and agents of larger social system; Human population size, growth and biophysical carrying capacity of Earth; Positive and negative feedback of human numbers and quality of life; Denaturalization of country and city; Alteration of biogeography, material cycles and energy flow.

UNIT IV: GLOBAL CHANGE ADAPTATION

Environmental crises and human reintegration. The end of duality: Adaptation and behavioural change; Environmental Management (undoing misdeeds): Ecoregional and watershed management strategies; Landscapes restoration and conservation of biodiversity.

Books Recommended

1. Dieter Steiner and Marcus Nauser (eds.): Human Ecology; New York: Routledge, 1993
2. Ehrlich, P.R., A.H. Ehrlich and J.P. Holdren: Human Ecology, San Francisco: W.H. Freeman & Co.; 1973
3. George A. Theodorson (ed.): Studies in Human Ecology, New York: Harper & Row, 1961
4. Quinn, J.A.: Human Ecology (2nd edition), New York: Hamden Conn.,1971.

Paper: VI (GGM-108)

Climatology and Oceanography

Credits: 4

UNIT 1: GENERAL CLIMATOLOGY

Meaning, scope and objectives of climatology and its relations with meteorology. Structure and composition of the atmosphere. Heat budget and insolation. Atmospheric equilibrium, air masses and fronts. Atmospheric disturbances: cyclones, tornadoes and water spouts. Classification of climate by Trewartha, Koppen and Thornthwaite.

UNIT 2: APPLIED CLIMATOLOGY

Climate and biosphere. Climate and human environment: agricultural and industrial. Climate, urbanization and urban planning. Weather forecasting and recent trends in climatology. Air pollution, global warming and climatic change. Micro climates.

UNIT 3: GENERAL OCEANOGRAPHY

Meaning, scope and objectives of oceanography. Submarine topography and configuration of Pacific, Atlantic and Indian ocean floors. Ocean temperature and salinity. Ocean dynamics: currents, tides, tsunamis and El Nino. Ocean deposits. Coral reefs.

UNIT 4: APPLIED OCEANOGRAPHY

Ocean routes and world economics. Marine resources and their conservation. Marine Pollution and ocean dumping. Global warming and transgression of seas. Remote sensing in oceanographic studies. Laws of the sea.

Books Recommended :

1. Barry, G.G. and Chorley, 1976 Atmosphere, Weather and Climate, Methuen and Co., London.
2. Barret, E.C. 1974 Climatology from Satellites, Methuen London.
3. Critchfield, H.F., 1987 General Climatology, Prentice-Hall of India Pvt. Ltd., New Delhi.
4. Davis, R.J.A., 1986 Oceanography-An Introduction of the Marine Environment, Win C. Brown, Lowa.

5. Griffiths, J.F., 1976 Applied climatology, Oxford press, New York.
6. Hobbs, J.E., 1996 Applied Climatology, Oxford University Press.
7. Huntington, E. and S.S. Visher, 1922 Climatic Changes, Yale University Press.
8. Hussain, T. and Tahir, M. 2003 Climatology, Jawahar, New Delhi.
9. Hussain, T. and Tahir, M. 2003 Oceanography, Jawahar, New Delhi.
10. Kings, C.A.M., 1963 An introduction to oceanography, McGraw, New York.
11. Lamb, H.H., 1972 Climate : Present, Past and Future, Methuen London.
12. Siddhartha, K. 1999 Oceanography-A Brief Introduction, Kisalya Pub., New Delhi.
13. Singh, S. 2002 Physical Geography, Prayag Pub., Allahabad.
14. Trewartha, G.T., 1968 An Introduction to Climate, McGraw, New York.
15. Thurnman, H.V. 1978 Introduction to Oceanography, Charles E. Merrill Pub., London.
16. Weyl, P.K. 1970 Oceanography-An Introduction of the Marine Environment, John W and Sons, London.

Paper – VII (GGM-109)

Social Geography

Credit: 4

UNIT I: FUNDAMENTAL CONCEPTS

Definition, scope and development of Social Geography. Relationship of social geography with other branches of Social Science. Concepts of social space, social area analysis and social well being. Development of social geography in India.

UNIT II: PATTERNS AND PROCESSES

World Distribution of religious and linguistic groups. Cultural realm and their distribution. Socio-economic and environmental issues of the developed and developing countries. Process and problems of social change in the traditional societies.

UNIT III: SOCIAL STRUCTURE OF INDIA

Distribution of racial and linguistic groups of India. Distribution of various social groups (i.e. SC, ST, OBC) and their socio-economic issues. Regional imbalances with-reference to literacy, health, poverty and crimes in India. Levels of social well-being in India / HDI.

UNIT IV: SOCIAL ISSUES IN INDIA

Unity in diversity. Regional consciousness and national integration. Social conflicts and violence. Emphasis of social planning during Xth and XIth Five Year Plans.

Books Recommended:

1. Ahmed, A.(1999), Social Geography, Rawat Publication, Jaipur.
2. Carter, John and Jones, T.(1989),Social Geography: An Introduction to Contemporary Issues, Edward Arnold, London.
3. Chandana R.C.(1989), Spatial Dimensions of Scheduled Castes in India, Intellectual Publishers House, New Delhi.
4. Crane, R.I.(1973), Regions and Regionalism in South Asia Studies: An Exploratory Study, Durham, Duke University.
5. D.M. Smith(1995), Geography and Social Justice, Black-well.
6. Dube, S.C. (1991), Indian Societies, National Book Trust of India, New Delhi.
7. Dube, S.C, Tribal Heritage of India, Vias Publishing Co, New Delhi.
8. Ghurye,G.S.(1963), The Scheduled Tribes, Bombay, Popular Prakashan.
9. Guha, B.S.(1944), Racial Elements in Indian Population, Oxford University Press, Bombay.
10. Knox,P.(1982), Urban Social Geography: An Introduction, Longman, London.
11. Konx, P.L.(1975), Social Well –being: A Spatial Perspective, Oxford London.
12. Manson, P., "Unity and Diversity: An Introductory Review" in P, Manson (ed.) India and Ceylon: Unity and Diversity pp. 1-19.
13. Morris, D. et. Al.(1982), Measuring the Condition of India's Poor: The Physical Quality of life index, Promila, New Delhi.
14. Sakharov,IV.(1971), "Ethno Linguistic Geography of India. Facts and Problems", In Economic and Socio- cultural Dimensions of Regionalization, Cencus of India, Monograph.No.7.
15. Singh, K.S.(1985), Tribal Society in India, Manohar.
16. Smith, D.M.(1977), Human Geography: A Welfare Approach, Edward Arnold.
17. Smith D.M., Geography of Social Well Being.
18. Sopher, D.E.(1980), An Exploration of India: Cornell University, London.

