Diamond Harbour Women's University ✧ Geography - Post Graduate Syllabus ✧ 2015

Semester	Module	Type	Subject	Marks
I	101	Th	Geomorphology	50
	102	Th	Climatology	50
	103	Th	Social & Cultural Geography	50
	104	Th	Economic Geography	50
	105	Pr	Geospatial Analysis	50
II	206	Th	Hydrology & Oceanography	50
	207	Th	Soil & Biogeography	50
	208	Th	Population & Settlement Geography	50
	209	Th	Historical & Political Geography	50
	210	Pr	RS, GIS & GPS	50
III	311	Th	Environmental Geography	50
	312	Th	Regional Geography	50
	313	Th	Regional Planning & Development	50
	314	Pr	Statistical Techniques	50
	315A	Pr	Quantitative Techniques	25
	315B	Pr	Field/Project Report	25
IV	416	Th	Philosophy of Geography	50
	417	Th	Special Paper–I	50
	418	Th	Special Paper–II	50
	419	Pr	Special Paper–III	50
	420	Pr	Special Paper–IV (Dissertation)	50

The Optional Subjects (Special Papers) offered

- Coastal Management
- Fluvial Geomorphology
- Soil Geography and Land use
- Gender Geography

Note: All theoretical papers would contain 40 marks for written exam and 10 marks for internal assessment. Internal assessment can be made in the form of seminar presentation *or* mid-semester test.

-SEMESTER I-

MODULE-101: GEOMORPHOLOGY

(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Concepts in Geomorphology

1.1 Spatial scale, temporal scale and related concepts: Systems, feedback, equilibrium and threshold.

1.2 Role of isostasy and plate tectonics in evolution of landforms.

1.3 Morphogenetic regions. Models of slope evolution.

1.4 Measurement and monitoring of landform evolution in fluvial and coastal environments.

Unit–II: Rivers and River Basins

2.1 River hydraulics: flow and energy. Hydraulic geometry of streams.

2.2 Catchment processes and fluvial processes. Factors regulating entrainment, transportation and deposition of sediments.

2.3 Adjustment of channel forms and patterns to morphodynamic variables.

2.4 Fluvial landforms: genetic classification, ordering, formation and evolution.

Unit–III: Evolution of Landforms

3.1 Coastal morphodynamic variables and their influence on evolution of coastal forms.

3.2 Classification and evolution of periglacial landforms.

3.3 Impact of Pleistocene on landform evolution.

3.4 Planetary geomorphology with special reference to Moon and Mars.

Unit–IV: Applied Geomorphology

4.1 Application of geomorphology in feasibility assessment of engineering and industrials projects. Geomorphic approach to hazard studies.

4.2 Factors, vulnerability, consequences and management of earthquakes, tsunamis and landslides.

4.3 Factors, vulnerability, consequences and management of coastal erosion, storm surges and floods.

4.4 Principles of integrated coastal management.

MODULE-102: CLIMATOLOGY

(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Concepts of Weather and Climate

1.1 The climate system: Micro, Meso and Macro; Linkages of climate with other environmental systems.

1.2 Role of heat and moisture in the atmosphere; Adiabatic processes and instabilities.

1.3 The wind circulation systems: Primary, Secondary and Tertiary.

1.4 Clouds: Formation and classification; Precipitation: Forms and functions.

Unit–II: Tropical Climates and Weather Hazards

2.1 Tropical circulations: Hadley and Walker, ENSO phenomena.

2.2 Tropical air mass; Convergence and divergence.

2.3 The Asian Monsoon: Importance, characteristics, and prediction.

2.4 Weather hazards – Heat and cold waves, thunderstorm, tornado and cyclone: Distribution, significance and forecasting.

Unit–III: Climate Change

3.1 Evidences of climate change; Reconstruction of past climates.

3.2 Anthropogenic interferences on climate prognostication .

3.3 The climate cycle; Climate trends in the Holocene period.

3.4 Recent trends of global climates: impact on society and economy

Unit–IV: Applied Climatology

4.1 Approaches and techniques of weather forecasting short, medium and long range.

4.2 Climate and agriculture: Agro-climatology – Water budget and crop calendar.

4.3 Climate and settlements: Urban climatology – Urban Heat Island.

4.4 Climate and health: Bio-climatology – Human comfort and health aspects.

MODULE-103: SOCIAL & CULTURAL GEOGRAPHY

(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Concepts in Social Geography

1.1 Social Geography: definition, schools of thought, recent trends, social stratification, social processes and social groups.

