5. Courses Offered:

<table>
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<tr>
<th>Courses</th>
<th>Duration</th>
<th>Eligibility criteria</th>
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<tbody>
<tr>
<td>1. M.Sc in Geography</td>
<td>Two Years</td>
<td>B.A./B.Sc., Three Years Course</td>
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<tr>
<td>2. M.Phil in Geography</td>
<td>One Year</td>
<td>M.A./M.Sc Two Years Course</td>
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<tr>
<td>3. Ph.D in Geography</td>
<td>Three Years</td>
<td>M.A./M.Sc Two Years Course</td>
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6. Outline Syllabus of each course offered:

FIRST SEMESTER M.Sc GEOGRAPHY

PAPER 1.1 ADVANCED GEOMORPHOLOGY

1. Fundamental Concepts of Geomorphology
   - Ten Concepts of Thornberry
   - Principle of Uniformitarianism
   - Cycle concepts, Views of W.M. Davis, Penk, and others.

2. Isostasy by Prat, Airy and Bowie
   - Plate tectonics
   - Concept of Earth’s Equilibrium and Gravity Anomaly

3. Crustal Deformation Theories and Principles
   - Tetrahedron, Wegner’s Continental Drift Theory
   - Holmes Convection current Theory
   - Joly’s Radio Activity Theory
   - Daly’s Subsidence Hypothesis
   - Structural Stress, Strain, Folds and Faults, Earthquakes
   - Slope Analysis
   - Slope Elements and Facets
   - Techniques of Terrain Mapping-DEM, TIN

4. Evolution of land forms and Geomorphic process.
   - Fluvial cycle- Drainage system, topographical features in Youth, mature and old stages.
   - Glacial cycle- Theories on iceage- landforms of erosion and deposition

5. Arid cycle- regions of aridity, deseart formation and theories of their origin, landforms of erosion and deposition.
   - Karst cycle- Karst regions of the world, erosional and depositional topography, Theories regarding the origin of limestone caves.
   - Marine cycle- origin and classification of coast lines and shore lines, erosional and depositional features. Theories regarding their origin

References:
PAPER 1.2 PRINCIPLES OF REMOTE SENSING


References:
PAPER 1.3 APPLIED ECONOMIC GEOGRAPHY

1. Nature, Scope and importance of Economic Geography, Evolution of Economic Geography, approaches to economic Geography, Concept of Economy, Simple model of economy, Spatial structure of the economy, Economy and economic Geography.


3. Consumer behavior and the economy, Analysis of Consumer behavior in Space, Location of Economic Activities, Production decisions, Choice of output, technique and location, Location and allocation model, Market centers- Origin and types, Retail and whole sale, periodic and daily market.

4. Interaction: Generalization of movement between areas, Spatial and Non-Spatial factors in movement generation, Distribution of Movement:- A) Gravity model, B) Input-output Analysis C) Intervening opportunity model.

5. Economic Development: difference between growth and development, Definition, Content and meaning of development, Concept of sustainable development. Development models: Rostow’s Model, Core-periphery model, balanced growth model.

Reference:
2. Hodder Lee- Economic Geography
3. Thoms, Coakila and Yeater:- The Geography of economic
4. Nithyananda Satpathy- Sustainable Development

PAPER 1.4 PRINCIPLES OF CULTURAL GEOGRAPHY

1. Scope & Content of Cultural Geography concept of culture , Culture & Geography, themes in cultural geography (5 themes).

2. Cultural Diversities:-
   Race, Religion, Language, Ideologies & Political order.

3. Cultural Realms of the world: Concept of Cultural realm, Classification & Problems of Classification.
   A study of following realms with reference to (a) environment (b) economy (c) Demography (d) major socio-cultural factors.
   West European, Soviet, Anglo-America, Latin America & North Africa & South- West Asia.

3. Cultural Realms :( continued) South – Asia, South – East Asia, East Asia, Africa, Australia New Zealand and Pacific

5. Major Tribes of the world & India  Pygmies, Eskimos, Kirghiz, Bushmen & Aboriginal of Australia.
   North – East India, Sub – Himalayan region, Central India & South India.