Paper – VIII (GGM- 110)

REMOTE SENSING, GIS AND GPS

Credits: 4

UNIT I: BASICS OF REMOTE SENSING

Stages in Remote Sensing data acquisition; Physics of Remote Sensing; Electro Magnetic Spectrum (EMS); EMR and its interaction with atmosphere and earth surface features.

UNIT II: REMOTE SENSING PLATFORMS, SENSORS, AND SATELLITE SERIES

Platforms: Types and their orbital characteristics; Sensors types: active and passive; Sensors systems: whiskbroom and push broom; Satellite series: IRS, SPOT, IKONOS and Quick bird.

UNIT III: DIGITAL IMAGE PROCESSING

Digital data formats; Image Restoration: geometric radiometric corrections and filtering. Image Enhancement: linear and non linear contrast stretch; Band combinations; Image Classifications: supervised and unsupervised.

UNIT IV: GEOGRAPHIC INFORMATION SYSTEM AND GLOBAL POSITIONING SYSTEM

Components of GIS; Data Structures; Data Base Management System (DBMS); Data Models; spatial data analysis and applications; Fundamentals of GPS; Segments of GPS; GPS Applications.

Books Recommended :

1. Lillesand T.M and Keifer R.W. (2000), Remote Sensing and Image Interpretation, IV Th Eds. John Wiley and Sons, New York.
2. Joseph George (2003), Fundamentals of Remote Sensing, University Press. Hyderabad
3. Sabins,F.F.(1986), Remote Sensing: Principles and Interpretation, Freeman, New York
4. Rashid S.M and Mazhar A.K .(1993), Dictionary of Remote Sensing, Manak Publishing House,
5. Delhi
6. Lo, C.P.and Yeung AKW.(2004), Concepts and Techniques of GIS, Prentice – Hall of India, New Delhi.
7. Masood, A.S .(2006), Introduction to GIS, Allahabad
8. Fazal S and Rahman A.(2007), GIS Terminology, New Age International Publishings, New Delhi
9. Leicka. A: GPS Satellite Surveying, John Wiley and Sons, New York.
10. N.K.Agarwal. (2004), Essentials of GPS, Spatial Network Pvt. Ltd.

Practical - III (GGM -111)

REMOTE SENSING AND IMAGE PROCESSING

Credits: 2

UNIT I : REMOTE SENSING AND IMAGE INTERPRETATION

Referencing layout and indent of Landsat TM and IRS imageries; Identification of objects / features on multiband imageries; Detection of defined objects/features; Preparation of Image interpretation keys; Interpretation, classification, delineation and mapping of land use/land cover from False Colour Composite (FCC); Transfer of information from imagery to base map.

UNIT II : DIGITAL IMAGE PROCESSING

Digital Image: Definition, size and Image Formats; Image Processing System : Image Registration : Image to map and Image to Image; Image Enhancement Techniques : Histogram Equalization. Contrast stretching, filtering and band rationing. Image Classification: selection of training sets, supervised and unsupervised classification; Use of Spectroradiometer for the measurement of radiance value.

UNIT III : MAPPING GEOMOGRAPHIC FEATURES

Geomographic mapping using aerial photographs and satellite imageries; Morphometric analysis : Drainage density, texture, stream order channel changes and delineation of watershed, Preparation of groundwater potential zone maps.

UNIT IV : URBAN LAND USE / LAND COVER MAPPING

Urban Land use/Land cover classification system; Multilevel land use classification; Urban Land use/land cover mapping of Chandigarh / Delhi/ Bangalore / Mumbai / Hyderabad / Kolkata/ Varanasi using IRS data; Transfer of information to the base map; Urban land use change detection.

Books Recommended :

1. Dikinson, G.C., 1979. Maps and Aerial Photographs, Arnold – Heinemann, New Delhi.
2. Lillesand, T. and Keiffer, R. 1979. Remote Sensing and Image Interpretation, John Wiley, New York.
3. Lindgren, D.T., 1985, Land Use Planning and Remote Sensing, Nijhoff, Dordrecht
4. Miller, V.C., 1961. Photogeology, McGraw Hill, New York.
5. NRSA, 1995. IRS – IC, Data User Handbook, Hyderabad.
6. NRSA, 1988. IRS – IA, Data User Handbook, Hyderabad.
7. Sabins, Floyd F, 1986, Remote Sensing : Principles and Interpretation, Freeman, New York.
8. Seigal, B.S. and AR Gillespie, 1980, Remote Sensing in Geology, Wiley, New York.
9. Townshend, J.R.G., 1981, Terrain Analysis and Remote Sensing, George Allen & Unwin, London.
10. Way, D., 1978, Terrain Analysis : A Guide to Site selection using Aerial Photo Interpretation, Dowden, Hutchinson & Ross, Stroudsburg

Practical- IV (GGM -112)

SOCIO – ECONOMIC SURVEY

Credits: 2

UNIT I:

Procure a topographic map of 1:50,000 to 1:25,000 scale to study the Settlements selected in its regional setting.

UNIT II:

Collect demographic, social & economic data of the village/town from Census Reports to study the temporal changes in the profile of such characteristics. 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, Playgrounds), educational, religious and other prominent features.

UNIT III:

Conduct a socio-economic survey of the households with a structured questionnaire. Supplement the information by personal observations and perceptions.

UNIT IV:

Based on results of the land-use and 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.

Books Recommended:

1. Gregory,S, 1980. Statistical methods and the Geographer, Longman, London.
2. Mahmood, A. 1986. Statistical Methods in Geographical Studies, Rajesh Pub., New Delhi.
3. Ibrahim, R., 1992. Socio-Economic Profile of Mewat, Radha Publishers, New Delhi.
4. Robinson, A.H. 1978. Elements of Cartography, John Wiley , New York.
5. Raisz, E. 1962. Principles of Cartography, Mc Graw Hill, New York.

PAPER: I X (GGM-113)

EVOLUTION OF MODERN GEOGRAPHICAL THOUGHT

CREDITS: 4

UNIT: I GENESIS OF GEOGRAPHICAL THOUGHT

Ancient Geography Contributions of Greek, Roman and Arab Geographers. Impact of voyages; Discoveries and Renaissance on Geographical Thought. Foundation of Scientific Geography (Contributions of Varenius and Kant).

UNIT: II EVOLUTION OF MODERN GEOGRAPHICAL THOUGHT – I

Classical period of modern geography contributions (Humboldt and Ritter) and Darwin's impact on Geography; Contributions of Ratzel and Blache; Shifting viewpoints in Geography during the latter half of Nineteenth Century.

UNIT: III EVOLUTION OF MODERN GEOGRAPHICAL THOUGHT-II

The debate between Determinist and Possiblists; Geography as science of relationships and as science of distributions. Geography as Chorological science and as Morphology of Landscape.