1.2 Welfare Issues: Social Wellbeing, Social Pathology, Social Development Index.

1.3 Social Security, Social Justice and Social Inequality.

1.4 Development and Gender: Women Empowerment (GEM), Gender Disparity.

Unit–II : Social System and Elements

2.1 Social Structure and Processes.

2.2 Class, Caste, Power Ethnicity and Tribe.

2.3 Religion and Language: Distribution and Classification.

2.4 Social Problems: Food Security, Nutrition, Social Exclusion.

Unit–III : Cultural Geography

3.1 Concept of Culture in Geography: definition and content.

3.2 Cultural Hearth and Realm.

3.3 Cultural System and Diffusion.

3.4 Cultural Segregation, Cultural Diversity, Cultural Regeneration, Cultural Turn.

Unit–IV : Social –cultural Relations

4.1 Cultural Landscape after Carl Sauer.

4.2 Cultural Development: Eco centric, Techno centric.

4.3 Role of Environment in the Development of Folk Culture and its Diversity.

4.4 Acculturation, Impact of Neo–liberal paradigm on urban culture–Cultural Globalisation.

MODULE-104: ECONOMIC GEOGRAPHY

(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Resources and Economics

1.1 Concept of resource, Resource adequacy and concept of scarcity. Economic systems.

1.2 Ranking of world economies. Resource classification: Ackerman's scheme.

1.3 Limits to growth: Classical, neo-classical and ecological economics.

1.4 Economic theories: Functional, sustainable development, resource and inequality.

Unit–II: Agricultural Economy

2.1 Agricultural regions: Concepts and Techniques of delineation.

2.2 World agricultural systems, Agri-business.

2.3 Green revolution and food security in India.

2.4 Land tenure systems and land reforms in relation to Indian agriculture.

Unit–III: Industrial Economy

3.1 Theories of industrial location as proposed by Palander, Hoover, Smith and Pred.

3.2 Major industrial regions. Spatial distribution of manufacturing industries: Petroleum refining and textile.

3.3 Emerging industries with special reference to food processing and ICT in India.

3.4 Industrial policy of India. Role of liberalisation, privatisation and globalisation.

Unit–IV: Trade and Commerce

4.1 Economics of global trade: Balance of payment, role of GATT and WTO.

4.2 Regional blocs in international trade.

4.3 Market network and linkages: Market centres, periodic and daily marketing, retailing and whole-selling, E-commerce.

4.4 Impact of information technology on trade in India

MODULE-105: GEOSPATIAL ANALYSIS

(Practical: Written Exam: 40 marks + Laboratory notebook and Viva-voce: 5+5 marks)

Unit– I: Analyses of Topographical Maps

1.1 Comparative utility of topographical maps, aerial photos and satellite images as sources of geographical data.

1.2 Preparation of altimetric frequency curves and hypsometric curves of drainage basins.

1.3 Extraction of radii of curvature and sinuosity & braiding indices of channels.

1.4 Nearest neighbour index analysis.

Unit–II: Analyses of Satellite Images

2.1 Common types of IRS and Landsat sensors and their suitability for analysis of geographical information. Indian referencing scheme of IRS sensors.

2.2 Extraction of physical features from satellite images of various resolution and band combinations.

2.3 Extraction of cultural features from satellite images of various resolution and band combinations.

2.4 Detection of change from multidated maps and/or images (including images captured from web–based earth observation programmes).

Unit–III: Survey Techniques

3.1 Traversing using Theodolite

3.2 Height measurement using Theodolite

3.3 Use of Abney Level and Clinometer

3.4 Land Use Study at Micro–level using Cadastral Map

-SEMESTER II-

MODULE-206: HYDROLOGY & OCEANOGRAPHY

(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Hydrology - Concepts

1.1 Components, Source and measurement of hydrological data

1.2 Water in earth: forms, occurrences and properties.

1.3 Significance of the global hydrological cycle with special reference to heat transfer.

1.4 Groundwater contamination: types and consequences

Unit–II: Hydrology – Applications & Management

2.1 Water management in tropical farmlands: Approaches and techniques.

2.2 Water management in tropical cities: Techniques and approaches.

2.3 Principles of integrated basin management with reference to micro-watershed planning.

2.4 Consequences of river impoundment. Issues related to damming of large rivers.

Unit–III: Oceanography - Concepts

3.1 Classification, characteristics and origin of the major structural and relief of ocean floor with reference to plate tectonics.

