P. G. AND RESEARCH DEPARTMENT OF GEOGRAPHY

M.Sc. G E O G R A P H Y
SYLLABUS

Under CBCS system

2015 - 2016 onwards

GOVERNMENT ARTS COLLEGE (AUTONOMOUS)
(Accredited by NAAC with 'A' Grade)

COIMBATORE - 641018

Govt. Arts College (Autonomous), Coimbatore
P.G. and Research Department of Geography

Comprehensive List of Papers for M.Sc., Geography for 2015-16 Board of Study

SUB.CODE	TITLE OF THE PAPER	Hours	CIA	EIA		Total Marks	Credit
				Total Marks	Min. Passing		
SEMESTER - I							
	Paper 1: Applied Geomorphology	6	25	75	38	100	5
	Paper 2: Applied Climatology	6	25	75	38	100	5
	Paper 3: Advanced Cartography	6	25	75	38	100	5
	Paper 4: Environmental studies and Management	6	25	75	38	100	5
	Practical – I: Techniques of Terrain Mapping	3	-	-	-	-	-
	Practical-II: Mapping of Qualitative and Quantitative Data	3	-	-	-	-	-
Total		30				400	20
SEMESTER - II							
	Paper 5: Urban Geography	6	25	75	38	100	5
	Paper 6: Concepts and Trends in Geography	6	25	75	38	100	5
	Paper 7: Statistical Methods in Geography	6	25	75	38	100	5
	Elective -1: Remote Sensing & its Applications in Geography	4	25	75	38	100	2
	Practical – I: Techniques of Terrain Mapping	4	40	60	30	100	5
	Practical-II: Mapping of Qualitative and Quantitative Data	4	40	60	30	100	5
Total		30				600	27

SEMESTER - III							
	Paper 8: Geography of Population	6	25	75	38	100	5
	Paper 9: Agricultural Geography	6	25	75	38	100	5
	Paper 10: Research Methodology in Geography	6	25	75	38	100	5
	Elective – 2: GIS and Its Applications	4	25	75	38	100	2
	Practical –III: Digital Surveying and Mapping	4	40	60	30	-	-
	Practical –IV: Map Analysis and Image Interpretation	4	40	60	30	-	-
Total		30				400	17
SEMESTER - IV							
	Paper 11: Regional Planning and Development	5	25	75	38	100	5
	Paper 12: Geography of India	5	25	75	38	100	5
	Elective – 3: GPS and its Applications	4	25	75	38	100	2
	Practical –III: Digital Surveying and Mapping	6	40	60	30	100	5
	Practical –IV: Map Analysis and Image Interpretation	6	40	60	30	100	5
	Project and viva-voce	4	20	80	40	100	4
Total		30				600	26
GRAND TOTAL MARKS / CREDITS		**120**				**2000**	**90**

Subject	**Part**	**No. of Papers**	**Credit Points**	**Total Credit**	**Total marks**
Core/Practicals	A	12 + 4 = 16	5	80	1600
Project and Viva-voce	A	1	4	4	100
Elective/Soft Skills	B	3	2	6	300
TOTAL MARKS/ CREDITS		**20**		**90**	**2000**

SEMESTER – I

PAPER –1 **Sub. Code:**

APPLIED GEOMORPHOLOGY

Unit I

Nature and Scope of Geomorphology, Fundamental concepts – Uniformitarianism - Geological Time Scale.

Unit II

Internal Processes: Isostatic balance - Continental Drift - Sea floor Spreading - Plate Tectonics: Margins, Seismicity and Volcanism.

Unit III

External Processes: Erosional, Transportational and Depositional Land Forms: Fluvial, Glacial, Aeolian, Coastal and Karst – Weathering: Types - Mass movement - Soil formation.

Unit IV

Conceptual Development in Geomorphology: Cycle of Erosion: W.M. Davis and Penck - Slope Development Theories: W.M. Davis, Penk, L.C. King and Wood - Morphogenetic Regions.

Unit V

Applied Geomorphology: Meaning - Application in Mineral Exploration – Hydrology - Engineering and Landuse planning.

References:

1. Thornbury, W.D., (1984). Principles of Geomorphology, John Wiley and Sons, New York.
2. Strahler, A.N. and Strahler A.H., (1992). Modern Physical Geography, John and Wiley Sons, New York.
3. Dayal, P., (1995). Text Book of Geomorphology, Shukla Book Depot, Patna.
4. Savindra Singh, (2002). Geomorphology, Prayag Pustak Bhawan, Allahabad.
5. Das Gupta, A and Kapoor, A.N., (2001). Principles of Physical Geography, S.C. Chand & Company Ltd, New Delhi.
6. Sharma, V.K., (1986). Earth Surface Process and forms, Tata McGraw Hill Publishing Company Ltd, New Delhi.
7. Bloom, Arthur L. (1998), Geomorphology, Pearson Education Pvt.Ltd. Singapore.