UNIT: IV CONTEMPORARY GEOGRAPHY POST SECOND WORLD WAR

Exceptionalism and the Schaefer-Hartshorne debate. Positivism and its reactions (behavioral and radical approaches). Post modernism and feminist Geography.

BOOKS RECOMMENDED

1. Deckinsonre (1969) The Maker's of Modern Geography Routledge and Kegen Paul, London.
2. Hartshorne (1939) The Nature of Geography. Association of American Geographers Lancaster Pennsylvania.
3. Hartshorne (1959) Perspective on the Nature of Geography Rand McNally and company Chicago.
4. Harvey, D. (1989) The condition of Post Modernity: An Enquiry into the Origins of Cultural Change, Blackwell, Oxford.
5. Husain, M. (2002) Evolution of Geographic Thought (also in hindi) Rawat Publication's Jaipur.
6. Sing, J. (1988) Bhaugolik Chenta ka karam vikas Gyanodaya Gorakhpur.
7. Peet, R. (1998) Modern Geographical Thought Blackwell, Oxford.

PAPER: X (GGM-114)

HYDROLOGY & WATER RESOURCES

CREDITS: 4

UNIT I: INTRODUCTION

Definition and scope of Hydrology, Hydrological cycle, Structure and properties of water, inventory of earth's water resources, quality and quantity of available water, Water as a cyclic resource.

UNIT II: SURFACE WATER DYNAMICS

Surface water: sources and factors affecting quality and quantity; Precipitation: forms and factors; Interception: factors; Runoff: sources and factors affecting runoff; Evaporation: measurement and factors; Evapotranspiration: control and factors.

UNIT III: GROUND WATER DYNAMICS

Ground water: Characteristics of stream flow, Darcy's Law, permeability, Infiltration, Ground water storage, Ground water aquifers in different rock systems, movement and discharge.

UNIT IV: WATER RESOURCE PROBLEMS

Environmental influences on water resources; sectoral demands for water; urban water supply; water management; water harvesting; water pollution and control.

SUGGESTED READINGS:

Timothy, Davie, 2003, Fundamentals of Hydrology. Rowledge, Taylor and Francis Group, U.K.

Rao, K.L., 1982, India's water wealth. Orient Longman, Delhi.

Todd, D.K., 2004, Groundwater Hydrology, John Wiley & Sons Inc

Mahajan, G., 1989, Evaluation and Development of Groundwater. Ashish Publishing House, New Delhi.

Karanth, K.R.C., 1988, Ground Water: Exploration, Assessment and Development. Tata-Mcgraw Hill, New Delhi.

Andrew D. Ward and Stanley Trimble, 2004, 2nd Ed., Environmental Hydrology, Lewis Publishers.

Aggarwal, A., 1991, Floods, Floodplains and Environmental Myths. Centre for Science and Environment, New Delhi.

Wright. R.T and Nebel. B.J., 2002, Environmental Science: toward a sustainable future, Prentice Hall India Ltd, 8th Edition.

Vijay P. Singh, 1995, Environmental Hydrology. Kluwer Academic Publications, The Netherlands.

Subramaniam V., 2002, Text Book of Environmental Science, Narosa Publishing House, Delhi.

PAPER: X I (GGM-115)

URBAN GEOGRAPHY

CREDITS: 4

UNIT: I CONCEPTS AND APPROACHES TO THE STUDY OF URBAN GEOGRAPHY

Nature and scope of Urban Geography; Different Approaches; Development and Recent Trends in Urban Geography; Evolution of towns during the Ancient, Medieval and Modern periods.

UNIT: II MORPHOLOGY AND CLASSIFICATIONS OF TOWNS

Morphology and Models of Internal Structures of cities; Functional Classification of towns; Hierarchy and Spacing of cities: Model of Christaller; Urban Fringe; Primate City and Megalopolis.

UNIT: III QUALITY OF LIFE AND HEALTH

Economic Base of Cities; Physical, Economic, Social and Cultural component; Quality of Urban Life; Air Pollution and Public Health.

UNIT: IV URBAN PLANNING

Urban transportation; transport and environmental degradation; vehicular pollution and congestion; urban planning in India with special reference to Chandigarh and Jaipur.

BOOKS RECOMMENDED:

1. Michael.P. (2009). Urban Geography: A Global Perspective, Taylor & Francis, Great Britain.
2. Marcotullio, P. Mc Granahan. G. (2007). Scaling Urban Environmental Challenges: From Local to Global and Back, Earthscan, Great Britain.
3. Hardoy, J. E., Mitlin. D. Satterthwaite. D. (1992). Environmental Problems in Third World Cities, Earthscan, Great Britain.
4. Jensen, J.R. (2007). Remote Sensing of the Environment: An Earth Resource Perspective, Prentice-Hall, NJ, USA.
5. Goudie, A, (2000). The Human Impact on the Natural Environment, MIT Press, Great Britain.
6. Paul. K. Pinch. S. (2006). Urban Social Geography: An Introduction, NJ, USA.
7. The Urban Environment: Twenty Sixth Report (2007) Royal Commission on Environmental Pollution, Great Britain

PAPER: XII (GGM-116)

AGRICULTURAL GEOGRAPHY

CREDITS: 4

UNIT – I APPROACHES PARAMETERS AND AGRICULTURAL SYSTEMS

Nature, scope and significance; Evolution in historical perspective; Approaches: commodity, systematic, regional and ecological; Determinants of agricultural development: physical, technological, institutional; World agricultural systems.

UNIT – II MODELS AND AGRICULTURAL REGIONALIZATION

Cropping patterns and their measurements: crop concentration, crop diversification, crop combinations, measurement of agricultural efficiency, agricultural productivity; Agricultural location models: Von Thunen and Lösch.

UNIT – III AGRICULTURAL DEVELOPMENT AND PLANNING IN INDIA

Agriculture during plan periods; Diffusion of agricultural innovations; Green revolution and its effects on economy, society and environment; Agro-climatic regions and their planning; Measurement and levels of agricultural development; Problems and prospects of Indian agriculture.

UNIT – IV CONTEMPORARY ISSUES IN INDIAN AGRICULTURE

Nutrition, malnutrition and hunger; Rural poverty and unemployment; Poverty alleviation strategies; Food aid and nutrition programmes; Food security and its components; Sustainable agriculture.

BOOKS RECOMMENDED:

1. Berry.B.J.L.1976. The Geography of Economic Systems, Prentice Hall; New York.
2. Chauhan,D. 2010. Agricultural Geography, Ritu Publications
3. Brown,L.R. 1990The Changing World Food Prospects- The Nineties and Beyond, World Watch Institute,Washington D.C.
4. Dyson,T. 1996. Population and Food – Global Trends and Future Prospects, Routledge, London.
5. Gobind,N. 1986. Regional Perspectives on Agricultural Development ; Concept Publications;New Delhi
6. Gregory,H.F. 1970. Geography of Agriculture; Prentice Hall Englewood Cliff; New Jersey.