3.2 Bottom topography of Bay of Bengal: characteristics and evolution.

3.3 Waves and tides: Genetic classification and models of formation.

3.4 Ocean circulation: classification and significance.

Unit–IV: Oceanography – Resource & Utilisation

4.1 Ocean water mass: origin, evolution, physical and chemical properties.

4.2 Sea-level change: types, causes and implications.

4.3 Ocean as a resource: nature and extent of anthropogenic utilisation of the oceans.

4.4 EEZ and CRZ: delimitation, significance and UNCLOS.

MODULE-207: SOIL & BIOGEOGRAPHY

(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Soil Geography

1.1 Soil as a component of Biosphere; Concept of land and soil; Plant–water–soil relationship.

1.2 Bio–functions of Soil; Soil organic matter, Soil organisms and their relation with soil fertility, macro and micro nutrients.

1.3 Role of physico–chemical properties in soil fertility and productivity.

1.4 Soil degradation and transformation: causes, processes and consequences; Preventive, ameliorative and conservation measures.

Unit–II: Plant Geography

2.1 Plant ecology: habitat factors and plant responses to environment: adaptation, and climax: domestication of plants.

2.2 Phyto–geographical regions; Concept of plant species, family and genera; taxonomy.

2.3 Consequences of deforestation. Forest conservation: social forestry and participatory management of forest.

2.4 Concept of degeneration and regeneration of plants.

Unit–III: Zoo Geography

3.1 Principles of animal ecology

3.2 Animals dispersal in different geological periods.

3.3 Dispersal and migration of animals: means and barriers; Zoo–geographical regions of the world.

3.4 Principles of animal ecology; Wild life management; Relevance of sanctuaries with special reference to India.

Unit–IV: Ecosystem and Ecology

4.1 Principles of physical and human ecology; Ecosystem models.

4.2 Population dynamics of organisms and problems of their abundance and extinction.

4.3 Mangrove ecosystems: associated problems and management.

4.4 Biodiversity conservation with special reference to humid tropics.

MODULE-208: POPULATION & SETTLEMENT GEOGRAPHY

(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Population Geography

1.1 Population geography: nature, trends and its relation with demography; different schools of thoughts in population studies.

1.2 Population Growth differentials: fertility, mortality, morbidity, migration.

1.3 Stationary and Stable Population, age-sex structure, ageing population.

1.4 Population quality: literacy, occupation, health.

Unit–II: Population Theories and Policies

2.1 Growth theories: Malthus and Marx, Dumont's hypothesis, theories of optimum population.

2.2 Demographic transition and mobility transition models.

2.3 Migration Theories: models of Lee, Zelinsky, Spencer and Todaro.

2.4 Population Policies: India and China, population-development debate, Ehrlich and Amartya Sen's view.

Unit–III: Rural Settlement

3.1 Concept of Settlement: rural and urban differentials; census categories of rural settlements.

3.2 Theories of evolution of rural settlements: models of Hudson and Green.

3.3 Classification of rural settlement: models of Champion and Gestalt.

3.4 Rural house types: structure and forms under different geographical environment in India.

Unit–IV: Urban Settlement

4.1 Definition of *urban* in India and world, classification of settlement by Census of India; concept of conurbation, metropolis, megalopolis, ecumenopolis and green cities.

4.2 Urban morphology: models of Alonso, Sinclair and Mann.

4.3 Theories of spacing of urban settlements; urban hierarchy, primate city.

4.4 Emerging urban problems in India: Policies and planning.

MODULE-209: HISTORICAL & POLITICAL GEOGRAPHY

(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Historical Geography – Conceptual Issues

1.1 Development of historical geography as a discipline.

1.2 Sources of historical geography and cartographic materials.

1.3 Major issues in the discourse of historical geography.

1.4 Paradigm shifts in historical geography

Unit–II: Historical Geography of India

2.1 Development of the identity of India in ancient periods: Population dynamics and sacred space.

2.2 Historical geography and mythology: events and issues.

2.3 Elements of historical geography and travel literature: Hiuen Tsang, Ibn–E–Batuta, Barnier.

2.4 Phases and changing environment in ancient period: Societies and resource utilisation.

Unit–III: Political Geography – Conceptual Issues

3.1 Evolution of Political Geography: major theoretical influences

3.2 Spatial perspectives: border, frontiers, buffer zones, core and periphery, regional identity

3.3 Transitions in the Political economy: Imperialism decolonization, post-colonisation, neo-liberalism, globalization.

3.4 Neo-Marxist critique – Harvey, Peet and Smith

Unit–IV: Issues in Political Geography and the Indian Polity

4.1 Border issues and enclaves: emerging problems and consequences

4.2 Electoral Geography: overview of models; Political ecology: tragedy of commons

4.3 India: Federalism, SAARC and BRICS

4.4 Water dispute issues in India: interstate and international

MODULE-210: RS GIS & GNSS (Practical–50 marks)