SEMESTER – I

PAPER –2 **Sub. Code:**

APPLIED CLIMATOLOGY

Unit I

Applied Climatology**:** Meaning, Nature and Scope - Relation with Meteorology - Composition and Structure of Atmosphere - Temperature: Horizontal and Vertical distribution - Heat Balance.

Unit II

Atmospheric Pressure: Distribution, General Circulation of Atmosphere – Planetary winds – Seasonal winds - Local winds and Jet streams - Atmospheric Humidity - Evaporation – Condensation and Precipitation.

Unit III

Atmospheric Disturbances: Cyclones and Anti-cyclones – Tornadoes - Ocean and Atmospheric interaction: El Nino, Southern Oscillation (ENSO) and La Nina impacts.

Unit IV

Monsoon: Mechanism, Significance, Impact and Recent ideas - Climatic Classification: Koppen and Thornthwaite.

Unit V

Applied Climatology**:** Agro-climatology - Human Comfort Zone – Urban climate - Micro climate – Weather Stations: Role and functions of Indian Meteorological Department (IMD) - Meteorological Satellites: Weather forecasting and other applications.

References:

1. Lal, D.S., (1990). Climatology, Chatianya Publishing House, Allahabad.
2. Tewartha, G.T., (1980). Introduction to Climate, Tata McGraw Hill, New York.
3. Critch field, H.J., (1987). General Climatology, Prentice Hall of India Pvt. Ltd, New Delhi.
4. Siddhartha, K., (2005). Atmosphere, Weather and Climate, Kisalaya Publications Pvt. Ltd., New Delhi.
5. Richmond W. Longley (1970). Elements of Meteorology, John Willey & sons inc, New York.
6. Savindra Singh, (2002). Physical Geography, Prayag Pustak Bhawan, Allahabad.

SEMESTER – I

PAPER –3 **Sub. Code:**

ADVANCED CARTOGRAPHY

Unit I

The Earth: shape, Size, areas and the great circles – Co-ordinates system: plane and spherical, latitude and longitude, direction and distance - Concept of base map**.**

Unit II

Basics of map making: Determination of scale- Generalization, elements, Controls, Simplification, Symbolization: Kind of symbols: Point, line, area. Volume, Size, location, and direction of symbols - Theory of visual perception.

Unit III

Mapping of Quantitative and Qualitative data - Selection of class intervals - choropleth and isopleths maps - Map projections: Merits and demerits of cylindrical, Conical and Zenithal - Projection suitable for maps of India.

Unit IV

Map compilation: Compilation process - Design planning: Color Theory and Models - Pattern and creation - Lettering and Typography: Functions, Lettering style, size, and types - Nature of typography, lettering the map topography.

Unit V

Applied Cartography: Aerial photos and satellite data. Generating cartographic data - Computer Cartography - Cartography and GIS. Digital Terrain Models: TIN and DEM, Terrain visualization.

References:

1. Misra, R.P. and Ramesh, A., (2002), Fundamentals of Cartography, Concept Publication Company, New Delhi.
2. Robinson, A.H., (1984), Elements of Cartography, John Wiley, London.
3. Monkhouse, F.J. and Wilkinson, H.R., (1989), Maps and Diagrams, B.I.Publications, New Delhi.
4. Sethu Rakkayi, S., (2014), Puvippadaviyal oor arimugam, Sree Meenakshi Offsets, Madurai.
5. Keates, J. S., (1982), Understanding Maps, Longman, London and New York.
6. Erwin Raiz, (1948), General Cartography, McGraw Hill Company., New York.
7. Lawrence, G.R.P., (1979), Cartographic Methods, Methuen, London.

SEMESTER – I

PAPER –4 **Sub. Code:**

ENVIRONMENTAL STUDIES AND MANAGEMENT

Unit –I

Environmental studies: Nature and Scope – Role of Geography – Man and Environment relationship – Changing nature of the Concepts: Determinism – Possibilism – Neo- Determinism.

Unit –II

Ecosystem: Concepts - Structure – Classification – Functions – Biomes – Food Web – Food Pyramid – Nutrient Cycles – Natural disruptions of the Ecosystem – Natural Hazards: floods and drought - Human interferences: Population growth and its impact.

Unit –III

Man's modification of the Biosphere – Agriculture – Green Revolution – HYV, Bio-Fertilizers, Pesticides and Insecticides – Man's impact on land, mining, soils and coastal areas.

Unit –IV

Human Settlements and Environment - Industrial Environment – Emerging Environmental Degradation and Issues – Environment and Health - Disaster management: Types - Components.

Unit –V

Eco-crisis – Environmental Management and Planning – Environmental Quality – Environmental Law and Protection - Environmental Impact Assessment (EIA) - Need for inter-disciplinary approaches.

References:

1. Odum .E.P. (1971), Fundamental of Ecology, W.B.Sunders Co, Philadelphia.
2. Peter Hagett (2001), Geography - A.Modern Synthesis, Prentice Hall, London
3. Savindra Singh (1991), Environmental Geography, Kalyan Publications, New Delhi.
4. Paul R. Ehrlich, Anne H. Ehrlich, and John P. Holdren (1977), Ecoscience: Population, Resources, Environment, Edition3, W. H. Freeman Publishers.
5. Batel, B. (1980) Management of Environment, Wiby Eastern Ltd., New Delhi.
6. Centre for Science & Environment: The State of India Environment, A Citizen's Report 1982, 1985, New Delhi.