7. Grigg F.D.B. 1974. The Agricultural Systems of the World, Cambridge University Press; New York
8. Hussain,M. 1979. Agricultural Geography; Inter India Publishers; New Delhi.
9. Hussain,M. 1979. Systematic Agricultural Geography; Rawat Publishers; New Delhi.
10. Jasbir,S. and Dhillon,S.S. 1984. Agricultural Geography, McGraw Hill; New Delhi.
11. Mannion, A.M. 1995. Agriculture and Environment Change; John Wiley; London.
12. Shafi,M. 2006. Agricultural Geography, Pearsons Publications, New Delhi.
13. Shafi, M. 1984. Agricultural Productivity and Regional Imbalances: A Study of Uttar Pradesh, Concept Publication Company, New Delhi.

Practical-V (GGM-117)

Advance Statistical Methods

Credits: 2

UNIT-I ELEMENTS OF PROBABILITY DISTRIBUTIONS AND STATISTICAL INFERENCE

Population and sample; Theory of probability and probability distributions: Binomial, Poisson and Normal; Estimation: Spatial probability distribution; Spatial sampling techniques; Level of confidence; One and two tail tests; Type I and Type II error.

UNIT II NON-PARAMETRIC TESTS

Non-parametric data: Chi-square; Kolmogrove-Smirnov; Mann-Whitney U-Test; Phi Coefficient.

UNIT II I PARAMETRIC TESTS

Parametric data: Analysis of Means; Analysis of Variance; Point Biserial Co-efficient.

UNIT IV MEASURES OF ASSOCIATION: ATTRIBUTE AND SPATIAL

Pearson's product-moment coefficient of correlation; spatial auto correlation; geographically weighted regression; Court's Method of Map comparison.

BOOKS RECOMMENDED:

1. Johnson. R.A. Bhattacharyya. G.K. (2009). Statistics: Principles and Methods, John Wiley and Sons, USA.
2. Micheal C.J. (2005). Statistics: An Introduction. R, John Wiley and Sons, USA.
3. Norcliff, G.B., (1977).Inferential Statistics for Geographers: An Introduction, Hutchinson, London.
4. David. E. (1985). Statistics in Geography, Basil Blackwell Ltd, Oxford.
5. Johnston, R.J. (1978). Multivariate Statistical Analysis in Geography, Longman Group Limited, London.
6. Burt J.E. Barber. G.E. Rigby D.L. (2009). Elementary Statistics for Geographers, Guilford Press, New York.

PRACTICAL-VI (GGM-118)

DIGITAL CARTOGRAPHY

CREDITS: 2

UNIT I: DIGITAL CARTOGRAPHY

History and development of Digital cartography, Cartographic and GIS software, Digital cartography, web cartography, Computer Aided Design (CAD), Spatial registration; spatial and non spatial data entry

UNIT II: DIGITAL MAPPING

Land use mapping (Choropleth mapping), Terrain mapping (isolines); urban land use mapping (Choropleth); Dot mapping

UNIT III: DIGITAL MAP ANALYSIS

Overlay analysis; buffer analysis; Network analysis; nearest neighbor analysis, 3D modeling

UNIT IV: Map designing

Map designing and layout creation

BOOKS RECOMMENDED:

1. Cromley, R.G. 1992 Digital cartography, Englewood Cliff, New Jersey, Prentice Hall
2. Monmonier, M.; 1982 Computer Assisted Cartography: Principles and Prosospects, Englewood Cliffs, New Jersey, Prentice Hall,
3. LO & YEUNG (2009) *Concepts and Techniques of Geographic Information Systems*, 2nd ed., PHI Learning Pvt. Ltd, New Delhi.
4. Robinson (2003) *Elements of Cartography*, Wiley India Pvt. Ltd., New Delhi.
5. Monkhouse. F.J and Wilkinson.H.R.(1999) *Maps and Diagrams*. Methuen , London
6. Raisz, E. 1962. Principles of Cartography, Mc Graw Hill, New York.

PAPER: XIII (GGM-119)

REGIONAL DEVELOPMENT AND PLANNING

CREDITS: 4

UNIT-I: BASIC CONCEPTS

Region: Concepts and types; Formal and functional; Delineation of region. Development and Planning: Concepts, need and scope; Types of planning.

UNIT-II: FRAME WORK OF DEVELOPMENT AND PLANNING

Regional devolvement: concepts, levels, and indicators; Regional Planning: concepts and scope; Levels of planning: local, regional, national and multi-level; Master Plans; Environmental issues in regional planning; Planning for sustainable development.

UNIT-III: THEORIES AND MODELS

Theories and models of the regional development: Hirschman's model; Growth centers and Growth pole theory of Perroux, Rostow's model; Gunnar Myrdal model.

UNIT-IV: PLANNING AND REGION

Five Year Plans: command area development, planning for backward area, desert drought-prone, hill and tribal area development; Decentralized planning and Panchayati raj; watershed management; Regional economic imbalances and inequalities in India; SEZs in regional development.

BOOKS RECOMMENDED:

1) Mishra. R. P. (1992). Regional planning: concepts, techniques, policies and case studies.
2) Bhat. L. S. (1972) Regional planning in India.
3) Chaudhary. J.R. (2001) Introduction to Development and Regional Planning: With Special Reference to India.
4) Mishra. J. Sinha. C. (1985) Planning and regional development in India.
5) Prasad B.K. (2005) India's development agenda: issues, challenges and policies.
6) Nath V. Aggarwal S.K. (2009) (Edited), Regional Development and Planning in India selected Essays Concept Publishing Company.
7) Compton Paul A. Pecsi Marton. (1976). Regional Development and planning, Akademiai Kiado Publishers.
8) Chand. M. Puri V.K. (1983) Regional planning in India.
9) Aziz. A. Krishna. S. Regional development: problems and policy measures.
10) Mishra. S. Pal. C. (2000) Decentralized planning and Panchayati Raj institutions.
11) Thakur. B. (2005) Urban and regional development in India.
12) Tiwari.P.C. (1988) Regional development and planning in India.

PAPER: XIV (GGM-120)

POPULATION GEOGRAPHY

CREDITS: 4

UNIT I: CONCEPTUAL FRAME

Population Geography and Demography; Approaches to Population Geography; Sources of Census Population data; History and Changing Methodology of Indian census taking.

UNIT II: POPULATION DYNAMICS

Population change and growth; Historical trends of population growth; Trends and patterns of fertility; Trends and patterns of mortality; Trends and patterns of child mortality; Migration: Types, patterns, causes and consequences.

