



Government College

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Ref No.....

Date.....

Department of Geography

Details about M.A. Geography Course:

Sem	Paper Code	Nomenclature	Hours Per Week (L +T +P)	Marks			Examination Hours	Credit (L +T +P)
				Internal	End Semester	Total		
1st	16GEO21C1	Geomorphology	04 (3+1 +0)	20	80	100	03	3+1 +0
	16GEO21C2	Climatology	04 (3+1 +0)	20	80	100	03	3+1 +0
	16GEO21C3	Resource Geography	04 (3+1 +0)	20	80	100	03	3+1 +0
	16GEO21C4	Statistical Methods in Geography	04 (3+1 +0)	20	80	100	03	3+1 +0
	16GEO21CL1	Practical Topographical Sheets and Its Interpretation	06 per student	-	50	50	04	0+0+3
	16GEO21CL2	Practical- Computer Aided Statistical Diagrams and Graphs	06 per student	-	50	50	04	0+0+3
	Credits	C=22 F=2	Total Credits=22-24					

Sem	Paper Code	Nomenclature	Hours Per Week (L +T +P)	Marks			Exam Hours	Credit (L +T +P)
				Internal	End Semester	Total		
2nd	16GEO22C1	Geography of World Economy	04 (3+1 +0)	20	80	100	03	3+1 +0
	16GEO22C2	Regional Development and Planning	04 (3+1 +0)	20	80	100	03	3+1 +0
	16GEO22C3	Environmental Geography	04 (3+1 +0)	20	80	100	03	3+1 +0
	16GEO22D1	Urban Geography	04 (3+1 +0)	20	80	100	03	3+1 +0
	16GEO22D2	Cultural Geography	04 (3+1 +0)	20	80	100	03	3+1 +0
	16GEO22D3	Geography of India	04 (3+1 +0)	20	80	100	03	3+1 +0
	16GEO22D4	Geography of Rural Settlements	04 (3+1 +0)	20	80	100	03	3+1 +0
	16GEO22D5	Soil Geography	04 (3+1 +0)	20	80	100	03	3+1 +0
	16GEO22CL1	Practical -Digital Cartography	06 per student	-	50	50	04	0+0+3
16GEO22CL2	Practical -Morphometric Analysis	06 per student	-	50	50	04	0+0+3	
Foundation Course								
	16GEOF1	Geography in Everyday Life	02(2+0+0)	10	40	50	03	2+0+0
Open Elective Course								
	16GEOO1	Basics of Geo-Informatics	03 (2+1 +0)	20	80	100	03	2+1+0
	16GEOO2	Geography of India: Systematic and Regional	03 (2+1 +0)	20	80	100	03	2+1+0
		C=18 D=04 SO=03	Total Credits=18-25					

Sem	Paper Code	Nomenclature	Hours Per Week (L +T +P)	Marks		Exam Hours	Credit (L +T +P)
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1. Foundation Course (02 credits) ,either in semester I/II to be chosen from the basket provided by the University.
2. Open Elective Course (03 credits) to be chosen from the basket of Open Elective Courses provided by the University.

Sem	Paper Code	Nomenclature	Hours Per Week (L +T +P)	Marks			Exam Hours	Credit (L +T +P)
				Internal	End Semester	Total		
3rd	17GEO23C1	Remote Sensing and GIS	04 (3+1 +0)	20	80	100	03	3+1 +0
	17GEO23C2	Geography of Transport	04 (3+1 +0)	20	80	100	03	3+1 +0
	17GEO23D1	Bio Geography	04 (3+1 +0)	20	80	100	03	3+1 +0
	17GEO23D2	Political Geography	04 (3+1 +0)	20	80	100	03	3+1 +0
	17GEO23D3	Social Geography	04 (3+1 +0)	20	80	100	03	3+1 +0
	17GEO23D4	Hydrology	04 (3+1 +0)	20	80	100	03	3+1 +0
	17GEO23D5	Oceanography	04 (3+1 +0)	20	80	100	03	3+1 +0
	17GEO23CL1	Practical -Field Work	06 per student	-	50	50	04	0+0+3
	17GEO23CL2	Practical -GIS	06 per student	-	50	50	04	0+0+3
	Open Elective Course							
	17GEO23O1	Introduction to Geography	03 (2+1 +0)	20	80	100	03	2+1+0
	17GEO23O2	Sources of Geographical Data	03 (2+1 +0)	20	80	100	03	2+1+0
		C=14 D=04 O=03	Total Credits=21-25					
1. Open Elective (03 credits) to be chosen from the basket of Open Electives (OEs) provided by the University.								

				Internal	End Semester	Total			
4th	17GEO24C1	Geographical Thought	04 (3+1 +0)	20	80	100		03	3+1 +0
	17GEO24C2	Research Methodology	04 (3+1 +0)	20	80	100		03	3+1 +0
	17GEO24DA1	Water Resource Management	04 (3+1 +0)	20	80	100		03	3+1 +0
	17GEO24DA2	Geography of Tourism	04 (3+1 +0)	20	80	100		03	3+1 +0
	17GEO24DA3	Rural Geography	04 (3+1 +0)	20	80	100		03	3+1 +0
	17GEO24DB1	Population Geography	04 (3+1 +0)	20	80	100		03	3+1 +0
	17GEO24DB2	Natural Hazards and Disaster Management	04 (3+1 +0)	20	80	100		03	3+1 +0
	17GEO24DB3	Agricultural Geography	04 (3+1 +0)						
	17GEO24CL1	Practical :Aerial Photographs and Its Interpretation	06 per student	-	50	50		04	0+0+3
	17GEO24CL2	Practical: Satellite Images and Its Interpretation	06 per student	-	50	50		04	0+0+3
		C=14 D=08		Total Credits=22					
	Students will have to opt two soft core papers, one each from 17GEO24DA1,DA2,DA3 and 17GEO24DB1,DB2,DB3.								