SEMESTER – II

PAPER –5 **Sub. Code:**

URBAN GEOGRAPHY

Unit –I

Urban Geography: Nature, Scope and Development – Origin and Evolution of Towns - Urbanization: Factors of urban growth – World urbanization – Trends of urbanization in India.

Unit –II

Urban Morphology: Basic and non-basic functions – Functional classification of towns - Urban landuse: Types – CBD and its characteristics - Primate City - Social area analysis.

Unit –III

Theories and Models: Classical – Burgess, Homer Hoyt, Harris and Ullman – Central Place Theory: Christaller and Losch – Rank Size Rule – Gravity Model – Gradient Models.

Unit –IV

Urban Expansion: Vertical and Horizontal – Urban Sprawl – Rural-urban fringe – Suburbs – Concept of satellite town – Conurbation - City region – Umland.

Unit –V

Urban Problems: Slums, Poverty, Crime, Pollution, Water Supply and Transport - Urban Planning: Policies – Town Planning – Master Plan.

References:

1. Mandal R.B (2009), Urban Geography: A Text Book; Concept Publishing Co., New Delhi.
2. Siddhartha K, (2013), Cities, Urbanisation and Urban Systems, kisalaya publication Pvt. Ltd New Delhi.
3. Ramachandran .R (1989), Urbanization and Urban Systems in India, Oxford University Press, Delhi.
4. Majid Hussain (1999), Human Geography, Rawat Publications, Jaipur.
5. Nath .V (2007), Urbanisation, Urban Development and Metropolitan Cities in India, Concept Publishing Co. New Delhi.
6. Singh .R .L, (1994), Geography of Settlements, Rawat Publications, New Delhi.
7. Perpillou, (1967, Human Geography, A.V.H.G. Longman, London.
8. Bala, Raj (1986), Urbanisation in India, Rawat Publishers, Jaipur.
9. Vasant Kumar Bawa (1985), Indian Metropolis, Urbanization Planning and Management, Inter – India Publication, New Delhi.
10. Pacione, Michael (2001), Urban Geography - A Global Perspective, Routedge, London.
11. Kundu, A (1992), Urban Development and Urban Research in India, Khanna Publication, New Delhi.

SEMESTER – II

PAPER –6 **Sub. Code:**

CONCEPTS AND TRENDS IN GEOGRAPHY

UNIT I

The Field of Geography: Nature – Branches - Approaches - Development of Geographical Thought: Classical period - Medieval Period: Greeks, Romans, Arabs and Chinese.

UNIT II

Modern Schools of Geographical Thought: German, British, French, American and Soviet - Foundations of Scientific Geography - Founders of Modern Geographical Thought – Alexander Von Humboldt, Carl Ritter, Ratzel, Vidal de la Blache, Jean Brunhes, Mackinder, W. M. Davis and E.C. Semple - Impact of Darwinism.

UNIT III

Four traditions in Geography – Man, Land, Area studies, Spatial and Earth Science traditions – Dualism and Dichotomies in Geography: Determinism Vs Possibilism, Physical Vs Human - Paradigms in Geography.

UNIT IV

Quantitative Revolution – Concept – Hypothesis - Laws, Theories and Models in Geography – Description and Explanation - Systems Approach and Analysis – Inductive and Deductive Approaches.

UNIT V

Recent Trends in Geography: Welfare Geography - Human Ecology - Sustainable Development – Geo-informatics - Data Explosion - Online Resources.

References:

1. Adhikari .S (1992), Geographical Thought, Chiatanya Publishing House, Allahabad.
2. Aeils Holt Jensen (2009), Geography, History and Concepts: A student's guide, Sage.
3. Hussain .M (2007), Evolution of Geographical Thought, Rawat Publications, Jaipur.
4. Rana .L (2008), Geographical Thought: A systematic record of Evolution, Concept Publication, New Delhi.
5. Dikshit .R .D (2006), Geographical Thought – A contextual Hisotry of Ideas, Prentice Hall of India.
6. Dickinson .R .E (1969), The Makers of Modern Geogaphy, Routeldge and Kegal Paul, London.
7. Richard Peet (2003), Radical Geography, Rawat Publications, Jaipur.
8. George Henderson ed. (2009), Geographic Thought, A Praxis Perspective, Routledge.

SEMESTER – II

PAPER –7 **Sub. Code:**

STATISTICAL METHODS IN GEOGRAPHY

Unit I

Defining Statistical Geography and academic lineage – Geography and statistical techniques – Model building – Measurement scales in Geography.

Unit II

Numerical data in Geography: Frequency distribution and curve – Central tendency measures: Mean, Median and Mode – Measures of dispersion – Variance and standard deviation – Measures of skewness and kurtosis.