(Practical: Written Exam: 40 marks + Viva-voce & Laboratory Notebook: 5+5 marks)

Unit–I: Global Navigation Satellite System

3.1 Principles of GNSS positioning with special reference to GPS

3.2 Collection and retrieval of GNSS positions

3.2 Preparation of maps from GNSS data

3.3 Length and area measurements from GNSS data

Unit– II: Remote Sensing

1.1 Georeferencing using ortho–images and GNSS data

1.2 Generation of spectral library of LU/LC features from L3 and TM data

1.3 Image classification: unsupervised and supervised Accuracy assessment.

1.4 Change detection from mutilated maps and images

Unit–III: Geographical Information System

2.1 Raster to vector conversion

2.2 Spatial analysis through vector overlay

2.3 Preparation of annotated thematic maps

2.4 Preparation of DEM from spot heights, contours and SRTM data

Unit–IV: Laboratory Note Book and Viva Voce

-SEMESTER III-

MODULE-311: ENVIRONMENTAL GEOGRAPHY

(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Concepts

1.1 Physical Components: Lithosphere, Hydrosphere, Atmosphere, Biosphere and their relationship

1.2 Socio-cultural components with special reference to Demographic characteristics, Health and Nutrition, Income and Education, Housing and Sanitation

1.3 Geographers' approach to environmental studies; Significance of environmental perception

1.4 Concept of Holistic Environment and emergence of Environmentalism

Unit–II: Environmental Hazards, Pollution and Technology

2.1 Perception of Degradation, Pollution, Hazards and Disaster

2.2 Natural hazards: Vulnerability and risk; hazard reduction and disaster management

2.3 Social hazards: Responsible factors, impact and redressal

2.4 Pollution of air, water and soil: Sources, management, health impact and control measures

Unit–III: Global Environmental Issues

3.1 Global resource crisis and population equilibrium

3.2 History of Earth Summits and thereof

3.3 Relevance of Kyoto and Montreal Protocols

3.4 Biodiversity conservation and genetically modified organisms (GMOs)

Unit–IV: Environmental Issues in India

3.1 Forest policies in India and problems of forest- society interface

3.2 Big dams and their viable alternatives

3.3 Conservation of wetland and wasteland management

3.4 Urban- industrial expansion and social conflict

MODULE-312: REGIONAL GEOGRAPHY

(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: India – Selected Regional Problems

1.1 Problems of water management and its impact on food security

1.2 Occupational change and labour migration in neo–liberal era

1.4 Gender imbalance and social implications

1.5 The problem of regionalism: Ethno–political identities

Unit–II: India –Regional Development

2.1 MGNREGA and Rural development; PM Gram Sadak Yojana

2.2 Hill Area Development Programmes; Right to Forest People's Act

2.3 JNNURM and urban mobility

2.4 Development Policies and Programmes for the North East India

Unit–III: Ganga Delta – Physical Setting

3.1 Tectonic and stratigraphic evolution of the Bengal basin.

3.2 Ganga delta: Quaternary evolution and geomorphic classification.

3.3 Drainage system of the Indian Ganga delta: characteristics and changes in the last 250 years.

3.4 Indian Sunderban: Tidal hydrodynamics and impacts of land use change.

Unit–IV: Sunderban Region – Human Aspects

4.1 Population: Growth, distribution and composition

4.2 Settlement and transport: Typology and dynamics

4.3 Agriculture: Patterns, problems and prospects

4.4 Infrastructure and Industries: Patterns, problems and prospects

MODULE-313: REGIONAL PLANNING & DEVELOPMENT

(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Regional Planning: Concepts

1.1 Concept of region: Formal, functional and planning; classification and delineation

1.2 Concept of multi-level planning: Local, regional and national level planning

1.3 Economic base theory and theory of Growth Pole and Growth Centre

1.4 Metropolitan concept: Metropolis, metropolitan area, metropolitan region and megacity.

Unit–II: Regional Planning and Development

2.1 Basic principles of regional planning.

2.2 Indicators of regional development: economic, social, technological and infrastructural.

2.3 Integrated regional development: Rural development; balanced vs. unbalanced development.

2.4 Urban planning; Renewal and management; planning for city-region.

Unit–III: Strategies of Regional Development and Zonal Planning

3.1 Concept of regional disparity; Theories of convergence and divergence.

3.2 Concept of regional development: Indicators of development, regionalisation, regional development theories and models.