Course Outcome of M.A. Geography

Semester 1:

Subject: GEOMORPHOLOGY

Course Outcome: The course will provide an understanding of the conceptual and dynamic aspects of landform development. Students will also learn the relevance of applied aspects of Geomorphology in various fields.

Unit-I

Geomorphology - Definition, Nature and scope, History and development of geomorphic ideas: Fundamental concepts - Uniformitarian's, geological structure, process and stage. The Earth's interior - structure and constitution, Recent Views. Plate tectonics- meaning and concept; plates, plate margins and boundaries; plate motion; Tectonic activities along the boundaries and Distribution of plates.

Unit-II

Endogenetic processes - Faulting, folding and their geomorphic expressions. earthquake concept, causes, classification, intensity and magnitude, Geographical distribution. Vulcanism - concept, mechanism and causes; Volcanoes- classification, volcanic materials; Topography associated with vulcanicity and geographical distribution.

Unit-III

Exogenetic processes : Weathering and mass wasting - meaning and concept, controlling factors, classification and significance. Dynamics of fluvial, aeolian, glacial and karst processes and resulting landforms.

Unit-IV

Applied Geomorphology - meaning; Applications of Geomorphology in Regional planning, engineering projects, mineral exploration and hydrology. Regional Geomorphology of Punjab plain, Aravalli Region and Thar desert of India.

Subject: CLIMATOLOGY

Course Outcome: On successful completion of this course, students should be able to understand the mean global atmospheric circulations and disturbances, world climate systems, climatic variability and change.

Unit-I

Nature and Scope of Climatology; Climatic elements – atmospheric temperature, pressure, moisture, general atmospheric circulations jet stream.

Unit-II

Weather system and disturbances – air-mass, fronts, cyclones, tornades; Ocean atmospheric interaction- EI Nino, Monsoon winds.

Unit-III

Global climate system - Approaches to climatic classification; Classification of Koppen, and Thornthwaite; Major Climates of the world-tropical and polar.

Unit -IV

Climatic changes - evidences, possible causes, global warming acid rain and problems of acid rain.

Subject: RESOURCE GEOGRAPHY

Course Outcome: Students will become sensitized to concept and classification of resources, use or misuse and will learn conservation methods and techniques.

Unit-I

Nature, Scope and Significance of Geography of Resource; Definition and Concept of Resources, Classification of Resources.

Unit-II

Models of Natural Resource Processes: Zimmermann's Primitive and Advance Models of Natural Resource Process, Kirk's Decision Model, Brookfield System Model.

Unit-III

Use and Misuse of Resources: Soil Resource; Water Resource; Forest Resource and Mineral Resources; Future Prospects of Natural Resources.

Unit-IV

Conservation and Management of Natural Resources : Meaning and Concept of Conservation of Natural Resources; Resource Conservation and Management Methods of Natural Resources- Soil Resource, Water Resource, and Forest Resource; Problems of Natural Resource

Management in India.

Subject: STATISTICAL METHODS IN GEOGRAPHY

Course Outcome: Keeping in view the nature of data and purpose of study, students would be able to make a rational choice amongst listed various statistical methods.

Unit-1

Statistics, Geography and Statistics; Significance of Statistics in geographical studies; Primary and Secondary Data; Levels of data measurement: Nominal, Ordinal, Interval, and Ratio.

Unit-II

Measures of Central Tendency: Arithmetic Mean, Median, Mode and their geographical significance; Centographic techniques: Mean Centre, Median Centre and Standard Distance.

Unit-III

Measures of dispersion and concentration: Mean deviation, Standard Deviation; Coefficient of Variation, Lorenz Curve and Gini's Coefficient; Location Quotient.

Unit-IV

Correlation and regression: Scatter diagram, correlation by Spearman's Rank Difference and Karl Pearson's Product Moment, Significance testing of Correlation; Regression analysis regression equations construction of regression line, computation of residuals and mapping.

Subject: TOPOGRAPHICAL MAPS AND INTERPRETATION (PRACTICAL)

Course Outcome: Students should be able to understand the importance and uses of maps and the relationship and juxtaposition of features therein.

Unit - I

Introduction to Maps: Definition and Types of Maps, Map scale, Conventional map symbols, Importance and uses of maps

Unit - II

Interpretation of Topographical maps: Topographical maps and their types, Basic information on Topographical sheets, Conventional Signs, Identification of Physical and Cultural details on Survey of India Toposheets.

Subject: COMPUTER AIDED STATISTICAL DIAGRAMS AND GRAPHS (PRACTICAL)

Course Outcome: Successful completion of this course will provide the students learning outcomes like an ability to analyse, classify and prepare data for drawing statistical diagrams through computer.

Unit - I

Introduction to Computer: Components of Computer—Hardware and Software; Use of Computers in Geography.