References:
1. Carliev – Man & Land
2. Dikin & Pill – Introduction to Cultural Geography
3. Huntington – Main Springs of Civilization
4. Lebon – Human Geography
5. Preston E James – One world Divided
6. Rountree – Human Mosaic
8. Spencer & Thomas- Introduction to cultural geography.

PRACTICAL 1- PHOTOGRAMMETRY

1. Introduction: Introduction to Aerial Photographs. Definition, types of photographs, taking vertical photographs, Uses of Photographs, uses of photogrammetry, history of Photogrammetry

2. Familiarization with pocket stereoscope, Familiarization with mirror stereoscope, familiarization with prism stereoscope. Marginal information of aerial photos

3. Setting of Aerial Photographs – Transfer of principal points and drawing of flight line

4. Calculation of photo scale – computing photo scale using a map of known scale, computing photo scale using focal length and altitude

5. Mapping of physical and cultural details, Elements of image characterization, interpretation of images, comparison between Aerial photographs and satellite images

References:


PRACTICAL II REMOTE SENSING

INTRODUCTION TO REMOTE SENSING

1. Preparation of base map from toposheet
2. Stereo test and determination of photo scale
3. Identification of features on single vertical aerial photograph and study of given area in black and white panchromatic, black and white infrared, color and color infrared photographs
4. Orientation of stereo- model under mirror stereoscope and tracing of details from stereo pair
5. Use of parallax bar and determination of heights

STUDY OF SATELLITE IMAGE

1. Study and use of IR-thermal radiation measuring instruments and drawing of isotherms
2. Study of thermal image, interpretation of various features and interpretation of SAR data for land use studies
3. Study of ground data collection instruments radiometers and spectrometers
4. Demonstration and handling of hand held GPS receivers

DIGITAL IMAGE ANALYSIS EXERCISES

1. Image processing system
2. Displaying image data
3. Image enhancement techniques
4. Band ratioing
5. Filtering techniques
6. Principal component analysis
7. Image rectification
8. Unsupervised classification
9. Supervised classification

References:

SECOND SEMESTER

PAPER 2.1 CLIMATOLOGY AND OCEANOGRAPHY

1. Heat Budget & Heat Balance

2. General Circulation of Air
   Pressure Cell Models: Hadley, Palmen’s and Walker Cell
   Air Masses
     Origin
     Modification
Classification
   Air mass  Impact on World Climate
   Fronts
   Cyclones and Anti Cyclones
   Jet Streams
   El Nina and La Nina Impact (12)

3. Mechanism of Monsoon
   Southern Oscillation
   ITC
   Jet Stream Impact
   Summer Monsoon
   Winter Monsoon

4. Classification of World Climate
   Koppen’s Classification
   Thornthwaite’s Classification
   Climatic Change’s
   Methods of Building Paleo Climate
   Dendrochronology and Dendroclimatology
   Pollen Grain
   Sedimentation and Lithology

5. Distribution of Surface and Sub Surface Temperature
   Latitudinal Distribution of Temperature and Salinity,
   Closed and Open Sea Concept and its impact on Climate
   Ocean Currents
   Origin, Types of Ocean Currents
   Path of Ocean Currents-Indian, Pacific, Atlantic
   Oceanic Conveyor Belt and its Impact on World Climate

Reference :
2. Collings, V.K. (1987), Weather, Radar and Flood Forecasting, John Wiley & Sons,

PAPER 2.2 TRENDS IN MODERN GEOGRAPHY

1. Foundation of Geography
   a. Modern geography: German, French, American, British schools.
   b. Traditions in geography: Man-environment tradition, Spatial tradition, Regional Science tradition, Area Science tradition

2. Regional concepts and Regional methods in geography.
   a. Concept of a region
   b. Type of regions
   c. Regional approach in geography
   d. Regionalism
3. Dualism in geography:
   a. Historical vs. contemporary
   b. Physical Vs. Human
   c. General Vs Particular/ systematic vs. regional
   d. Determinism Vs possibilism
   e. Ideographic vs nomothetic
   f. Quantitative vs qualitative
   g. Inductive vs deductive

4. Revolution in Geography:
   a. Quantitative revolution
   b. Conceptual revolution: i) Space and distance ii) Spatial implications and distance decay iii) Spatial diffusion behavior and movements


References:
3. Freeman T. : Hundred years of geography
6. Wooldridge and East. W. G : The spirit and purpose of geography

PAPER 2.3 STATISTICAL GEOGRAPHY

I. Meaning and scope of statistics, importance of statistics in Geography; Nature and types of geographical data. Methods of collecting data, sample frame and procedures.