UNIT III: POPULATION DISTRIBUTION AND REDISTRIBUTION

Population distribution in the world and India; Patterns and Trends of population Redistribution: Urbanization in the developed and developing world; urbanization in India: Trend and pattern; world population-resource regions: Ackerman's scheme; Prospects of habitation of non- ecumene regions.

UNIT IV: POPULATION PROBLEMS AND POLICIES

Population: a problem (liability) or resource (asset); Problem of Aging, Health –care and food security; Critical appraisal of population policy of India; Population in the context of environmental crises.

BOOKS RECOMMENDED:

1. Ackerman, E.A. (1967). Population, Natural Resources and Technology. *Annals of the Academy of Political and Social Science,* 369: 84-97.

2. Ali-Ali Sidiq, N. and Koser. K. (2002). *New Approaches to migration*. New York: Routledge.

3. Bloom,D.E.,D. Canning and J.Sevilla.2003. *The Demographic divided: A new perspective on the consequences of population change*. Santa Monica: Environmental law Institute.

4. Cassen, R. (Ed.). (1990). *Population and Development: Old debates, New Conclusions*. New Brunswick, Transaction Publishers. New Jersey.

5. Jones, H. (1990). *Population Geography*. Sage: London

6. Voss, P.R, White K.J.C.and Hammer. R.B (2004). The *(re) emergence of spatial Demography*. Wisconsin: Centre for Demography and Ecology.

7. Weeks, J. R. (2005) *Population: An introduction to concepts and issues*. Belmont, C.A: Wadsworth Publications.

PAPER: XV (GGM-121)

POLITICAL GEOGRAPHY

CREDITS: 4

UNIT: I

Nature, Scope, subject matter and recent development in Political Geography; Approaches to study; major schools of thoughts

UNIT: II

Geographic elements and the state; Physical Elements; Human Elements; Economic Elements; Political Geography and Environment Inter- face.

UNIT: III

Themes in political geography: State, Nation, Nation-state and Nation-building; Frontiers and Boundaries; Colonialism, Decolonization, Neo- colonialism, Federalism and other forms of governance. The changing patterns of World Powers Perspectives on core periphery concepts, Conflicts cooperation.

UNIT: IV

Geopolitical significance of Indian ocean; Political geography of any one of the following regions; SAARC region, South East Asia, West Asia, East Asia.

UNIT: V

Political Geography of contemporary India with special reference to: The changing Political map of India, Unity-Diversity, Centripetal and Centrifugal forces, Stability and Instability, Inter- state issues (lake water disputes and riparian claims) and Conflict Resolutions Insurgency in boarder states; Emergence of New States and Federal India.

BOOKS RECOMMENDED :

1) Alexander, L.M (1963). World Political Patters. Ran McNally, Chicago.

2) D Blij, H J and Glassner, M. (1968) Systematic Political Geography, John Wiley, New York.

3) Dikshit R.D. (1996) Political Geography; A Contemporary Perspective, Tata McGraw Hill, New Delhi.

4) Taylor, P. (1985) Political Geography, Longman, London.

5) Fisher, C. A. (1968), Essays in Political Geography, Methuen, London.

6) Pounds, N.J.G (1972), Political Geography Tata McGraw Hill, New York.

7) Short, J.R (1982), An Introduction to Political Geography, Routledge, London.

8) Deshpandey, C.D. (1992) India –a Regional Interpretation, Northern Book Centre, New Delhi.

9) Panikkar, K.M (1959) Geographical Factors in Indian History; II Volumes – Asia Publishing House, Bombay.

PAPER: XVI (GGM-122) (a)

GEOGRAPHY OF URBAN ENVIRONMENT

CREDITS: 4

UNIT: I URBAN ENVIRONMENT IN CONTEXT

Urban Environment: Concept; Components and Levels of Analysis; City and Region Environmental Interactions: Local, Regional and Global Impacts; Approaches to the Study of Urban environment.

UNIT: II URBAN ENVIRONMENTAL ISSUES: DEVELOPED AND DEVELOPING WORLD

Urbanization; Physical Expansion of Cities: Urban Encroachment, Urban Land use, Urban Congestion and Crowding; Urban hydrology; Urban Climate and its Impacts on Human Health.

UNIT: III URBAN ENVIRONMENTAL ISSUES IN METRO CITIES OF INDIA

Urban Poverty, slums and crimes; Urban Pollution (Air, Water, Noise, Land) and its Health Impacts; Water crises and Water Management; Municipal Waste and its Management.

UNIT: IV SUSTAINABILITY OF URBAN ENVIRONMENT

Concept of Urban Sustainability; Environmental Impact Assessment; Remote Sensing and GIS Applications for Urban Studies; Conventions and Strategies for Urban Environmental Monitoring.

BOOKS RECOMMENDED:

1. Michael.P. (2009). Urban Geography: A Global Perspective, Taylor & Francis, Great Britain.
2. Marcotullio, P. Mc Granahan. G. (2007). Scaling Urban Environmental Challenges: From Local to Global and Back, Earthscan, Great Britain.
3. Hardoy, J. E., Mitlin. D. Satterthwaite. D. (1992). Environmental Problems in Third World Cities, Earthscan, Great Britain.
4. Jensen, J.R. (2007). Remote Sensing of the Environment: An Earth Resource Perspective, Prentice-Hall, NJ, USA.
5. Goudie, A, (2000). The Human Impact on the Natural Environment, MIT Press, Great Britain.
6. Paul. K. Pinch. S. (2006). Urban Social Geography: An Introduction, NJ, USA.
7. Munn, R.E. (1979), Environmental Impact Assessment: Principles and Procedures, John Wiley and Sons, New York.
8. The Urban Environment: Twenty Sixth Report (2007) Royal Commission on Environmental Pollution, Great Britain

PAPER: XVI (GGM-122) (b)

ENVIRONMENTAL PLANNING AND MANAGEMENT

Credits: 4

UNIT: I INTRODUCTION TO ENVIRONMENT

Concept of environment; Components of environment; Environment: Life support system, resource field and pollution sink; Ecosystem: Concept, nature, components, functions and types.

UNIT: II ENVIRONMENTAL CRISES AND PROBLEMS

Human-environment interaction: Environment and technology; Local, regional and global environmental problems; Interconnections of these environmental problems; Environmental degradation and pollution and depletion and degradation of resources.

UNIT: III ENVIRONMENTAL PLANNING AND MANAGEMENT

Planning and management: Concepts, functions, approaches and processes; Environmental planning: Theory and process; Environmental management: Steps and process; International commitments and national legal framework of environmental planning and management.