Unit – II

Introduction to Microsoft Excel: Input of data, Bar Diagram, Pie Diagram, Scatter Diagram, Line Graph. Placement of heading and sub-heading, legend, Font size, Style, Bold, Italics, Changes from colour to different shade pattern. Different weight, colour and pattern to X and Y coordinates. Page layout. Ascending and Descending order.

Semester-II

Subject: COMPUTER AIDED STATISTICAL DIAGRAMS AND GRAPHS (PRACTICAL)

Course Outcome: Students would be able to understand how in an increasingly globalized world, economic activities occur unevenly over geographical space; how local places and global economy are intertwined, and how the regime of neoliberal policies are generating uneven geography of capitalist development.

Unit-I

Economic Geography: The Stuff of Economic Geography, A brief history, Why Economic Geography? Modes of Theorizing in Economic Geography: Political Economy, Poststructuralist Economic Geography

Unit-II

Capitalism, Fundamental Concepts: Use-value, Exchange Value, Capital, Capital and Labour, Capital Accumulation, Capital Accumulation by Dispossession. Capitalism in Twentieth Century: Organized Capitalism, Disorganized Capitalism. Neo-Liberalism.

Unit-III

World Economy and the Capitalist mode of production, The Basic Elements of World Economy: A Single Market, a Multiple State System, the Three-tier structure; A Space-Time Matrix of the World Economy, Dynamics of World Economy, Spatial Structure of the World Economy.

Unit-IV

Economic Development: Globalization or Internationalization, Patterns of International Trade, WTO and Developing Countries.

Subject: REGIONAL DEVELOPMENT AND PLANNING

Course Outcome: The student will get familiarized with the theoretical foundations and conceptual grounding of this branch; understand and evaluate the concept of region in geography and its role and relevance in regional planning; and to comprehend the regional development and planning process in India.

Unit I

Conceptual and theoretical framework: Concept of development, regional development; concept of region and regional planning; geography and regional planning; selection of indicators and measures of regional disparities.

Unit II

Regional Growth Theories: Friedman's core-periphery theory; polarisation and trickle-down effect theory of Hirschman; circular and cumulative causation model of Myrdal; growth pole theory of Perroux.

Unit III

Planning process: types of planning; regional planning and its rationale, principles and objectives. Regions for Planning: characteristics, hierarchy, need, and demarcation; Planning regions of India.

Unit IV

Experiences of regional development and planning in India - multi level planning (state, district, block and panchayat level planning); Regional Policies in the Indian Five Year Plans; planning policies for regional development; regional backwardness: criteria, strategy and programmes for backward area development.

Subject: ENVIRONMENTAL GEOGRAPHY

Course Outcome: Students will learn the importance of conserving biodiversity to maintain ecological balance as well as national and international concerns on various environmental issues.

Unit-I

Environmental Geography: Nature and scope of environmental geography, fundamental concepts of environmental geography; Approaches and methods in Environmental Geography; Relationship with other branches of knowledge, Environment and Ecology: Meaning, structure and type of Environment, Ecology - meaning, scope and concepts. Sub-vision of ecology.

Unit-II

Ecosystem: Meaning and concepts of ecosystem, Classification and components of eco-system, trophic structure, ecological pyramid, energy

flow and biogeochemical cycle; Ecological regions of India.

Unit-III

Environmental pollution- meaning, types, sources, causes and impacts; Air, Water and Land pollutions; Environmental Degradation – Nature, process, types and causes of environmental degradation; Green house effect, Global warming, Ozone depletion and Desertification.

Unit-IV

Environmental management- concept, methods and approaches. Management of soil, forest and mineral resources; Disaster Management; Conservation of natural resources; Emerging environmental problems and issues in India, Environmental policies, programmes, awareness and movements in India.

Subject: URBAN GEOGRAPHY

Course Outcome:

It will help students gain a better understanding of the the process of urbanization and origin, growth of urban settlements with various theoretical viewpoints in the literature explaining them. They would be able to understand the key aspects of cities and get an indication of the breadth of material that can be covered when examining cities. Students will also get sensitized to the evolving urban planning visions.

Unit-I

Urban Geography: definition, nature, scope, and recent trends; Urban revolutions and growth of towns and cities in the world (with particular reference to India).

Unit-II

Urbanisation processes and patterns in an era of globalisation; urbanisation process in India: colonial legacy, the post-independence characteristics; phases of urban development with location of economic activities in cities; urban form and structure: pre-industrial, industrial and post industrial societies.

Unit-III

Aspects of urban places: Location, site and situation - definition, nature and significance; urban ecological processes; urban systems and the growth of cities: the rank-size distribution of cities, primate city distribution, central place theory of Christaller; the urban fringe.

Unit-IV

Urban planning visions: the garden city, the radiant city; conserving urban landscapes; sustainability and the city; city environments and living conditions; urban development strategy with particular reference to India.

Subject: CULTURAL GEOGRAPHY

Course Outcome:

The student will keep up to date with the theoretical aspects and conceptual base of this branch; understand and evaluate the concept of culture in geography and its role and relevance in society; The student will be able to understand the cultural environment and various cultural regions of the world.

Unit-I

The Nature Meaning & Scope of Cultural Geography. The evolutionary approach in cultural geography. The Framework of cultural Geography. The evolution of cultural Geography-The contribution of Otto Schluter and Carl Sauer.