II. Frequency distribution and graphical representation of data: Cumulative frequency, Histogram, frequency polygon, ogive curves, Lorenz curve and Gini coefficient

III. Measures and central tendencies: Mean, Median, Quartiles, deciles, percentiles and Mode. Merits and demerits of various measures.


References:
PAPER 2.4 GEOGRAPHIC INFORMATION SYSTEM

1. Introduction: GIS Definitions and terminology, concepts, Geographical entities, Attributes, Topology.

2. GIS Architecture: components of GIS, GIS Workflow; Theoretical Framework; categories; levels/scales of Measurement


5. Data base models: Hierarchical database models, network system, Relational database models, Standard Query Language; Storage of GIS Data: Hybrid data model, integrated data model; Object based data models: Entity Relationship – Attribute Model; Spatio-Temporal Data: Entity – Relationship, Location-Based, Entity Based and Time-Based.

Books for Reference

PRACTICAL- I GEOGRAPHIC INFORMATION SYSTEM

1. Introduction and Overview of Geographic Information Systems

Definition of GIS, features and functions; GIS as an Information System; GIS and cartography; historical development of GIS.

2. Map Projections and Coordinate Systems

3. Data Sources, Data Input and Data Quality and Database Concepts

Database concepts and components; relational database systems; entity relation model, spatial data modeling; databases and GIS.
4. Spatial Analysis

GIS analytical functions; vector analysis including topological overlay; (a) point data (b) Line data (c) Polygon data

5. Implementing a GIS using public domain low cost software

Map info and Arc info software

Books for Reference


PRACTICAL-II GLOBAL POSITIONING SYSTEM

Prismatic Compass Surveying
Open and Closed Traverse

Theodolite Survey
Digital Theodolite Survey
Measurement of Horizontal Angle and Vertical Angle

Measurement of Area


Total Station
Horizontal angle and Vertical Angle

References:
THIRD SEMESTER

STUDENTS HAVE TO SELECT FOUR OF THE FOLLOWING OPTIONALS.

PAPER 3.1 POPULATION GEOGRAPHY

I. Introduction to population geography, nature of population geography, evolution of population geography as a separate branch, approaches to population geography, population geography in India, source of population data and problems.

II. Trends of population growth in the world and in India. Theories of population growth, Malthusian theories, optimum theory, Demographic transition model.

III. Components of population change- Fertility: Measures, determinants and world pattern. Mortality- Measures, determinants and world pattern, Migration- Typology, Measures, determinants consequence and theories.


V. Demographic situations in the world. Population polices and projections- Demographic status in LDCs and MDCs, nature of population policies, population policies in MDCs and LDCs, population policy in India, Population projections,

Reference:

**PAPER 3.2 AGRICULTURAL GEOGRAPHY**


2. Origin & Diffusion of agriculture -Elements of agriculture & world classification of agriculture bases for the witlessly Classification

3. Determinants of agriculture :
   (a)Physical, (b)Economic (c) Social (d) Institutional (e)Technological  Green Revolution, White & Blue Revolution.


5. Methods of Delineating agricultural Regions concept & Techniques of regionalization Dois method, Least Square method, Maximum positive deviation method. Agriculture regions of India & their characteristics.

References:

1. Agriculture geography - Prof.M.Shafi.
2. Agriculture geography - majid hussain.
3. Agriculture geography - Noor Mohammed.
4. Agriculture geography - sing & Dhillin.
5. Agriculture geography - Jasbir sing.
6. Foundations of Indian Agricultura- Negi V.L
7. Agricultural Problems of India – Manaria C.R.

**PAPER 3.3 SETTLEMENT GEOGRAPHY**

I. Nature, scope and contents of settlement geography, evolutions of settlement geography as a separate branch, approaches to settlement geography,

II. Origin and evolution of settlements, role of physical, historical, economic, cultural factors in the origin and development of settlements, diffusions of settlement, Diffusions modeling.