3.3 Regional imbalances: Identification of backward areas and policy issues.

3.4 Regional planning in India: DVC, National Capital Region, Kolkata and Tribal Area Development.

Unit–IV: Regional Planning in India

4.1 Regional Policies in Five Year Plans, Introduction to 12th Five Year Plan.

4.2 Role of Regional Planning in National Development.

4.3 Regional Planning in different fields: Irrigation and Regional Planning, Energy resources and Regional Planning

4.4 Globalization and its impact on India

MODULE-314: STATISTICAL TECHNIQUES (Practical–50 marks)

(Practical: Written Exam: 40 marks + Viva-voce & Laboratory Notebook: 5+5 marks)

Unit–I: Probability, Sampling and Test of Confidence

1.1 Probability theory and Normal distribution

1.2 Sampling theory and Sampling Error

1.3 Scaling Techniques: Rank Score, Weighted Score, Likert's Opinionnaire

1.4 Statistical Decision theory: Social Affinity Index (SAI), t-test, Type I and Type II errors, One-tailed and two-tailed tests

Unit–II: Correlations and Statistical inferences

2.1 Partial and Multiple correlations

2.2 Factor Analysis (Centroid Method)

2.3 Analysis of Variance (ANOVA)

2.4 Non-parametric tests: Chi-Square Test, Mann-Whitney U Test

Unit–III: Computer Application in Data Processing and Representation

3.1 Data mining from internet sources: Preparation of an inventory

3.2 Tabulation of data and its graphical representation: Population, Land use, Weather

3.2 Use of statistical formula: Central tendency, Dispersion, Co-efficient of Variation

3.3 Fitting of trend lines: Bi-variate, Time series

Unit–IV: Laboratory Note Book and Viva Voce

MODULE-315: QUANTITATIVE & FIELD TECHNIQUES (Practical–50 marks)

(Practical: Written Exam: 40 marks + Viva-voce & Laboratory Notebook: 5+5 marks)

Unit–I: Quantitative analysis and diagrams

1.1 Gini-coefficient and Lorenz curve

1.2 Nearest Neighbour Analysis and Occupational Ternary diagram.

1.3 Exponential growth curve and population projection

1.4 Index number and Cumulative Index Curve

Unit–II: Quantitative Mapping and interpretation

2.1 Mean centre of population and its shift; Concentration of population about mean centre

2.2 Location quotient; Z-score

2.3 Residual mapping; Crop combination analysis

2.4 Population potential (Gravity Model); Accessibility Map (Distance/ Centrality Matrix/ MAT)

Unit–III: Field Techniques

3.1 Observation Method: Traffic Composition/Flow, Bio-diversity Register, Crop-composition

3.2 Survey Schedule: Household Survey, Market Survey, Passenger Survey, Tourist Survey

3.3 Field instruments: Portable weather station, Abney Level, Clinometer, sound meter

3.4 Land Use Study at Micro-level using Cadastral Map

Unit–IV: Laboratory Note Book and Viva Voce

-SEMESTER IV-

Module-416: PHILOSOPHY OF GEOGRAPHY

(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit-1: Genesis of Geographical Thought

1.1 History of development of geography. Place of geography in the classification of knowledge.

1.2 Ancient geography: Contributions of Greek, Roman and Arab Geographers.

1.3 Pre-scientific ideas in the ancient and medieval periods, Emergence of modern geography. Environmental determinism of Ratzel and Huntington

1.4 Contemporary Geography since 1950. Impact of World Wars

Unit-2: Trends in Geography

2.1 Dualism and dichotomies in Geography

2.2 Reaction to positivism: Marxism, post structuralism and post colonialism.

2.3 Critique of modernism: Post modernism

2.4 Deconstruction and spatiality

Unit-3: Geography and Inequality

3.1 Critical theory and its implications: Habermas, Harvey and Peet.

3.2 Geography of inequality, social wellbeing and welfare approach

3.3 Critical turn in Geography

3.4 Geography of Gender

Unit-4: Changing Face of Geography

4.1 Redefining geography, revival of classical ideas.

4.2 Changing nature of man-environment relations and revival of ecological approach.

4.3 Development of radical geography. Paradigms in contemporary geography: sustainability globalization.

4.4 Contemporary research trend in geography and use of modern techniques.

Module-417: COASTAL MANAGEMENT–I (Optional Special Paper)

(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Coastal processes and forms

1.1 Coastal Morphodynamics: factors, characteristics and relative dominance of wave, tidal and fluvial processes. Morphodynamic indices and their controls

1.2 Processes and effects of bio-tidal accretion, coral formation and storm urge/tsunami in coasts.

1.3 Formation, system of change and classification of coastal landforms with special reference to rhythmic beach topography, coastal dunes and deltas.