Unit-II

Cultural Geography: Elements & Components; Cultural Areas & Cultural Realm. Environment and Culture: Concept of cultural areas and cultural regions. Cultural adaptation and Environmental perception. Man as modifier of the earth

Unit-III

Spatial Structure. Focus on similarities and differences of various cultures with respect to racial, religious, linguistic and demographic, characteristics in Indian context. Studies of the socio- cultural characteristics of contemporary societies within their manifested

Unit-IV

Human races: Habitat economy and Society of tribal groups. Racial Elements in India's Population; Tribes of India (Bhil, Gond, Toda, Naga); Tribes of World (Eskimo, Pigmy, Bushman).

Subject: GEOGRAPHY OF INDIA

Course Outcome:

The students will appreciate the relevance of geographical know ledge of India to understand the contemporary issues.

Unit-1

Physiographic division of India; Drainage systems" Mechanism of Indian monsoons and climatic regions of India: types of soils and natural vegetation.

Unit-II

Growth of population, Distribution and density of population ; Demographic attributes; sex-ratio, literacy rate and work force; population

problems and policies.

Unit-III

characteristics of Indian agriculture and its development since independence; Agricultural region of India; Major industrial regions of India; domestic and international trade patterns; Transportation network.

Unit-IV

Evolution of administrative map of India since independence; Disputes of river water sharing amongst states with reference to SYL; Inter-linking of rivers; Terrorism problems of internal security; Population explosion and food security.

Subject: GEOGRAPHY OF RURAL SETTLEMENTS

Course Outcome:

The present paper shall enhance the knowledge of students about the historical development, patterns, types and functional systems of rural settlements.

Unit-I

Definition, Nature and Scope of Rural Settlement Geography; Trends in Rural Settlement Geography with special reference to India; Approaches to Rural Settlement Geography

Unit-II

Culture-Historical Perspective; Archaeological finds and settlements - Mesopotamia, the Nile valley, the Indus valley; Historical Development of Rural Settlements (based on major cultural periods) in India. Analysis of Place Names and environments.

Unit-III

Morphology of Rural Settlements in India: Religio-Ritual Model, Secular-Dominance Model; Types and Patterns of Rural Settlements in India and Causes of Diverse Types of Rural Settlements.

Unit-IV

Functions of Rural Settlements; Rural service centers; their nature and hierarchy; Basics of Rural Settlement Planning; Rural Settlement Planning of India.

Subject: SOIL GEOGRAPHY

Course Outcome:

Students will be familiarized and enhance their knowledge about the soils, its properties, development and degradation. They will understand

the management and conservation of soil resource with reference to India along with its importance.

Unit - I

Soil Geography: meaning, nature, and scope; its relationship with Pedology. Soil forming factors: parent material, organic, climatic, topographic, and time; Soil components: inorganic materials, organic matter, soil air, and soil water.

Unit - II

Processes of soil formation and soil development: physical, biotic and chemical. Soil Profile and its development; Pedogenic Regimes: podsolization, laterization, calcification and salinization.

Unit - III

Physical properties of soils: morphology, texture, structure, water, air, temperature and other properties of soil; Chemical properties of soil and soil reaction; Genetic classification of soils; Taxonomic classification of soils: zonal, azonal and intra-zonal soils, their characteristics. Spatial distribution of Indian soils.

Unit - IV

Evaluation of land and soil: Parametric and non parametric systems, Land capability classification, Soil survey and Mapping, field study of soil profile and their characteristics; Soil erosion, degradation, and conservation with special reference to India.

Subject: DIGITAL CARTOGRAPHY (PRACTICAL)

Course Outcome:

After the completion of the semester students will be able to understand and prepare maps.

Unit I

Introduction to Softwares

Basic introduction to GIS softwares; (QGIS, ArcGIS, etc.), Raster (grid format) and vector (point, line and polygon) data models.

Unit II

Mapping and Map Essentials

Dot, Choropleth and Isopleths mapping; Proportional circles, and bar diagrams in a map. Map elements- title, legend, lat.long, scale, direction, source, name of projection and layout creation.

Subject: MORPHOMETRIC ANALYSIS (PRACTICAL)

Course Outcome:

Students would be able to understand the usefulness of morphometric techniques in the case of a drainage basin.

Unit - I

Morphometric Analysis of Drainage Basin- Types and its Geographical Significance, **Linear Aspects:** Stream Ordering Based on Horton and Strahler, **Areal Aspects:** Stream Frequency and Drainage Density. (04 Exercises)

Unit- II

Relief Aspects: Hypsometric Curve and Integral Hypsometric Curve, Clinographic Curve, **Slope Analysis-** Average Slope (Wentworth's method), Relative Relief (Smith's method), **Profile Analysis** -Longitudinal profile. (06 Exercises)

Subject: FOUNDATION COURSE: 16GEOF1 GEOGRAPHY IN EVERYDAY LIFE

Course Outcome: On completion of the course a student should be able to understand how geography permeates each and every aspect that concerns our living on this earth. They would know how Geography can use its versatility and multi-factor approach, co-existence between physical and human aspects, construction of ideas around space which are politically and administratively relevant, to its best advantage.

Unit I

Geography and Environment; Geography and Social Sciences; Geography and Development; Geography and Planning

Unit II

Geography and Governance; Geography and Globalization; Geography and Disasters; Geography and Cartography

Note: (i) The question paper will have three units. First two units of question paper will contain two questions from each unit of the syllabus. Candidate(s) are required to attempt two questions in all selecting one from each unit. Unit III shall be compulsory and shall contain five short answer type questions covering entire syllabus in which candidates will be required to attempt any five out of eight questions. All questions carry equal marks.