III. Classification of settlement on the basis of size, form, shape and functions, Pattern of rural settlement, density and spacing of rural settlements.

IV. Morphology, shape analysis and house types of rural settlements.
V. Rural service centers and strategy for the growth of rural service centers, hierarchy of rural settlements, central place theory, Loschian model, rural markets and periodical markets, planning rural settlement centers.

Reference:
2. Majid Husain “Human and Economic Geography” NCERT, New delhi
4. R.B. Mondel “introduction to rural settlements” Concept pub, New Delhi.

PAPER 3.4 URBAN GEOGRAPHY

1. PRINCIPLES OF URBAN GEOGRAPHY
   a. Scope  and Development of urban geography as a branch of geography.
   b. Approaches to the study of urban geography.
   c. Factors affecting origin and growth. Location, site and situation of the urban areas. Size and spacing of settlement

2. CLASSIFICATION OF URBAN CENTRES.
   a. Census classification
   b. Functional classification of Harris, Ullman.
   c. Service classification of Nelson.

3. THEORIES OF CITY SYSTEMS :
   Theories: Christaller theory of central places, central place
   Theory of Loach
   Concepts: fringe development, Green belt concept

4. THEORIES OF INTERNAL STRUCTURE OF CITIES
   a. Theories land use structure.(i)concentric, (ii) sector and (iii)multiple nuclei.
   c. Movement (i) intra urban movement work place home relationship. (ii) Inter settlement flows- rural urban linkages and urban systems

5. METROPOLITAN CITIES OF INDIA AND SATELLITE TOWNS.
   a. Urbanization and; urban planning in India.
   b. Patterns of urban and rural settlements with special reference to India.
   c. Patterns, process and trends.
   d. Government policy and Urban planning in India.

References:
3. Cadwallader Analytical urban geography.
PAPER 3.5 ENVIRONMENTAL GEOGRAPHY


5. Industrial and agricultural development and Environmental degradation, Environmental pollution- Air, Water, Land and noise.

6. Environmental planning and management: concept of Environmental management approaches to Environmental management, resource and wildlife management, soled waste management. Environment Impact Assessment (EIA), elements of EIA, methodology and case study of EIA, Environmental planning in India.

Reference:
Environmental Geography- Sexena
Environmental Geography- Chandan
Ecology - Mohan.P.Arora
Ecology and Environment- P.D. Sharma.

PAPER 3.6 RESEARCH METHODS IN GEOGRAPHY

1. Research : Meaning –Need for Scientific research Type of research- Approaches to geographical research: Traditional and scientific – Identification of the problem sub fields and themes
2. Logic in Research: Hypothesis, concepts and facts, Principles Law, theory and their implications in Geographical research- the science of Geography- Role of models- Research trends in Geography

3. Research design; Selection of the topic – statement of the problem- Formulation of hypothesis –Testing of hypothesis Parametric and non parametric tests – T-test, F-test, x2-test and Z-test. Literature survey and the role of internet, Preparation of bibliography

4. Data Acquisition and Analysis; collection of data- sources of data- primary and secondary- structuring the data- data transformation- Sampling techniques SPSS package in data analysis.


References:

6> Kothari, C.r. (1990) Research methodology : methods and Techniques, Vishwakarashana, New Delhi

PAPER 3.7 TRANSPORTATION GEOGRAPHY

I Introduction:
1. Nature of transport geography
2. Scope of transport geography
3. Development of transport geography as an independent branch of geography
4. Recent trends in transport geography

II Causes of Movement and Accessibility
1. Major Forces Influencing Transportation :Globalization and Transportation
2. Type of movements (a). intra-urban (b). Inter urban (c) Rural – Urban (d) Inter regional (e) International.
3. Causes of movement: (a) Social and interpersonal pattern (b) Economic and commercial(c) Recreation and tourism (d) Pilgrimage and others

III Urban Transportation
IV. Modes of transportation

1. Road network - hierarchy of roads (b) Road traffic congestion/overcrowding

2. Rail transport. (a) The Historical Pattern: (b) growth (c) Recent Trends (d) Railways in the Third World

3. Air Transportation: (a) historical pattern (b) growth (c) Recent trend (d) Crisis in the Airline Industry: Causes,Impact and Solutions (e) The Budget Airline Phenomenon Across the Globe (f) The International Scene: route patterns, passenger demand and market (g) Air Cargo: Patterns, Issues