UNIT: IV APPROACHES AND TOOLS

Approaches to environmental planning and management: Risk, restoration and holistic; Scales of planning and management: Small community, urban, watershed and ecoregion; Tools: EIA, GIS, Remote sensing.

BOOKS RECOMMENDED:

1. Barrow, C. J. (1999). Environmental Management: Principles and Practice. Routledge. New York.
2. DuPont, R. R., T.E. Baxter and L. Theodore. (1998). Environmental Management: Problems and Solutions. Lewis Publishers. Missouri.
3. Hanaki, K. (Ed.). (2008). Urban Environmental Management and Technology. Shinano Inc. Springer.
4. Jeroen C.J.M. Vunder Bagh, K.J. Button and P. Nijkanp. (2007). Environmental Planning. Edward Elgar. London.
5. Krishnamurthy, B. (2008). Environmental Management: Text and Cases. Prentice- Hall of India Pvt. Ltd, New Delhi.
6. Madu, Christian N. (2007). Environmental Planning and Management. Imperial College Press. London.
7. Selma, P. (2008). Environmental Panning. Sage Publication India Ltd. New Delhi.

PAPER: XVI (GGM-122) (c)

GENDER GEOGRAPHY

CREDITS: 4

UNIT I: CONCEPTS AND APPROACHES

Feminism and feminist movement, Feminist epistemology, scope, nature and development of gender geography.

UNIT II: ATTRIBUTES OF FEMALE POPULATION

Quality of life among female in the developed and developing countries; sex-ratio and child and maternal mortuary rate, Literacy and education; Status of females in the society in Development and Developing countries with special reference to India.

UNIT III: FEMALE PARTICIPATION IN ECONOMIC ACTIVITIES

Gender and Work: Historical developments in the sexual division of labour, Crime against women with special reference to domestic violence; Participation in economic activities: Primary, Secondary and Tertiary Sector, Domestic work and its significance.

UNIT IV: EMPOWERMENT OF WOMEN

Empowerment of women: education, economic opportunities, access to health services; Involvement in decision making processes from local bodies to parliaments: Role of women in development, environmental management and disaster management.

BOOKS RECOMMENDED:

1. Boserup, E. 1989, Women's Role in Economic Development Earthscan, London.
2. Dankelman, I & Davidson, J. 1989, Women and environment in the Third world, Earthsan, London.
3. Deblig, H,J. 1996, Human geography-Culture, society and space (5th edition), John Wiley, New York.
4. Johnston, R.J. et, al(eds), 1996. The health of women, A global respective, Westview press, Boulder.
5. Koblinsky, M.et. Al (eds), 1993. The health of women- A global respective, Westview press, Boulder.
6. Lee, D, 1988. Women in geography – A Comprehensive Bibliography, Boca Raton, Florida.

7. Hararway, D, 1991, Simians, Cyborgs and women- The Reinvention of nature, Routledge, New York.
8. Lewis, R, 1995. Race, Feminity and Representation. Routledge, New York.
9. Momsen, J.H & Townsend, J (eds),1987. Geography of gender in the third world, Albany New York.
10. Montagu, A, 1964, Man's most dangerous myth-the fallacy of race, Cleveland.
11. Reagent, A.C & Monk J.J (eds), 1982. Women and spatial change, Kendell & Hunt, Dubuque, Lowa.
12. Rhodda, A, 1991. Women and environment, Zed, London.
13. Seager, J. &Olson, A, Women in the world- An international Atlas.
14. Siviant, R.L, 1985. Women – A world survey, World priorities, Washington D.C.
15. Skjelsback, I and Smith, D, 2001. Gender, peace and conflict. Sage, London.
16. Sowell, T, 1994. Race and culture- A world view, Basic Books, New York.
17. UNICEF, 1990, The Lesser child – the girl in India, United Nations, Geneva.
18. United Nations 1991. The World's Women , 1970-1990, United Nations, New York.
19. United Nations 1995, World resources 1994-95. Chapter 3: Women and sustainable development, United Nations, New York.

PAPER: XVI (GGM-122) (d)

RURAL DEVELOPMENT

CREDITS: 4

UNIT-I: CONCEPT, HISTORY AND APPROACHES

Development and Rural Development: elements, objectives, scope and significance; Rural development theories: Linear stage models, Structural change models, Development themes during 1970s-1990s; Approaches to rural development: Community development approach, sectoral approach, target approach, integrated approach, participatory development approach.

UNIT – II: RURAL ECONOMICS AND RURAL DEVELOPMENT

Rural economics: concept and scope; Stages in rural economic development; Modernization theory; Gandhian Model of rural development; Determinants of rural development; Rural Industrialization

UNIT-III: SPATIAL ANALYSIS OF FACILITIES & SERVICES

Types of community facilities and services - water, sanitation, electricity; Provider of community facilities- governmental, non-governmental and philanthropic organizations; Community facilities and services programmes; Rural transportation; Rural education, health and health care delivery systems.

UNIT-IV: RURAL DEVELOPMENT & PLANNING

Rural planning: District and block level planning; Area specific projects/programmes: Tribal Area Development and Integrated Wasteland Development programme; Agricultural specific Programmes: High Yielding Variety programme, Integrated Rural Development Programmes (IRDP), Panchayati Raj Institutions; Sustainable rural development

BOOKS RECOMMENDED:

1. Sahu, B.K. (2003). Rural Development in India; Anmol Publishers, Delhi.
2. Maheshwri, S. (1995).
3. Jha, U.M. (1995) Rural Development in India: Problems and Prospects.
4. Mathew,T. (1981). Rural Development in India: Papers Presented at National Conference.
5. Madan, G.R. (2010). Indian Rural Problems, Radha Publications, New Delhi.

6. Garg, A. (1992). Working and Impact of Integrated Rural Development Programme; Deep and Deep Publishers, New Delhi.
7. Das, K.D. 2007. Dynamics of Rural Development; Deep and Deep Publishers, New Delhi.
8. Sinha,S.P. & Singh, S. 2007. Strategies for Sustainable Rural Development; Deep and Deep Publishers, New Delhi.
9. Armendera, 1998. Poverty Rural Development and Public Policy; Deep and Deep Publishers, New Delhi.
10. Sinha,R.N.P., Geography and Rural Development; Manohar Publishers and Distributors, New Delhi.
11. Satendra and Sharma,V.K.2004. Sustainable Rural Development for Disaster Mitigation, Concept, New Delhi.
12. Nath,V.2010. Rural Development and Planning in India, Concept, New Delhi
13. Nikkiran,S. and Ramesh,G. 2010. Research Methods in Rural Development, Deep and Deep Publications, New Delhi.

PAPER: XVI (GGM-122) (e)

Geography of Transport and Trade

Credits: 4

UNIT- I: Introduction

Nature, scope, significance and development of Transport Geography; Factors associated with the development of transport system.