- (ii) Internal Assessment of 10 marks will be 'Map Filling' about the location of important places, landforms, and geographical features in India and the world. The unit three shall be compulsory and shall contain five short answer type questions covering entire syllabus.

Subject: Open Elective: 16GEOO1 BASICS OF GEOINFORMATICS

Course Outcome: Students will be able to learn the use of latest geospatial technology. It will help them to understand the spatial phenomena in a better manner with availability of real time and accurate information. These technologies being modern and interdisciplinary in nature will enable the students to apply this knowledge in various fields of life.

Unit – I

Aerial Photography

Aerial photography: history and development, advantages and limitations; Classifications of aerial photographs; Geometry of an aerial photograph; Scale of an aerial photograph; Availability and procurement of aerial photographs in India; Aerial photograph vs map.

Unit – II

Remote Sensing.

Introduction to Remote Sensing; electromagnetic radiation; stages of remote sensing; energy interactions in atmosphere; energy interactions with earth surface features and spectral signatures. Remote Sensing applications in land use/land cover, urban, environment, forest and disaster studies.

Unit – III

Remote Sensing

Remote Sensing platforms: airborne and space borne; satellite orbits: geostationary and near polar; Image data characteristics: resolutions-spatial, spectral, radiometric and temporal; Sensors and their types; Satellite missions of ISRO .

Unit – IV

GIS and GPS

Geographic Information System (GIS): definition and applications; GIS and remote sensing integration; components and elements of GIS; representation of earth surface features in GIS; introduction to Global Positioning System; GPS satellites constellations; GPS segments; Applications of GPS.

Subject: Open Elective: 16GEOO2- GEOGRAPHY OF INDIA: SYSTEMATIC AND REGIONAL

Course Outcome: The student will get familiarised with the geographic dimensions of India in terms of its political and administrative characteristics; aspects of its regional vitality; and formation of regions.

Unit-I

India: a historical-geographical expression; Size, location, and boundaries; Physical environment; Historical setting.

Unit-II

Unity in diversity of India: Unifying mechanism and divisive streaks; Evolution of the administrative map of India since Independence.

Unit-III

Regional vitality of India; multiculturalism in India; the Indian diaspora; India's cultural landscape.

Unit -IV

Regionalisation schemes of India: Physiographic (S.P. Chatterjee); Climatic (Koeppen and Trewartha); Agricultural (Jasbir Singh and C.B. Mamoria); and Industrial (B.N. Sinha).

Semester-III

Subject: REMOTE SENSING AND GIS

Course Outcome: Students will be familiarized and enhance their knowledge about the Remote Sensing and GIS technology. They will understand the technology along with application value as well as its importance in the Earth observation.

Unit - I

Photogrammetry: History and development, Definition and meaning; Aerial photographs-types, characteristics and Geometry, methods of determining scale; Ground coverage and overlapping; stereoscopes and stereoscopic vision; Photomosaics-types and uses; Elements of image interpretation.

Unit - II

Remote Sensing technique- Meaning, basic principles/concepts, Remote sensing system and relevance in Geography; Electromagnetic radiations (EMR); Electromagnetic spectrum; interaction of EMR with atmosphere and Earth's surface features; Spectral reflectance; Remote sensing data; Basic principles of thermal and microwave remote sensing.

Unit - III

Remote sensing platforms- types and characteristics; Satellite orbits- Near polar and Geostationary orbits; Sensors- types, specifications and resolutions; Various artificial satellites series; Remote sensing applications in land use/land cover, urban, water resources and environment studies; Remote sensing set up and programmes in India.

Unit - IV

Geographic Information System (GIS) – Meaning and Basic concepts; Components of GIS; Functions in GIS - data input, storage, maintenance, manipulation, analysis and output; GIS data - spatial and nonspatial data; Data formats - raster and vector; Data sources; Integration of Remote Sensing and GIS; Applications of GIS in Geographical studies.

Subject: GEOGRAPHY OF TRANSPORT

Course Outcome: Students shall learn about the significance of transport in multifaceted development, various models and theories related to transport network, accessibility and connectivity and policy interventions.

Unit - I

Nature and Scope of Transport Geography, Geographic Relevance of Transportation, Transport and Development: Conceptual Frameworks; Theoretical Framework, Models of Global Relevance;

(i) The Vance Model, (ii) The Rimmer Model, and (iii) The Taaffe, Morrill and Gould Model.

Unit - II

The Modes of Transport: Introduction to Modes of Transport, Modal Characteristics of Roads, Railways, Ropeways and Cableways and Airways.

Unit – III

Structural Analysis of Transport Networks: Networks, Networks Graphs and Types; Measures of Individual Elements of Transportation Networks: Mileage Matrix, Nodality Matrix, Weighted Mileage Matrix, Weighted Nodality Matrix, Gross accessibility; Connectivity of Networks: Cyclomatic Number, Diameter; Alpha, Beta, Gamma, Eta, Pie, Theta and Iota indices.

Unit- IV

Development of Road Transport in Haryana: Growth and Development of Roads in Haryana, Types of Roads, Levels of Road Transport in Haryana, Levels of Road Connectivity in Haryana, Problems of Road Transport in Haryana.

Subject: BIOGEOGRAPHY

Course Outcome: Students will get familiarized with interface between biology, ecology and geography converging and forming our biosphere.