1.4 Coastal classification schemes of Hayes (1979), Orton and Reading (1991 and 1993) and Darlymple, Zaitlin and Boyd (1992).

Unit–II: Coastal ecology

2.1 Coastal ecosystems: Diversity and uniqueness

2.2 Coastal vegetation of humid tropics: Classification and significance

2.3 Coastal animals of humid tropics: Classification and significance

2.4 Coastal ecosystems of West Bengal: threats and management

Unit–III: Anthropogenic impacts on coasts

3.1 Origin, typology and classification of impacts: Direct, indirect, cumulative, ecosystem, socio-economic and natural.

3.2 Coastal reclamation: types, techniques and effects

3.3 Coastal pollution: sources and management

3.4 Principles of Environmental Impact Assessment and Environmental Management Planning

Unit–IV: Coastal hazards - Factors, risks, vulnerability and management

4.1 Tropical storm

4.2 Tsunami

4.3 Saltwater incursion

4.4 Dune encroachment

Module-418: COASTAL MANAGEMENT–II (Optional Special Paper)

(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Coastal Engineering

1.1 Modelling in coastal engineering

1.1 Erosion prevention structures: classification and evaluation

1.3 Beach nourishment and augmentation

1.4 Dredging: types and utility

Unit–II: Socio-economic aspects in coastal management

2.2 Coastal communities: Types, opportunity and vulnerability

2.2 Coastal development: stakeholders, issues and management

2.3 Environmental impacts of coastal communities

2.4 Socio-economic responses to climate and sea level change in coasts

Unit–III: Integrated Coast Zone Management

3.2 Coast zone components: identification and establishment of relationships

3.2 Environmental assessment and auditing; problem analysis and conflict resolution

3.3 Coastal management and planning techniques: Administrative, social and technical

3.4 Integrated coastal management plan: Types, implementation, monitoring and evaluation.

Unit–IV: Case studies on coastal issues and management

4.2 Coastal erosion in Medinipur and Sundarban coasts

4.2 Reclamation of Sundarban

4.3 Sedimentation of the Hugli estuary

4.4 Coastal tourism at Digha, Bakkhali and Mandarmani

Module-419: COASTAL MANAGEMENT–III (Optional Special Paper)

(Practical: Written Exam: 40 marks + Laboratory notebook and Viva-voce: 20 marks)

Unit–I: Quantification of coastal processes

2.2 Preparation of wave refraction diagram.

2.2 Determination of breaker types by empirical equations.

2.3 Determination of discharge of tidal streams by using field equipment (total station / dumpy level, echosounder and current meter)

2.4 Longshore drift estimation using tracers.

Unit–II: Quantification of coastal landforms and environment

2.2 Coastal mapping and profiling using survey equipment (total station / theodolite)

2.2 Floral species survey using grid method.

2.3 Sample designing for conducting perception survey of coastal issues.

2.4 Questionnaire preparation for primary survey.

Unit–III: Sediment analysis and image interpretation

3.2 Measurement of suspended sediment concentration.

3.2 Analyses of pebbles and sediments: shape indices, textural analysis by sieving.

3.2 Extraction of geomorphic and cultural features from Satellite images.

3.3 Coastal erosion and inundation: rate estimation and risk zoning from maps and images.

Unit–IV: Laboratory Notebook and Viva Voce

Module-417: FLUVIAL GEOMORPHOLOGY–I (optional special paper)
(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Concept and approaches

1.1 Fluvial Geomorphology: Concept, Chronological Study of Fluvial Geomorphology, Trend of study

1.2 Fluvial System: Components , Variables, Scale-spatial and temporal

1.3 Drainage Basin: Hydrological components and flow principles, form and processes.

1.4 Run-off: Factors, Cycles, Estimation, Stream rise

Unit–II: Hydrological behaviour of river

2.1 Channel flow: Mechanism of open channel flow and hydraulic relations, types and factors

2.2 Stream Power : Energy and velocity principle in flow, Flow Model, Storm Flow

2.3 Stream Load: Transportation and entrainment laws and stream load

2.4 Channel Equilibrium: Graded stream, Re-graded stream, Base level of erosion- types, changes and consequences

Unit–II: Channel morphological behaviour

3.1 Channel Geometry: Morphological and hydrological factors, processes and consequences

3.2 Channel Bed : Topography, factors and consequences.

3.3 Channel Change : Evidences, causes and consequences of spatio-temporal changes, channel metamorphosis.

3.4 Channel Pattern: Causes of development and morphological properties of straight, meandering and braided river

Unit–III: Basin quantification

4.1 Models of channel initiation and channel evolution

4.2 Empirical and genetic model of drainage pattern

4.3 Quantitative analysis of drainage basin- merits, demerits and applicability

4.4 Application of Remote sensing and GIS system in Drainage Basin Analysis

Module-418: FLUVIAL GEOMORPHOLOGY–II (Optional Special Paper)
(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Fluvial landforms