Unit III

Probabilistic treatment: Normal distribution – Binominal distribution – Poisson distribution – Spatial statistics: Analysis of location pattern: Mean, Median and Modal center – Standard distance deviation – Nearest neighbour analysis.

Unit IV

Parametric statistics: Sampling and sampling plan - Sampling estimates for large and small sized samples -Null hypothesis – Student 'T' test – Analysis of variance – 'F' distribution - Non parametric statistics: Chi square test – Spearmen rank correlation.

Unit V

Regression analysis: Product moment correlation – Linear regression – Spatial correlation analysis – Linear multiple regression and correlation – Curve fitting and multiple regression.

Reference:

1. Saroj k. pal, (2010) statistics for geosceintists-techniques and applications, concept publishing company, New Delhi.
2. S.P. Gupta, elementary statistical methods- sultan chand & sons, educational publishers, New Delhi.
3. R Hammond and P McCullagh. 1978. Quantitative Techniques in Geography: An Introduction (second edition), Oxford University Press
4. Cole, John P. and Cuchlaine a. M. King (1968): Quantitative Geography, Techniques and Theories in Geography, John Wiley and Sons Ltd., London.
5. Taylor, Peter J. (1977): Quantitative Methods in Geography, An Introduction to Spatial Analysis. Hougton Miffin Company, Boston, USA.
6. Robinson A.H. (1984) - Elements of Cartography, John Wiley, London.
7. Misra R.P & Ramesh A. (2002) - Fundamentals of Cartography, Concept Publication Company, New Delhi.

SEMESTER – II

ELECTIVE – 1 **Sub. Code:**

REMOTE SENSING AND ITS APPLICATIONS IN GEOGRAPHY

Unit –I

Basic Concepts – History – Electromagnetic Spectrum – Radiation Principles – Energy interaction in Earth and Atmosphere – Ideal Remote Sensing - Platforms.

Unit –II

Aerial Remote Sensing: Aerial photographs: Classifications based on Camera, Film and Orientation – Determining photo scale – Stereo model - Flight planning - Marginal information – Interpretation keys.

Unit –III

Satellite Remote Sensing: Types of satellite, Orbits and Sensors – Types of Resolutions - Resolutions aspects of LANDSAT, SPOT, IRS and IKONOS - Recent satellite programmes – Marginal information and Interpretation – Applications of Microwave and Thermal Remote Sensing.

Unit –IV

Image processing: Pixel – Preprocessing: Rectification and Enhancements – Manipulation - Classification methods: Supervised and Unsupervised - Ground truth verification – Accuracy assessment.

Unit –V

Applications of Remote Sensing in Geography: Geomorphology, Landuse and land cover, Agriculture, Water resources, Urban planning and Environmental Assessment.

References:

1. Lillesand, T.M. and Ralph W. Keifer (2002), Remote Sensing and Image Interpretation, John Wiley & Sons, Inc., New York.
2. Sabins, Jr. (1978), Remote Sensing: Principles and Interpretation, Freeman and Co, Sanfrancisco.
3. Curran, P.J., (1985), Principles of Remote sensing, English Language Book Society Longmans, London.
4. Kumar, S., (2003), Basics of Remote Sensing and GIS, Laxmi Publications, New Delhi.
5. Chanrda, A.M. and S.K. Ghosh (2006), Remote Sensing and Geographical Information System, Narosa Publishing House, New Delhi.
6. Joseph, George (2003), Fundamental of Remote Sensing, University's Press (India) Pvt. Ltd., Hyderabad.
7. Panda, B.C., (2005), Remote Sensing: Principles and Applications, Viva Books Pvt. Ltd., New Delhi.
8. Singh Surendra and A.N. Patel (1999), Principles of Remote Sensing, Scientific Publishers (India), Jodhpur.

SEMESTER – I & II

PRACTICAL –I **Sub. Code:**

TECHNIQUES OF TERRAIN MAPPING

Unit – I

Representing Relief: Profiles: Simple, Serial, Super-imposed, Projected and Composite profiles.

Unit – II

Slope Analysis: Wentworth – Smith and Robinson methods.

Unit – III

Drawing of altimetric frequency curve – Hypsographic – Clinographic curve.

Unit – IV

Drainage Basin Analysis: Drainage Morphometry – Linear – Aerial – Relief - Streams Orders – Bifurcation Ratio – Drainage Density and Shape of the Basin – Thalwag.

References:

1. Monkhouse, F.J. and Wilkinson, H.R., (1989), Maps and Diagrams, B.I.Publications, New Delhi.
2. Sethu Rakkayi, S., (2014), Puvippadaviyal Oor Arimugam, Sree Meenakshi Offsets, Madurai.
3. Singh, R. L., (2005), Elements of Practical Geography, Kalyani Publishers, New Delhi.
4. Gopal singh, (1996), Map Work and Practical Geography, Vikas Publishing House Pvt.Ltd.,
5. Khullar, (1997), Practical Geography, Educational Publishers, New Delhi.
6. Zulfequar Ahmad Khan, M. D., (1998), Text Book of Practical Geography, Concept Publishing Company, New Delhi.
7. Pijushkanti Saha and Partha Basu, (2010), Advanced Practical Geography, Books and Allied Pvt. Ltd, Kolkata.