Unit-I

Biogeography - The Development, field, functions of Biogeography; Biosphere - definition, nature, scope and composition.

Unit-II

Biogeochemical cycles- the hydrological cycle, the carbon cycle, the oxygen cycle, the nitrogen cycle, the phosphorous cycle and the sediment cycle.

Unit-III

Ecosystem - Meaning, types, components and functioning of ecosystem; Evolution of living organism and factors influencing their distribution on the earth.

Unit-IV

Biomes- Meaning and types; Bio-geographical realms : Zoogeography and Zoogeographical realms.

Subject: POLITICAL GEOGRAPHY

Course Outcome: Students would be able to understand key concepts like state, nation, nationalism; understand the changing nature of modern state, challenges it is facing; the linkages of space and politics in terms of geopolitics and some of the issues of concern at the local level.

UNIT-I

Nature and scope of Political Geography; Perspectives: Political-Economy, World Systems, Place, and Globalisation.

UNIT-II

Concepts of Nation, State, Nation-State; Emergence and growth of territorial state; Globalization and the Crisis of the Territorial State; Forms of Governance: Unitary and Federal.

UNIT-III

Rise and Demise of German Geopolitics; Geopolitics in the post Cold War World—S.B. Cohen's model of Geo-strategic and Geo-political regions.

UNIT-IV

India as a regional power in South Asia; National and Regional political parties in India; Women as a marginalized section in Indian politics; Inter-state water disputes in India (special reference to SYL canal).

Subject: SOCIAL GEOGRAPHY

Course Outcome: The student will make better known with the theoretical, philosophical and conceptual base of this branch; understand and evaluate the concept of society in geography. It improves a student as a good human being in India.

Unit - I

Social Geography: Nature, meaning & Development of Social Geography; Philosophical bases of Social Geography :Positivism, Humanism and Feminism.

Unit - II

Towards a social geography of India; Concept of Social differentiation, socio cultural regions of India, Socio-Cultural Regions of India; Linguistic Elements in India. Caste System in India.

Unit - III

Social Well-being : Concepts of social well being, Human Development Index. Human Development in India. Factors of social change.

Unit - IV

Gender Issues of social Well Being: Female Literacy, family Planning, Women Health. Sex Ratio, Women Empowerment. Women Employment.

Subject: HYDROLOGY

Course Outcome: At the end of the semester students will different physical aspects of water as a natural resource.

Unit – I

Introduction to hydrologic science: History of hydrology; Hydrology as a science; Basic hydrologic concepts: Physical quantities and laws; hydrologic systems;

Unit-II

Drainage Basin-Characteristics of drainage basin: size of the Basin,Shape of the basin, compactness ratio, form factor, type and arrangement of stream channels.

Unit – III

Precipitation-Process; Types, Forms. Mean Areal Depth of precipitation: Arithmetic average method, Thiessen polygon method and Isohyetal method; Intensity of rainfall.

Unit –IV

Evaporation-Actual evaporation, Potential evaporation; Estimation of actual and potential evaporation; Thornthwaite's book-keeping method of climatic water balance. Runoff- Factor affecting runoff .

Subject: OCEANOGRAPHY

Course Outcome: Student will be able to understand the dynamics of ocean physiography and water movement. It will help them to have an understanding of relevance of oceans as a resource in times to come.

Unit-I

Definition and scope of oceanography, major sea voyages , oceanography and other sciences; distribution pattern of land and sea, origin of ocean basins :Wegner's drift hypothesis, and sea floor spreading and Plate Tectonics.

Unit-II

Depth of ocean, ocean floor profile-continental shelf, slope, ridge and deeps, abyssal plains; submarine canyons; coral reefs-origin and distribution; ocean deposits; configuration of ocean floors of Indian Ocean and Atlantic Ocean.

Unit-III

Temperature of oceans; salinity in oceans; density of oceans; dynamics of ocean currents; currents of Atlantic, Pacific and Indian Ocean; tides and origin; Tsunami.

Unit-IV

Ocean currents and their impact on climate and economy; oceans as source of food, mineral and energy resources;; sea-level changes; evidences, mechanism and impact; maritime laws.

Subject: PRACTICAL: FIELD WORK

Course Outcome: Students would be able to understand the basic socio-economic characteristics of the chosen area through the field methods/ techniques and build the capability of writing a report.

Field Work in Geographical studies- Role, Value and Ethics; Field techniques- Merits and Demerits; Source of Data- Primary and Secondary; Collection of data: methods of primary data collection- Observation method, interview method, through questionnaire, through schedule and other methods; Questionnaire and Schedule; Processing and analysis of data.

Field Work and Report writing: Identification of research problem; data collection through field visit; Preparing research design- aims and objectives, methodology, analysis, interpretation and writing of report.

Subject: PRACTICAL-GIS

Course Outcome: Student will be able to understand the representation of earth surface features with the help of maps by GIS techniques.

Exercises will be taken on following topics:

1. Introduction to digital environment i.e. file creation and management
2. Introduction to GIS software
3. Shape file creation of point, line and polygon
4. Digitization
5. Map layout : title, legend, direction, scale, coordinate information
6. Map preparation of point, linear and areal features(atleast two exercises on each)
7. Map editing
8. Area calculation
9. Buffer analysis
10. Overlay analysis

Subject: INTRODUCTION TO GEOGRAPHY

Course Outcome: Student will be able to understand the geographical concepts which are relevant in day to day life.