UNIT-II: Mode of Transportation

Characteristics and relative significance of different modes of transport: railways, roads, airways and waterways, pipelines etc.

UNIT-III: Transport Network Structure

Transport Network Structure – Graph theoretic measures, indices of transport network efficiency and indices of nodal accessibility, Complementary intervening opportunity and transferability.

UNIT-IV: Trade and Development

History of trade; Significance of trade and its role in world and regional economy; Flow of commodities in economic blocks: EU, ASEAN, EFTA, LAFTA and SAARC.

Reference:

Bamford, C.G. and Robinson, H. (1978) Geography of Transport, Mc Donald and Evans, London.

Bhaduri S. (1992) Transport and Regional Development, Concept Publishing Company, New Delhi.

Chorley, R.J. and Haggett, P. (1967) Models in Geography, Methuen and Company, London.

Eliot Hurst, M.E. (1972) A Geography of Economic Behaviour : An Introduction, Duxbury Press, California.

Hay, A. (1973), Transport Economy, Macmillan, London.

Hoyle, Band Knowles, R. (2000), Modern Transport Geography, John Wiley and Sons, New York.

Hoyle, B.S. (1973) Transport and Development, Mc Millan , London.
Raza,M. and Aggarwal, Y.P. (1985), Transport Geography of India Concept Publishing Company, New Delhi.

Taffe, E.J. and Gauthier, H.L. (1973) Geography of Transportation, Prentice Hall Englewood Cliff, New Jersey.

White, H.P. and Senior M.L. (1983) Transport Geography, Longman, London.
16. Wheeler, J.O. et. al.: Economic Geography, John Wiley, New York, 1995.

PAPER: XVI (GGM-122) (f)

LAND EVALUATION

CREDITS: 4

UNIT – I: FUNDAMENTALS OF LAND EVALUATION

Basic concepts, approaches and criteria of land evaluation; Geoinformatics for data storage and analysis: Land Information System (LIS) and Geographic Information System (GIS); Cadastral mapping; Land use and land cover mapping; Physical and economic land evaluation.

UNIT – II: SOURCES OF DATA FOR LAND EVALUATION

Types of land resource data; Data sources: Land survey records, Remote Sensing, Digital Elevation Models and the Global Positioning System; Estimation of uncertainty: Concepts and Methods: Spatial variability and 'fuzzy' logic.

UNIT – III: METHODS OF LAND EVALUATION AND SUITABILITY

Land parcel ownership and land quality; Land evaluation using RS and GIS; Land suitability classification for different uses; Evaluation of land degradation and land capability assessment; Principal modeling approaches: empirical (or, statistical) and dynamic simulation modeling (Cellular automata and Genetic Algorithm).

UNIT – IV: LAND USE PLANNING

Planning: Planning vs. adaptation; Collective vs. individual rights planning; Strategic vs. tactical planning; Rural land use planning on private land and state-owned land; Proscriptive vs. prescriptive planning; Legal and institutional structure of land use planning.

READING LIST OF BOOKS AND JOURNALS:

1. Barlowe, R. 1986. Land resource economics: the economics of real estate. 4th ed. Englewood Cliffs, NJ: Prentice-Hall.
2. Burrough, P.A. and McDonnell, R.A. (1998) Principles of geographical information systems. Oxford University Press, Oxford, 327 pp.
3. Burrough, P.A., MacMillan, R.A. & van Deursen, W. 1992. Fuzzy classification methods for determining land suitability from soil profile observations and topography. J. Soil Sci. 43: 193-210.
4. Chang, K. T. (2008). Introduction to Geographical Information Systems. New York: McGraw Hill.

5. Elangovan,K (2006)"GIS: Fundamentals, Applications and Implementations", New India Publishing Agency, New Delhi"208 pp.

6. Food and Agriculture Organization of the United Nations. 1976. A framework for land evaluation. Soils Bulletin 32, Rome, Italy: FAO. S590 .F68 no. 32 Mann

7. Food and Agriculture Organization of the United Nations. 1993. Guidelines for land-use planning. FAO Development Series 1, Rome, Italy: FAO. 96 pp. ISBN 92-5-103282-3

8. Goodchild, M.F. & Gopal, S. (ed). 1989. The accuracy of spatial databases. London: Taylor & Francis.

9. Goodchild, Michael F., (2010). Twenty years of progress: Geosciences in 2010. JOURNAL OF SPATIAL INFORMATION SCIENCE, No. 1, pp. 3–20.

10. Heywood, I., Cornelius, S., & Carver, S. (2006). An Introduction to Geographical Information Systems (3rd ed.). Essex, England: Prentice Hall.
11. Jensen, J.R. 1986. Introductory digital image processing. Englewood Cliffs, NJ: Prentice-Hall.
12. Klir, G.J. & Folger, T.A. 1988. Fuzzy sets, uncertainty, and information. Englewood Cliffs, NJ: Prentice-Hall.Law, A.M. & Kelton, W.D. 1991. Simulation modeling and analysis. 2nd ed. New York: McGraw-Hill.
13. Leick, A. 1990. GPS satellite surveying. New York: John Wiley & Sons.
14. Lillesand, T.M. & Kiefer, R.W. 1987. Remote sensing and image interpretation. 2nd ed. New York: John Wiley & Sons.
15. Longley, P.A., Goodchild, M.F., Maguire, D.J. and Rhind, D.W. (2005) Geographic Information Systems and Science. Chichester: Wiley. 2nd edition.
16. Mark, D.M. 1984. *Automated detection of drainage networks from digital elevation models*. Cartographica 21: 168-178.
17. Morgan, M.G. & Henrion, M. 1990. *Uncertainty : a guide to dealing with uncertainty in quantitative risk and policy analysis*. New York: Cambridge University Press.
18. Tomlin, C.D. 1990. *Geographic information systems and cartographic modeling*.

Englewood Cliffs, NJ: Prentice-Hall.

19. Webster, R. & Oliver, M.A. 1990. *Statistical methods in soil and land resource survey*. Oxford: Oxford University Press.

20. Young, A. & Goldsmith, P.F. 1977. *Soil survey and land evaluation in developing countries: a case study in Malawi*. Geogr. J. 143: 407-431.

WEB LINKS:

Open Geospatial Consortium, Inc. (http://www.opengeospatial.org/)

Open Source Geospatial Foundation (http://www.osgeo.org/)

PAPER: XVI (GGM-122) (g)

Geography of Tourism

Credits: 4

UNIT-I

Definition and scope; Geographic resources of tourism: historic, climatic, cultural landscape and wildlife resources for tourism; Types of Tourism: cultural, coastal, eco and adventure; Tourism as an industry and its future prospects.