1.1 Alluvial Terrace: Evolution and Characteristics with special reference to Tista River Basin

1.2 Alluvial Fan: Evolution and Characteristics with special reference to Kosi River Basin

1.3 Flood Plain: Evolution and Characteristics with special reference to Brahmaputra River Basin

1.4 Delta Plain: Evolution and Characteristics with special reference to Lower Ganga Basin

Unit–II: Fluvial hazards

2.1 River Floods: Causes, Consequences, Viability of Management Strategies in national context

2.2 River Bank Erosion: Causes, Consequences, Viability of Management Strategies with special reference to River Ganga

2.3 River Shifting: Causes, Consequences, Viability of Management Strategies with special reference to Sunderban Region

2.4 River Pollution: Causes, Consequences, Viability of Management Strategies

Unit–III: Anthropogenic impacts

3.1 Effect of Dams, Reservoirs and Bridges on morphological and Hydrological character of river Basin

3.2 Effects of Irrigation and Navigation canals on morphological and Hydrological character of river Basin

3.3 Effect of Urbanisation on morphological and Hydrological character of river Basin

3.4 Effect Industrialisation and Privatization on morphological and Hydrological character of river Basin

Unit–IV: Basin management strategies

4.1 Watershed Management: Approaches and Principles with reference to India

4.2 Flood Plain Management: Approaches, Evaluation of existing strategies of Eastern India

4.3 Interlinking of Rivers: Issues, Evaluation, Consequences with reference to India

4.4 River Water Sharing: Interstate and International Issues with case studies

Module-419: FLUVIAL GEOMORPHOLOGY–III (Optional Special Paper)
(Practical: Written Exam: 40 marks + Viva-voce & Laboratory Notebook: 5+5 marks)

Unit–I: Drainage basin analysis

1.1 Verification of laws of drainage basin

1.2 Computation of long and cross profiles of drainage basin

1.3 Preparation of Water Budget Graph (Recharge, discharge, surplus and deficit calculation).

1.4 Preparation of geomorphological map of the drainage basin

Unit–II: Sediment analysis and mapping techniques of drainage basin

2.1 Analysis of pebbles and sediments: shape indices, textural analysis by sieving

2.2 Measurement of suspended sediment concentration

2.3 Preparation of River bank erosion map and vulnerable zone with the aid of GPS and GIS techniques

2.4 Preparation of channel shifting zone with the aid of toposheet and satellite images

Unit–III: Flood analysis

3.1 Computation and preparation of Annual hydrograph, Techniques of Base Flow Separation, Computation of Runoff Co-efficient

3.2 Preparation of river flood map on the basis of collected data

3.3 Analysis of shapes sizes of collected river sediments

3.4 Flood Probability Analysis: Weibull and Gumbel's Method

Module-417: SOIL GEOGRAPHY & LAND USE–I (Optional Special Paper)
(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Soil genesis: factors, processes & profile development

1.1 Importance of the study of soils, Processes of Weathering, Formation of Regoliths.

1.2 Soil formers and factors of Soil formation

1.3 Soil forming processes

1.4 Soil Profile development under different Climatic conditions

Unit–II: Physical and chemical properties of soils

1.1 Physical Properties: Texture, Structures, Colour, Pore spaces & Temperature.

2.2 Chemical Properties of Soils: Soil Reaction: Acidity and Alkalinity, Nutritional significance of Soil pH.

2.3 Soil Organic Matter: Humus – Genesis and Nature; Factors affecting Soil Organic Matter; Carbon Cycle

2.4 Soil Colloids: Nature and Practical Significance

Unit–III: Techniques of soil survey and soil classifications

3.1 Procedures of Soil Survey

3.2 Some Classical Genetic Soil Classifications: Dakucheav, Marbut

3.3 Evolution of Indian Soil Classification Systems

3.4 Comprehensive Soil Classification Systems: Soil Taxonomy

Unit–IV: Soil fertility

4.1 Nitrogen (N)

4.2 Phosphorous (P)

4.3 Potassium (K)

4.4 Micronutrients

Module-418: SOIL GEOGRAPHY & LAND USE–II (Optional Special Paper)
(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Concept of land and land use