4. Recent trends and future growth in the demand for travel

5. The Impact of Transportation and transportation Costs

V. Transportation Planning - overall objective

1. Integration of transportation and land use planning

2. Governmental policy: The Role of Institutions a. Deregulation b. Privatization,

3. Public transport - overall policy

4. Transportation impact assessments: (i) Environmental consequences of transport provision

5. Economic impact of transport/traffic conditions: Role of planning

References:
3. Susan Hanson, “The Context of Urban Travel,” in Hanson and Giuliano (eds), The Geography of Urban Transportation, 2004

PAPER 3.8 POLITICAL GEOGRAPHY

1. Relevance of Political Geography
   Meaning Nature and Scope
   Contemporary Geographical Traditions
   Scope of Political Geography
   Recent Trends in Political Geography

2. Concept of Organic State and Geopolitics
   Spencer and Schaffle
   Freidrich Ratzel
   Rodolf Kjellan
Geopolitics Models
Modelske’s Long Cycle of Global Politics
A Dynamic Model of Hegemony and Rivaly
Geopolitics : Present and Future
Global Change and Geo Politics: Different Version Diverse Relation and New Dimensions

3. Approaches to the study of Political Geography

  Whittlesey’s Law of Landscape Approach
  Hartshrone’s Functional Approach
  Gottman’s Political Partitioning Model
  Jone’s Unifield Field Theory
  Political System and Model
  Contemporary relevance to these approaches.

4. Concept of Territoriality, State and Nation State

  Territoriality, State, The Nation State, Nationalism and Nation Building
  The role of Spatial Factors in determining State
  a) Shape b)Size and c)Shape

5. Global Strategic Models

  Mahan’s Sea Power Model, Geographical Pivot Model
  Heart Land Model,The Mid Land Model
  The Rim Land Model,The relevance of Rim Land and Heart Land Model in present context.

References:


PRACTICAL I QUANTITATIVE TECHNIQUES

1. Meaning and significance of quantitative techniques in Geography
2. Measuring centrality of settlements- Index of centrality
3. Centro graphic analysis- Mean and median centre
4. Rank size and nearest neighbor analysis.
5. Gravity potential models
6. Network analysis- shortest path and shortest distance analysis.
7. Measures of dispersions- Kendal’s and Bhatia’s methods.
8. Crop combinations and concentrations techniques. Weaver’s method and location quotient method.

Reference:
5. R Hammond and P. mccullagh “Quantitative techniques in Geography” Clarendon press, oxford

PRACTICAL II MAP ANALYSIS

1. Introduction, Importance, Types, Scale of topographical maps.
2. Interpretation of topographical maps with reference to Geomorphology, geological structure, soil, climate, transportation and settlement, drainage. Study of interrelationship among these features.
3. Morphometric Analysis
4. Profile drawings: Simple, Super imposed profiles etc.
5. Slope Analysis; Wentworth’s Method, Dhurunder’s Method, Smith’s method, Average slope analysis, Relative relief Method

Reference:
Gopal Singh- Practical geography
R. Mammod and P. Mecullagh “ Quantitative Techniques in Geography”

FOURTH SEMESTER

STUDENTS HAVE TO SELECT FOUR OF THE FOLLOWING OPTIONALS

PAPER 4.1 PRINCIPLES OF REGIONAL PLANNING

I. Concept of region and regional planning; meaning and types of regions, Planning region and its characteristics, hierarchy of regions, delineation of region and methods of delineation. Types of planning, Regional planning defined, Objectives and principles of regional planning, approach to regional planning.

II. Theories of regional growth: Sector, stage and export base theories, Economic base theory, convergence and divergence growth theory, Multiplier effects, intra and inter-regional input and output analysis.
III. Growth pole hypothesis and regional planning
Basic concepts-Leading Industry, Polarization effects and Spread effects
Inadequacies of growth pole hypothesis. Modified growth foci of R.P Misra,
Growth poles in regional planning

IV. Regional imbalances in the levels of development
Regional imbalance; causes and consequences
Need for balanced regional development
Indicators of measuring regional imbalance and extent of regional imbalance in India and
in Karnataka
Policies and programs- adapted to remove regional imbalance in India. and in Karnataka.