Unit-I

Solar system , solar and lunar eclipse; Earth- shape, movements, formation of day/nights and seasons ; location-latitude-longitude, longitude and time zones.

Unit-II

Interior of earth; vulcanism and earthquakes; plate tectonics; weathering and erosion; brief introduction to major landforms.

Unit-III

Weather and climate: factors affecting and distribution; composition and structure of atmosphere; atmospheric pressure and global winds; introduction to Monsoon.

Unit-IV

Relief of oceans; oceanic salinity; circulation of oceanic water; currents of Atlantic, Pacific and Indian Oceans.

Subject: SOURCES OF GEOGRAPHICAL DATA

Course Outcome: Students shall learn about the significance of geographical data, various sources related to physical and cultural environments, households, population, assets, facilities, building materials and policy interventions.

Unit - I

Nature and Main Sources of Geographical Data: Place Names, Census of India, Field Studies.

Unit - II

Place Names (Based on Physical and Cultural Environments).

Census of India: Primary Census Abstract: (Number of Households, Population, Sex, 0-6 Years Population, Scheduled Castes and Scheduled Tribes Population, Literate, Workers, Main Workers, Marginal Workers (Cultivators, Agricultural Labourers, HHI, Other Workers and Non -Workers and Non- Workers in respect of Total, Rural and Urban Population).

Unit-III

Census of India: Household Data: Condition of Household, Availing Banking Services, Availability of various Assets, Pre- dominant materials of Roof, Wall and Floor, Sources of Drinking Water and Location, Lighting, Availability of Latrine Facility, Types of fuel for Cooking.

Unit-IV

Census of India: Village Directory (Area. Population, Availability of Educational, Medical, Postal, Drinking Water, Communication Facilities, Land Use Pattern.

Semester-IV

Subject: GEOGRAPHICAL THOUGHT

Course Outcome: This should enable the student to critically look at the contents of other courses at Postgraduate level as logically integrated with the broad currents of thought the subject has witnessed in the distant and recent past.

Unit-I

Development of Geographical Knowledge: classification of knowledge; place of geography in the classification of knowledge. Relationship of geography with other natural and social sciences; subject matter of geography. Pre-scientific geographical ideas and emergence of scientific

geography; influence of Kant.

Unit-II

Classical Period of Modern Geography: Humboldt and Ritter; legacy of Humboldt and Ritter. Dualisms and dichotomies: physical and human, systematic and regional, and general and particular. Unification of Geography- Richthofen and Hettner. Social Origins of Environmental Determinism. Possibilism, Regional concept, Vidal de la Blache.

Unit-III

Modern Geography since 1950s: Quantitative revolution and positivism; locational analysis. Reactions to scientific positivism and development of 'human centred theories; Behavioural, humanistic and radical approaches.

Unit-IV

Beginnings of Contemporary Geography: Structuralism and structuration; post-structural and post-colonial critique; Feminist and gender geography; the post-modern perspectives in geography; geography, neoliberalism and globalisation.

Subject: RESEARCH METHODOLOGY

Course Outcome: Students would be able to formulate research questions; understand advantages and disadvantages of quantitative and qualitative approaches, and write a research proposal.

Unit-I

Meaning and Purpose of Research? Types of Research; Social Science Research; Identification of Research Question and Literature Surveying; Methods and Methodology in Human Geography

Unit-II

Scientific Method in Human Geography; Analytical Steps of the Scientific Method; The Routes of Scientific Explanation: Deductive and Inductive forms of reference; Explanation in Geography: Some Problems

Unit-III

From Quantitative to Qualitative Geography; Qualitative Data Production: Interviews (Process of Interviewing, Structure interviews and informal surveys; Depth Interviewing and Working with Groups); Observation (Participant Observation and Ethnography).

Unit-IV

Process of Research Report Writing; Reference styles (Harvard, Chicago), Ethics in Research.

Subject: WATER RESOURCE AND MANAGEMENT

Course Outcome: At the end of the semester they will learn some strategies of water resource management.

Unit –I

Water as a focus of geographical interest; Hydrological cycle; factor affecting water resources- physical factors, climatic factors, geological factors.

Unit – II

Groundwater and its occurrence - consolidated formation, semi-consolidated formation and unconsolidated formation.

Unit –III

Utilization of water resources; problems of groundwater utilization- groundwater quality, groundwater salinity, waterlogging and groundwater depletion.

Unit – IV

Surface and groundwater pollution; water scarcity; water resource management- definition, functions and strategies.

Subject: GEOGRAPHY OF TOURISM

Course Outcome: Knowledge of the basic concepts of tourism and regional dimensions of tourism in India shall be main learning outcomes. Through the syllabus the students can have a closer insight to tourism in our own country.

Unit -I

Geography of Tourism: Definition, nature and scope; Motivating factors of tourism; Robinson's classification of motivating factors of tourism.

Unit-II

Tourism: Product and typology; Infrastructure and support system of tourism: Accommodation and supplementary accommodation; Agencies and intermediaries.

Unit-III

Impact of tourism: Physical, economic and social, perceptual positive and negative impacts; Tourism paradigms: Ethnic and cultural tourism, heritage tourism, sustainable tourism and eco- tourism.

Unit- IV

Regional dimensions of tourism in India: Himalayan region, Northern Plains and The Thar Desert, Deccan plateau, Coastal Plains and the islands.