UNIT-II

Spatial dimensions of tourist attraction: national and international; Promotion of Tourism: Infrastructure and support system, accommodation, other facilities and amenities; Globalization and Tourism; Role of Government and other agencies in the promotion of tourism.

UNIT-III

Evolution, growth and development of tourism in India; Regional patterns of tourism in India; Social and economic dimension of tourist industry in India; Planning and Development of tourism in India.

UNIT-IV

Impact of tourism: Environmental, social and cultural, economic; Tourism impact assessment: case study of J & K, Goa, and Rajasthan.

READING LIST OF BOOKS AND JOURNALS:

1. Bhatia A.K.: Tourism Development: Principles and Practices, Sterling publishers, New Delhi, 1996.
2. Bhatia, A.K. International Tourism-Fundamentals and Practices, Sterliing, New Delhi, 1991.
3. Hunter C and Green H: Tourism and the Environment: A Sustainable Relationship Routledge, London, 1995.
4. Milton D.: Geography of World Tourism Prentice Hall, New York, 1993.
5. Robinson, H. Geography of Tourism Macdonald and Evans, London, 1996.

PAPER: XVI (GGM-122) (h)

Geography of Health and Well-being

Credits: 4

Unit I- Concepts, Approaches and Determinants

Basic Concepts, Scope and significance of Health, Disease and Wellbeing; Approaches to the Study of Health Geography: Ecological, Social and Spatial; Approaches to the Study of Wellbeing: Need-based, Relative Standard and Capability; Geographical Factors affecting Human Health and Wellbeing.

Unit II- Diseases and their Typology

WHO Classification of Diseases and their Major Types: Genetic; Communicable and Non-communicable; Occupational and Deficiency Diseases; Epidemics and Pandemic.

Unit III –Global Patterns of Human Health and Wellbeing

Ecology, Etiology, Diffusion and Distribution Pattern of Malaria, Tuberculosis, Hepatitis, AIDS, Glycemia and Cardiovascular Diseases; Poverty; Food Security; Nutrition Deficiency; Health and Sanitation Facilities.

Unit- IV International and National Concerns

Role of WHO, UNICEF, Red Cross; Indian Health Care Planning: Child and Family Health Welfare, Immunization, Rural Health and Health for All Programmes, National Health Care Infrastructure; Health GIS.

Suggested readings:

1. Cliff, A. & Haggett, P. (1989). Atlas of Disease Distribution, Basil Blackwell, Oxford.
2. Digby,A, & Stewart, L. (eds.) (1996). Gender, Health and Welfare, Routledge, New York.
3. Fouberg, E.H., Murphy, A.B., H. J. de Blij.(2009). Human Geography: People, Place, and Culture, Wiley and Sons, Eagle Lake.
4. Hardill,I., Graham. D.T., Kofman, E. (2001). Human geography of the UK: an introduction, Routledge, N.Y.
5. Hazara, J. (ed) (1997). Health Care Planning in Developing Countries, University of Calcutta, Kolkata.
6. Knox, P.L. (1975). Social Well-being: A Spatial Perspective, Oxford University Press
7. Learmonth, A.T.A. (1978). Patterns of Disease and Hunger, a Study in Medical Geography, Davisd and Charls, Victoria.
8. May, J.M. (1970). The World Atlas of Diseases, National Book Trust, New Delhi.

9. May, J.M. (1959). Ecology of Human Diseases, M.D. Pub., New York.
10. Narayan, K.V. (1997). Health and Development: Inter-sectoral linkages in India, Rawat Pub., Jaipur.
11. Phillps, D.R. (1990). Health and Health Care in the Third World, Longman, London.
12. Pyle, G. (1979). Applied Medical Geography,Winston Halsted Press, Silver Spring, USA.
13. Rais,A. and Learmonth, A.T.A., (1986). Geoghraphical Aspects of Health and Diseases in India, Cocept Publishing Company, New Delhi.
14. Shannon, G.M. et. Al, (1987). The Geography of AIDS, Guiford Press, N Y.
15. Smith, D. (1997). Human Geography-A Welfarwe Approach, Arnold Heinemann, London.
16. Izhar,N. (2004). Geography and Health; A study in Medical Geography, Saujanya Books, Delhi.
17. Peter,A. and Hazen,H. (2011). An Introduction to the Geography of Health, Routledge, New York.
15. Smith, D.M. (1973).The geography of social well-being in the United States: An introduction to territorial social indicators,McGraw-Hill.
18. Takehito,T. (ed.) (2003). Health Cities and Urban Policy Research, Routledge, New York.
19. Wilbert, M.G. & Robin, A.K. (2001). Culture/ Place/ Health, Routledge, New York.
20. http://en.wikipedia.org/wiki/Health_geography
21. http://www.esri.com/industries/health/geomedicine/index.html

PRACTICAL-VII (GGM-123)

GEOGRAPHICAL INFORMATION SYSTEM AND GPS

Credits: 2

UNIT-I GIS SOFTWARE & DATA HANDLING

User interface with GIS software: Arc View, Geo- media, ILWIS and Arc GIS; Software and hardware interface and limitations; Data input: spatial and non-spatial; Scanning and Digitizing; Data import and export.

UNIT-II DATA TRANSFORMATION

Data editing and cleaning; Projection and datum; Coordinate transformation; Geo-referencing; linking spatial and no-spatial data; Data base creation; Attribute handling.

UNIT-III DATA BASE CREATION & DATA ANALYSIS

Spatial analysis: overlay, buffer and proximity, network analysis; Creation of digital elevation models (DEM): contours and spot heights; Determination of slope, aspect and hill shading; Data interpolation: point and line data; Output generation and layouts.

UNIT-IV- GLOBAL POSITIONING SYSTEM

User interface with global positioning receivers; Mobile mapping: collection of ground control points using hand held GPS receiver; transferring data from GPS receiver to PC.

BOOKS:

1. Lo C. P. & Yeung A. K. W., (2004). Concepts and Techniques of GIS, Prentice-Hall of India, New Delhi.
2. Heywood I, Cornelius S, Carver S. (2000). Introduction to GIS. Addison Wesley Longman, New York.
3. Burrough P.A. and Rachael A. McDonnell. Principles of Geographic Information Systems, 2nd Ed.
4. Masood A S, (2006). Introduction to GIS, Sharda Pustak Bhavan Allahabad.
5. Fazal. S. & Rahman A (2007). GIS Terminology, New Age International Publishers, New Delhi.
6. Fazal.S. (2008). GIS Basics, New Age International Publishers, New Delhi.
7. Leick A. (1995) GPS Satellite Surveying, 2nd Edition, John Wiley and Sons.
8. French. G.T. Understanding the GPS: An Introduction to the Global Positioning System.

		Credits
VIII.	**PROJECT (GGM -124)**	**2**
IX.	**DIP Training (GGM-125)**	**2**