V. Issues in regional planning and approach to planning; social and environmental
issues, Top down and bottom up approaches. District and block level planning in India,
Backward and tribal area development programs.

Reference:
1. Mahesh Chand, Puri V.K (1997)“Regional Planning in India”, Allied Publishers
   Limited, New Delhi.

PAPER 4.2 TOURISM GEOGRAPHY

1. Importance of Tourism Industry in the Present World
   Definition and Scope of Tourism
   Types of Tourist
   Objective’s of Tourism
   Heritage Tourism
   Cultural Tourism
   Recreational Tourism
   Political Tourism
   Religious Tourism
   Game Tourism

   Tourist Behaviour on Space
   Path of Tourist and Flow Pattern
   Domestic and International
   Hospitality and Stay pattern
   Occupancy and Rate of Occupancy
   Rural Tourism : Kerala Model

3. Geo Economic Implications of Tourism on Rural and Urban development.
Local level development
Employment opportunities
Principle of Carrying Capacity and Sustainability
Negative Impacts: Under Employment, Seasonal Employment, Under Utilization of Facilities and Infrastructure, Cultural dent, Landscape deformation, Pollution and Congestion, Shortage of Water and other facilities etc.

4. Tourism Research for Tourism Development and Promotion
   Role of Tour Operators
   Advertisement and Campaign: Audio Video and Web Based Promotion
   Conducted Tours and Tour Packages
   Questionnaire Survey and Sampling Techniques

5. Role of G.I.S. and Remote Sensing in Tourism Planning
   Identification of Geomorphological Sights as prospective tourist sights using Remote Sensing Images
   GIS and Tourism Planning
   GIS based Conservation and Management of Tourist Sights.

Reference:

PAPER 4.3 MEDICAL GEOGRAPHY

1. Introduction to medical geography
   a. Nature and scope of medical geography
   b. Evolution and growth of medical geography as an independent branch of geography
   c. Contribution of Geographers to medical Geography
   d. Recent trends in medical geography

2. Environmental impact on human health
   a. Hazards of the natural environment
   b. Human induced hazards (i) air pollution (ii) water pollution
   c. Health and Weather (i) meteorological and climatological influences on morbidity and mortality

3. Transition of diseases
a. Ecological considerations of transmission of diseases-physical and cultural
b. Nature and modes of transmission of infectious diseases
c. Diffusion studies

4. The Geography of Health Care and Health Care Delivery
   a. The cultural role in health care

   b. Nutritional disorders: Vitamin/mineral deficiencies

5. Changing Patterns of Health
   a. Transitions 1. Demographic 2. Epidemiologic 3. Mobility


   c. Patterns of health 1. Regional 2. Health and development

References:

1. Andrew T.A. Learmonth, *Patterns of Disease and Hunger* (1978);
2. Gerald F. Pyle, *Applied Medical Geography* (1979);

PAPER 4.4 INDUSTRIAL GEOGRAPHY

1. Scope, Importance of industrial Geography, Approaches to industrial Geography, evolution of industrial Geography

2. Industries: classification of industries, basic and consumer, heavy and light industries and other classifications, Factors of industrial location- Geographical, Social, Economic, Environment, Historical and political factors. Changing role of these factors over time.

3. Theories of industrial location- least cost school, transport cost school, market area school, Marginal location school, and behavioral school.

4. Pattern and trends of industrialization in the world and in India, industrial regions of the world and industrial regions of India.
5. Industrialization: Significance, problems and prospects. Industrialization and economic development, Industrialization and environmental quality, Industrial policy in India since independence.

Reference:
1. D.M Smith- Industrial Location
4. Majid Hussen- Industrial Geography.
5. Johan Bale- The Location of manufacturing industry- conceptual frame work in Geography

PAPER 4.5 THEMATIC CARTOGRAPHY


References:
1. Concept of resource: Definition  
   Meaning & classification – Resource Creating factors  
   - culture, technology, man.


3. Forest resources – Types & uses depletion of forest resources & its impact on Environment, conservation of forest resources.

4. Atmospheric resources- Solar power; Atmospheric gases, wind power, Atmospheric pollution, Management of atmospheric resources.