SEMESTER – I & II

PRACTICAL –II **Sub. Code:**

MAPPING OF QUALITATIVE AND QUANTITATIVE DATA

Unit –I

Data: Sources and Types – Sampling: Systematic, Stratified and Random (Point- Line - Area sampling).

Unit –II

Preparations and Interpretation of Graphs: Simple, Semi log – Log log - Triangular – Lorenz curve - Distribution maps – Located bar, Circle and Spheres.

Unit –III

Drawing and Interpretation of Maps: Isopleths – Choropleth - Dasymetric – Chrochromatic and Chroschematic - Flow map.

Unit –IV

Mapping of Agricultural Data: Crop concentration and Diversification: Ranking of crops: Bhatia – Gibbs. Crop Combination: Weaver, Doi's, Rafiullh.

References:

1. Monkhouse, F.J. and Wilkinson, H.R., (1989), Maps and Diagrams, B.I.Publications, New Delhi.
2. Sethu Rakkayi, S., (2014), Puvippadaviyal oor arimugam, Sree Meenakshi Offsets, Madurai.
3. Singh, R. L., (2005), Elements of Practical Geography, Kalyani Publishers, New Delhi.
4. Gopal singh, (1996), Map work and practical geography, Vikas Publishing House Pvt.Ltd.,
5. Khullar, (1997), Practical Geography, Educational Publishers, New Delhi.
6. Zulfequar Ahmad Khan, M. D., (1998), Text Book of Practical Geography, Concept Publishing Company, New Delhi.
7. Pijushkanti Saha and Partha Basu, (2010), Advanced Practical Geography, Books and Allied Pvt. Ltd, Kolkata.

SEMESTER – III

PAPER –8 **Sub. Code:**

GEOGRAPHY OF POPULATION

Unit –I

Population Geography: Scope and Development – Sources of Population Data: Census, Registers and Sample Survey.

Unit –II

Population Distribution, Density and Growth – Theoretical issues: Classical and Modern Theories in Population Growth – Malthus, Optimum Theory, Ricardo and Demographic Transition. - World Patterns and their Determinants – India: Population Distribution, Density and Growth Profile.

Unit –III

Population Composition: Age and Gender - Family and Households - Literacy and Education – Religion and Caste - Rural and Urban - Occupational Structure - Gender Issues - Population Composition of India.

Unit –IV

Population Dynamics: Measurements of Fertility and Mortality - Migration: Types, Causes and Consequences – National and International Patterns.

Unit –V

Population and Development: Population Polices in developed and less developed countries - Human Development Index (HDI) and its components - India's population polices - Population and Environment - Implications for the future.

References:

1. Beaujeau Garnier .J (1966), Geography of Population, Longman Group, London.
2. B.N.Ghosh (1985), Fundamentals of population geography, sterling publishing, New Delhi.
3. Chandha, R.C (1986), A Geography of population, Concepts, patterns, Kalyani publishers, New Delhi.
4. A Geography of Population, World patterns, John Wiley & sons. New York.
5. Kayastha, S.L., (1998), Geography of Population, Rawat Publications,Jaipur.
6. William F.Hornby and Melvyn Jones, (1990), An Introduction to Population Geography, Cambridge University Press, Cambridge.
7. Clerk, I, (1984), Geography of Population, Approaches and Applications, Pergamon Press, Oxford, UK.

SEMESTER – III

PAPER –9 **Sub. Code:**

AGRICULTURAL GEOGRAPHY

Unit –I

Agricultural Geography: Scope and Content – Approaches – Origin and Development of Agriculture – Major Agricultural Systems of the World (Whittlessey).

Unit –II

Determinants of Agriculture: Physical, Socio-economic, Institutional and Technological - Models: Von Thunen's and Jonson's model.

Unit –III

Agricultural Data Sources and Analysis: Sources – Types of Data – Landuse Surveys: USGS, NRSC and Nine fold - Sampling and Landuse data.

Unit –IV

Agricultural Regionalization: Crop Combination: Weaver, Doi and Rafiullah – Crop Concentration - Crop Diversification – Agricultural Productivity – Degree of Commercialization – Patterns of Crop Rotation.

Unit –V

Land Capability: Classification – Green Revolution: Salient features and impact on Landuse – Need for second Green Revolution – Crop Calendar - Agricultural Regions of India.

References:

1. Hussian.M., (1996), Systematic Agricultural Geography, Rawat publication, New Delhi.
2. Jasbir Singh and Dhillon S.S.(2004), Agricultural Geography, Tata Mc Graw-Hill Publishing Company Ltd, New Delhi.
3. Mohamad Shafi, (2006), Agricultural Geography, Dorling Kinerlay (India) Pvt. Ltd. New Delhi.
4. Negi. B.S., (1998), Agricultural Geography, Kedar Nath Ram Nath, Meerut.
5. Mohamad,(1981), Perspective Agricultural Geography, Vol. Concepts Publishing Company, New Delhi.
6. Morgan, W.B. & Munton R.J,C., (1971), Agricultural Geography, Methuen, London.
7. David Grigg., (1984), An introduction to Agricultural Geography, Hutchinson, London.