Subject: RURAL GEOGRAPHY

Course Outcome: The present paper shall enhance the knowledge of students about the infrastructure, various types of building materials used, development issues, and untouchability and Dalits in rural India.

UNIT-I

Nature and scope of rural geography; **Infrastructure in rural India:** Irrigation, Electrification, and Roads.

Unit-II

Rural House Types : House Types based on Building Materials, Size and Shape as basis for classification, House Types based on Socio-Economic Status, Regional Patterns of Houses in India.

Unit-III

Issues of Rural Development in India: Land Reforms, Agricultural land-use, Distribution of Landholdings, Rural Poverty, Rural Unemployment.

Unit-IV

Untouchability and Dalits in Rural India: Some Theoretical Explanations, Anti Untouchability Movements: A Historical Overview; Scheduled Castes in Rural India, Patterns of Female Work Participation of Scheduled Castes, Women Empowerment in Rural India.

Subject: POPULATION GEOGRAPHY

Course Outcome: Students would be able to understand the distribution and dynamics of population distribution and its problems and management.

Unit-I

Population Geography: Definition, nature and scope; relationship with other disciplines – demography and population studies; sources of data with particular reference to India – census, vital or civil registration system, Sample Registration System, Sample surveys with particular reference to NSSO and NFHS; Problems of their reliability and comparability.

Unit-II

Population Distribution and Growth: Factors affecting population distribution; Population growth - trends and determinants; spatial dimension of population growth in India; Theories of population growth – pre-Malthusian views, Malthus' Theory, views of socialist writers, optimum population theory, demographic transition model.

Unit-III

Components of population change: trends and patterns in fertility and mortality levels; Theories of fertility; Migration: major international migrations; features of internal migration in India; theories of migration; population composition and characteristics - age and sex composition, literacy, marital status and economic characteristics of population.

Unit-IV

Population and development: population growth and economic development; population growth and environmental quality; population control movement: population policies and its types; India's Population Policy: Post independence development – Reproductive and Child Health Programme.

Subject: NATURAL HAZARDS AND DISASTER MANAGEMENT

Course Outcome: Students would be able to learn about hazards and their management.

Unit-I

Concept of Hazards, Risk, Vulnerability and Disaster. Types of Hazards: Natural (Tectonic Hazards – Earthquakes and Volcanoes; Hydrological Hazards – Floods and Droughts).

Unit- II

Regional Dimension of Natural Hazards: Occurrence and Trends. (Tectonic Hazards – Earthquakes and Volcanoes; Hydrological Hazards – Floods and Droughts).

Unit- III

Disaster Losses and Impact – Displacements, Livelihood. Economy and Infrastructure, and Health.

Unit -IV

Mitigation and Management: Plans and Policies. Role of Remote Sensing, GIS and GPS in Disaster Management.

Subject: AGRICULTURAL GEOGRAPHY

Course Outcome: The students should be made to learn major concepts, factors affecting agricultural land use, agricultural system of the world and the emerging scenario in agriculture.

Unit-I

Definition, nature, scope, and significance of agricultural geography; approaches to the study of agriculture in geography-commodity, deterministic, systematic, and regional.

Unit-II

Factors influencing agricultural patterns-Physical factors; terrain, climate, soils and water resources; institutional factors; demographic, land holding, farm family structure, caste, religion, peasant way of life, infrastructural services; technological factors, irrigation, mechanical inputs.

Unit-III

Agricultural system of the world: Whittlessey's classification- shifting cultivation, plantation farming, Mediterranean agriculture, commercial grain farming; agricultural region-concept and techniques; Normative technique, empirical technique, single element technique and statistical technique.

Unit-IV

Nature, significance and classification of agricultural models; economic and descriptive models; food security; sustainable agriculture; WTO and Agriculture.

Subject: PRACTICAL: AERIAL PHOTOGRAPHS AND ITS INTERPRETATION

Course Outcome: Students would be able to understand the usefulness of air photo interpretation techniques in geography.

Exercises will be taken on following topics:

1. Aerial Photographs-Types and Characteristics;
2. Elements of Air Photo Interpretation;
3. Stereo Vision Test, Orientation of stereo model under Mirror Stereoscope; Determination of scale on an aerial photograph;
4. Measurement of height of an object on single vertical aerial photograph;
5. Parallax bar measurement and height determination;
6. Preparation of Index map;
7. Preparation of stereogram, stereotriplet and mosaic from aerial photographs;
8. Interpretation of Aerial photographs - Identification, mapping and interpretation of Natural and Cultural features (at least three exercises);
9. Land use/Land cover studies on aerial photographs;
10. Urban studies on aerial photographs-Change detection, Residential area study

Subject: PRACTICAL- SATELLITE IMAGES AND ITS INTERPRETATION

Course Outcome: Student will be able to understand and interpret variety of satellite images and they can create information about earth surface features.

Exercises will be taken on following topics:

1. Kinds of satellite images
2. Study of a satellite image - annotation (IRS - IB, IRS- IC etc.)
3. Visual interpretation of a satellite image.
4. Separating physical and cultural features on an image.
5. Identification of objects on panchromatic, true colour and FCC images and their comparison.
6. Identification and mapping of landuse/land cover on satellite images.
7. Study of thermal image and interpretation of various features.
8. Study of Radar image and interpretation of various features
9. Acquisition of open source satellite data from USGS / GLOVIS.
10. Acquisition of open source satellite data from BHUVAN (ISRO).