References:
1. Dasmann - Environmental Resources.
2. Finch Trewartha & Sheares – The Earth & its Resources
3. Herald G.V.V- Conservation of Natural Resources.
4. Kommeyer – Population Studies
7. Renner G.G – Conservation of Resources.

PAPER 4.7 DISASTER MANAGEMENT


Ref: References:

PAPER 4.8 WATER RESOURCE MANAGEMENT

1. Meaning and scope of water resource management, Important of water as a resource, Hydro-meteorological relationship: Analysis of rainfall and temperature, evapotranspiration, rainfall and runoff relationship, hydrological cycle.


3. Watershed management; concept of watershed; morphological units, morphogenetic classification, morphometric analysis, importance of watershed protection and approaches to watershed protection, watershed management.

5. Water resource policy, water resource development and conservation strategies. National water policy in India since independence and Inter state water disputes, River inter linking; Problem and prospects. Rain harvesting as strategies of water resource conservation, other strategies of water conservation; water recycling, sprinkler irrigation.

Reference:

PRACTICAL-I DIGITAL CARTOGRAPHY

1. Introduction to Cartography-Cartography and GIS
   Categories of Maps
   Scanning operations and file formats

2. Introduction to GIS software-Mapinfo , Arcinfo
   Georeferencing, coordinate system
   Digitization-editing operations
   Raster and vector data models

3. Creatinon of attribute data tables
   Excel, Access and SPSS

4. Map design and layout
5. Mapping methods: Dot map, choropleth, isoline, flowline, cartograms, proportional point symbols, 3D mapping

Reference:


PRACTICAL II PROJECT WORK

UNIVERESITY OF MYSORE
DEPARTMENT OF STUDIES IN GEOGRAPHY, MANASAGANGOTRI, MYSORE
M.Phil DEGREE IN GEOGRAPHY

PAPER I: RESEARCH METHODOLOGY

1. Research: Meaning – Need for scientific research Type of research – Approaches to geographical research: Traditional and Scientific – Identification of the problems sub fields and thems.


References:


M.Phil Degree in Geography

Paper II: Quantitative Techniques in Geography

1. Nature and Significance of Quantitative Techniques in Geography. Types of techniques and levels of measurement, types of spatial data.
3. Measures of line distribution. Accessibility of nodes, route density, route sinnosity, traffic flow; measures of connectivity- Beta index, gamma index, cyclomatic number, Alpha Index, Eta index.
5. Correlation and Regression Analysis – study of residuala from Regression.
6. Spatial distribution and interactions – Nearest Neighbor Analysis, Rank size rule, Gravity and potential model.

Reference:

1. Quantitative Techniques in Geography; Hammont and Mecullch
2. Statistical Methods in Geographical Study; Aslam Mahamed

M.Phil Degree in Geography

Paper III Geoinformatics


5. Geographic information systems: components of GIS – data models and structures. Digital elevation models – layered and object oriented approaches- DBMS and RDMS – data input and editing – overlay methods – modeling in GIS.

Reference:


Annexure-1

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<td>1.2 Geographical Thought</td>
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<td>1.2 Principles of Remote Sensing</td>
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<td>1.3 Fundamentals of Economic Geography</td>
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<td>1.3 Applied Economic Geography</td>
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<td>1.4 Principles of cultural Geography</td>
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<td>1.5 Practicals A) Statistical application in Geography B). Field Mapping</td>
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<td>1.5 Practicals A) Photogrammetry B) Remote Sensing</td>
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<td>2.1 Climatologic, Oceanography &amp; Biosphere</td>
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<td>2.2 Trends in Modern Geography</td>
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<td>2.3 Applied Economic Geography</td>
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<td>2.4 Settlement Geography</td>
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<td>2.4 Fundamental of G.I.S</td>
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<tr>
<td>2.5 Practical A). Map Projection B). Interpretation of Map and Images</td>
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<td>2.5 Practical A). Geographic information System B). Global positioning System (G.P.S)</td>
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<th>III Semester</th>
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<td>3.1 Remote Sensing (Compulsory)</td>
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<td>IV Semester</td>
<td>4.1 GIS data and Manipulation and Analysis (Compulsory)</td>
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Scheme of examination will be similar to the existing PG semester scheme of the University of Mysore