SEMESTER – III

PAPER –10 **Sub. Code:**

RESEARCH METHODOLOGY IN GEOGRAPHY

Unit – I

Research: Meaning, Objectives and Significance – Research and Scientific Method – Types and Methods of Research.

Unit – II

Planning of Research: Selection of the Problem – Hypothesis: Types - Testing of Hypothesis - Logic in Research: Facts, Themes, Concepts, Theories and their implications in Geographical Research.

Unit – III

Research Design: Meaning, Need, Importance and Features of design – Important concepts - Review of Literature – Sampling: Types and Techniques – Methods of Data Collection: Tools for Data Collection – Field Work.

UNIT – IV

Process of Data: Preparation- Editing – Coding – Tabulation – Classification – Graphs and Diagrams – Statistical Analysis.

Unit – V

Report Writing: Types and Planning - Organization of the Thesis: Preliminaries, Text and Reference Materials – Foot notes and Bibliography - Drafting of thesis and Final evaluation – Preparation of Abstract, Research Papers and Project Proposals - Time Schedule – Role of Computer in research.

References:

1. Kothari C.R. (1990), Research Methodology: Methods and Techniques, Wishwa Prakasan Pvt. Ltd., New Delhi.
2. Krishnaswamy O.R. (1993), Methodology of Research in Social Sciences, Himalaya Publishing House, Mumbai.
3. Basotia G.R. & Sharma K.K. (2002), Research Methodology, Mangal Deep Publications, Jaipur
4. John A. Mathews (1981), Quantitative and statistical approaches to Geography, Pregamon Press, Oxford.
5. Drwajma khan (1998), Quantitative methods in Geographical research, Concept Publications, New Delhi.
6. Harvey, David (1969), Explanation in Geography, Edward Arnold, London.
7. Dey, Ian (1993), Quantitative Data Analysis, Routledge, London
8. Scale, Clive (ed.) (2008), Social Research Methods, Routledge (India Edition), London.
9. Somekh, Bridget and Cathy Lewin (eds.) (2005), Research Methods in the Social Sciences, Vistaar Publications, New Delhi.

SEMESTER – III

ELECTIVE – 2 **Sub. Code:**

GIS AND ITS APPLICATIONS

UNIT – I

GIS: Definition –History and Development - Maps and Spatial Information - Computer Assisted Mapping - Components – Data Types - Thematic characteristics of Spatial Data - Sources of Spatial Data.

UNIT – II

Spatial and Attribute Data: Spatial entities - Raster and Vector data model and structures - Raster and Vector approach to Digital Terrain Modeling (DTM) – Modeling third and fourth dimensions – RDBMS – Problems - Integrating spatial and attribute data.

UNIT – III

Data Input and Editing: Data Input – Data Editing: Methods of correcting errors in Attribute and Spatial data - Data analysis: Measurements of Length, Perimeter and Area - Queries – Reclassification - Buffering and Neighbourhood functions.

UNIT – IV

Overlay: Raster and Vector - Problems - Spatial Interpolation – Surface Analysis - Network Analysis - GIS Output: Maps as output - Spatial Multimedia - Delivery Mechanism - Map as Decision Tool.

UNIT – V

Applications: Agriculture, Environment, Forestry, Emergency Services, Health, Regional and Local Planning, Transport and Tourism.

References:

1. Ian Heywood, 2009), An Introduction to Geographical Information System, Pearson Education Pvt. Ltd., New Delhi.
2. Peter, A. Burrough Rachael, A. and McDonnell, (1998), Principles of Geographical Information Systems, Oxford University Press Inc., New York.
3. LO, C.P., Albert K.W.Yeung, (2007), Concepts and Techniques of Geographic Information Systems, Prentice-Hall of India, New Delhi.
4. Anji Reddy, M., (2004), Geoinformatics for Environmental Management, BS Publications, Hyderabad.
5. Kang-tsung Chang, (2006), Introduction to Geographic Information systems, Tata McGraw –Hill Publishing Company Limited, New Delhi.
6. Kumar, S., (2003), Basics of Remote sensing and GIS, Laxmi publications, New Delhi.
7. Chang, Kang-tsung (2002), Introduction to Geographic Information Systems, Tata McGraw Hills Publishing Company Ltd, New Delhi.
8. Siddique, M.A. (2006), Introduction to Geographical Information Systems, Sharda Pustak Bhawan, Allahabad.

SEMESTER – IV

PAPER –11 **Sub. Code:**

REGIONAL PLANNING AND DEVELOPMENT

Unit –I

Regional Planning: Meaning, Scope and Content – Planning Regions: Formal and Functional – Planning Types – Approaches to Regional Planning – Delineation of Regions in India: Physical and Economic.

Unit –II

Planning: Constituents and Objectives – Urban and Rural Planning – Planning Process – Criticism of Planning – Role of District, Block and Local Planning.

Unit –III

Regional Analysis: Concepts, Methods and Techniques – Input-Output Analysis – Theories of Industrial Location, Center Pole and Growth Pole.

Unit –IV

Regional Imbalances and Inequalities: Pre and Post Independence periods – Ashoka Mitra Study – Process of Urbanization – Regional Planning in Agriculture.

Unit –V

Development of Backward Areas: Identification, Measures Adopted – Rural Industrial Project – NABARD – NCDBA – CADA – Centre State Resource Transfer – Planning for Tribal Development – Directions of Regional Policy.

Reference :

1. Chand, M and V.K. Puri (1985), Regional Planning in India, Allied Pub. Pvt. Ltd. New Delhi.
2. Misra .R.P. (1971), Regional Planning: Concepts Techniques. Politics and case studies. University Mysore, Mysore.
3. Misra .R.P., Sundram, K.V. and V.L.S Prakasa Rao (1974), Regional development in India, Vikas publishing House, New Delhi.
4. Prakasa Rao V.L.S. (1963), Regional planning, Asia publishing House, Kolkatta. Glasson John, (1974) : An Introduction to Regional Planning, Hutchinson, London
5. Hall Peter, (1974), Urban and Regional Planning, Penguin, London.
6. Kukhinski A.R. ed. (1972), Growth poles and Growth centers in Regional Planning - Mouton, Paris, The Hague.
7. Bhatt, L.S. (1972), Regional Planning in India, Statistical Publishing Society, Calcutta.
8. Bhatt, L.S. et. al. (ends) (1982) Regional Inequalities in India, Society for the study Regional Disparities, New Delhi.
9. Blunder. J. et. al. (1973), Regional Analysis and Development, Harper & Row, London.
10. Chandna, R.C. (2000), Regional Planning- A Comprehensive Text, Kalyani Publishers, Ludhiana.

SEMESTER – IV

PAPER –12 **Sub. Code:**

GEOGRAPHY OF INDIA

Unit – I

Physical Setting: Location, Major Physiographic Divisions – Climate: Seasons, Indian Monsoon, Soil Types and Distribution – Drainage Systems and Irrigation types – Multi-purpose projects - Natural Vegetation.

Unit – II

Agriculture Resources: Food Crops: Rice and Wheat - Cash Crops: Sugarcane and Tobacco - Plantation Crops: Tea, Coffee - Fibre Crops: Cotton and Jute - Green Revolution - Animal Resources: Cattle and Sheep Rearing – White Revolution - Fisheries: Fresh and Marine Water Fishing – Blue Revolution.

Unit – III

Mineral Resources: Distribution and Production of Iron ore, Bauxite, and Mica - Energy Resources: Distribution and Production of Coal, Petroleum and Atomic Minerals - Non Conventional Energy: Solar, Wind and Tidal.

Unit – IV

Industries and Transport: Distribution and Production: Iron and steel - Cotton Textiles – Cement - Chemical and Electronic Industries – Industrial Regions of India.

Transport: Roadways – Railways - Airways and Waterways – Communication: Telecommunication - Information Technology Development.

Unit – V

Human Resources and Trade: Human Resources: Growth, Distribution and Density of Population, Population Problems - Trade: Volume and Composition of India's Foreign Trade – Role of India in SAARC and BRICKS.

References:

1. Gopal Singh, (1970), A Geography of India, Atnaram & sons, New Delhi.
2. Khullar, D. R., (2010), India – A Comprehensive Geography, Kalyani Publishers, New Delhi.
3. Majid Hussain (2008), Geography of India, Tata McGraw Hill Publishing company Ltd., New Delhi.
4. Pal, Saroj K. (2003), Physical Geography of India – A study in Regional Earth Sciences, Orient Longman Pvt. Ltd. Kolkata.
5. Singh, R.L., (1977), India - A Regional Geography, NGSI, Varanasi.
6. Sharma, T.C., (2003), India – An Economic & Commercial Geography, Vikas Publishing House Pvt. Ltd., New Delhi.
7. Krishnan, M.S. (1982), Geology of India and Burma, CBS Publishers, New Delhi.
8. Mathur, S.M. (1982), Physical Geology of India, National Book Trust, India, New Delhi.

SEMESTER – III

ELECTIVE – 3 **Sub. Code:**

GNSS AND ITS APPILCATIONS

UNIT – I

GNSS: History - Advantages and Limitations – Segments: Control - Space and User - Geo Positioning: Point - Relative - Static – Kinematics - Uses of GNSS.

UNIT – II

GNSS Systems: NAVSTAR - GLONAAS – GALILEO - Beidou – QZSS - IRNSS - GNSS receivers based on: Data type and yield – Realization of channels – Signal structure: Course Acquisition (Code) - Carrier ranging and Navigational message.

UNIT – III

Basic modes of GNSS Surveying: Differential GNSS Surveying: Post Processed: Static, Rapid Static, Kinematic – Real Time: Using radio, Beacon Signals, Satellite based Augmentation System - Data Transfer and Data Processing.

UNIT – IV

Sources of Error: Selective availability – Anti-spoofing - Satellite and Receiver Clock Error - Ionospheric and Atmospheric delays – Multipath – Dilution of Precision (DOP): Horizontal, Vertical, Positional and Geometry - Error Correction – Location of GPS receiver - Distance between Base station and Rover receiver – Signal to Noise ratio – Occupation time at a point.

UNIT - V

Applications: Precision farming – Fishing – Environment – Forestry - Siting and Routing - Surveying - Navigational applications – Vehicle tracking – Simultaneous GNSS - Mobile computing - Military applications – Recreational applications.

References:

1. Satheesh Gopi (2005), Global Positioning System Principles and Applications, Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. Ganesh, A. and Narayanakumar, R. (2006), GPS Principles and Applications, Satish Serial Publishing House, New Delhi.
3. Hofmann-Wellwnhof B. Lichtenegger, H. and Collins, J. (2007), GPS theory and Practice, Spinger (India) Private Limited, New Delhi.
4. Michael Kennedy (2002),The Global Positioning System and GIS: An Introduction, Taylor and Francis Inc., New York.
5. Leick Alfred (2004), GPS Satellite Surveying, Third Edition, John Wiley & Sons, Inc., Hoboken, New Jersey.

SEMESTER – III & IV

PRACTICAL –III **Sub. Code:**

GNSS SURVEY AND GIS

Unit –I

GNSS Survey: Principles and Components - Data Collection: Point – Line – Area – Integration with GIS data.

Unit –II

GIS: Survey: Scanning – Digitization – Geo-reference – Database Creation – Attribute Editing.

UNIT – III

Interpolation – Buffer – Overlay Analysis – Creation of Elevation Models.

UNIT – IV

Field study – Field trip / Field excursions for minimum 1 week is mandatory and report to be submitted.

Reference:

1. Monkhouse, F. J. and Wilkinson, H. R. (1976), Maps and Diagrams, Methuen and Co., London.
2. Hammond, R. and McCullagh, P. (1978), Quantitative Techniques in Geography: An Introduction (second edition), Oxford University Press.
3. Pijushkanti Saha and Partha Basu, (2010), Advanced Practical Geography, Books and Allied (P) Ltd, Kolkata.
4. Lillesend, T.M. and Kiefer, R.W., (1979), Remote Sensing and Image Interpretation, John Wiley and sons, New York.
5. Sabins, Jr. (1978), Remote Sensing: Principles and Interpretation, Freeman and Co, Sanfrancisco.
6. Curran, P.J., (1985), Principles of Remote sensing, English Language book society Longmans, London.
7. Anji Reddy, M., (2004), Geoinformatics for Environmental Management, BS Publications, Hyderabad.

SEMESTER – III & IV

PRACTICAL –IV **Sub. Code:**

MAP ANALYSIS AND IMAGE INTERPRETATION

Unit –I

Toposheets: Appreciation and Interpretation of SOI, US and OS sheets – Comparison of SOI, US and OS – Interpretation of NATMO and District Planning Map.

Unit –II

Weather Map: Interpretation for Different Seasons – Cross Section and Cyclone Tracking.

Unit –III

Aerial Photo Interpretation: Stereo-Vision Test – Marginal Information – Interpretation (Physical and Cultural).

Unit –IV

Satellite Image Interpretation: Marginal Information – Visual Interpretation of Imagery (Physical and Cultural).

Reference:

1. Monkhouse, F.J. and Wilkinson, H.R., (1989), Maps and Diagrams, B.I.Publications, New Delhi.
2. Pijushkanti Saha and Partha Basu, (2010), Advanced Practical Geography, Books and Allied (P) Ltd, Kolkata.
3. Singh, R. L., (2005). Elements of Practical Geography, Kalyani Publishers, New Delhi.
4. Lillesend, T.M. and Kiefer, R.W., (1979), Remote Sensing and Image Interpretation, John Wiley and sons, New York.
5. Sabins, Jr. (1978), Remote Sensing: Principles and Interpretation, Freeman and Co, Sanfrancisco.
6. Curran, P.J., (1985), Principles of Remote sensing, English Language book society Longmans, London.

SEMESTER - IV

PROJECT AND VIVA-VOCE

A minimum of 45 pages report to be submitted

MODEL QUESTION PAPER

M.Sc., GEOGRAPHY

TIME : 3 Hours **Maximum Marks : 75**

SECTION – A **10 x 2 = 20**

Answer all questions
All answer carry equal marks

1.
2.
3.
4.
5. Two questions from each unit to be set
6.
7.
8.
9.
10.

SECTION – B **5 x 5 = 25**

Answer all questions
All answer carry equal marks
Two Questions from each unit to be set questions either a) or b) type

11. a) or
    b)

12. a) or
    b)

13. a) or
    b)

14. a) or
    b)

15. a) or
    b)

SECTION – C **3 x 10 = 30**

Answer any **THREE** questions out of **FIVE** questions given
All answer carry equal marks
One question from each unit to be set

16.

17.

18.

19.

20.