1.1 Factors governing land utilisation; Importance of soil as determinant of land use

1.2 Objectives and Principles of land use planning

1.3 Methods of Land Use Survey

1.4 Land use Planning Techniques and Methods

Unit–I: Principles and techniques of land classifications

2.1 Land Capability classification of USDA, UK methods

2.2 Land Capability Classification of UK methods

2.3 FAO Methods of Land Suitability Classification

2.4 Land Capability Classifications in India

Unit–I: Soil pollution

3.1 Reactions of Pesticides in Soils

3.2 Soils as Organic Waste Disposal Sites

3.3 Acid Rain

3.4 Fertilizer Contamination of Water

Unit–I: Methodology for assessing land & soil degradation

4.1 Methods for assessing land degradation

4.2 Methods for assessing soil degradation

4.3 Desertification and degradation

4.4 Salinization &Alkalinization of Soils

Module-419: SOIL GEOGRAPHY & LAND–III (optional special paper)
(Practical: Written Exam: 40 marks + Viva-voce & Laboratory Notebook: 5+5 marks)

Unit–I: Physical soil properties: Laboratory analysis

1.1 Soil samples: Techniques of collection, preparation and preservation

1.1 Measurement of Hygroscopic moisture

1.2 Munsell's Soil Colour Analysis

1.3 Mechanical Analysis (Robinson's International Method).

Unit–II: Keen Raczkowski measurements

2.1 Soil density & Soil specific gravity

2.2 Soil porosity

2.3 Volume expansion

2.4 Water holding capacity

Unit–IV: Chemical soil properties: Laboratory analysis

4.1 Kit Box analysis (N.P.K., Organic Matter, and pH)

4.2 Determination of Organic Matter (Walkley& Black's Rapid Titration method)

4.3 Determination of Organic Carbon

4.3 Soil pH (Kuhn's Colourimetric method).

Module-417: GENDER GEOGRAPHY–I (optional special paper)
(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit–I: Introduction to Gender Geography

1.1 History and development of Gender Geography, Women's Studies to Gender Studies: A Paradigm Shift

1.2 Sex and Gender; Types of Gender, Gender Stereotyping and Gender Discrimination

1.3 Definition and Understanding of Masculinities, Politics of Masculinity and Power

1.4 Gender roles Biological vs. cultural determinism, Private vs. public dichotomy

Unit–II: Gender and Society

2.1 Gender and Family: Gender division of labour and asymmetric role structure− Gender role socialization and formation of identity

2.2 Segmented labour market and labour force participation, Occupational segregation and wage discrimination.

2.3 Gender disparity in education, Gender bias in school curriculum knowledge, Education goals from gender perspective

2.4 Patriarchy and Gender-power, Capitalism and Gender.

Unit–III: Gender and Economy

3.1 Women and work: Women in primary, secondary and tertiary sectors, Invisibility of women's work, problems in measurement

1.2 Gendered jobs and Social Inequality, Sex Segregation at Work Place

1.3 Women's participation in organized sector, Gender Discrimination, Marginalization and Glass Ceiling,

1.4 Globalization and its impact on gender.

Unit–IV: Gender, Environment and Livelihood

4.1 Gender Roles in Rural and Tribal Societies.

4.2 Male and Female Farming System: Differential roles Rural Women Livelihood in Subsistence Economy

4.3 Environmental Degradation: Gender specific consequences of environmental degradation.

4.4 Women in Natural Resources Management, Role of women in Sustainable Development.

Module-418: GENDER GEOGRAPHY–II (optional special paper)
(Theoretical: Written Exam: 40 marks + Internal Assessment: 10 marks)

Unit 1 Gender and Poverty

1.1 Definition and types of poverty, Relation between gender and poverty

1.2 Gender Inequality and poverty Women's Work and Household Survival, Female headed households and Feminisation of poverty

1.3 Status of women in Poverty: Rural society, urban society and Tribal society

1.4 Poverty and Women Empowerment: Limited voice in community decision making

Unit 2 Gender Empowerment

2.1 Empowerment of Women at Various Levels; Village to Parliament

2.2 Access to economic opportunities

2.3 Access to reproductive health services

2.4 Involvement in decision making process environmental issues

Unit 3 Gender and Violence

3.1 Understanding violence from Historical Perspective

3.2 Structural Inequalities and Violence – Racism, Classicism, Heterosexism, Sexism

3.3 Sexual violence on Women

3.4 Caste violence and honour killing

Unit 4 Gender and Law

4.1 Creation of a colonial law: the penal code and personal laws

4.2 Women & Family Laws: Marriage, Child Marriage, Widow Remarriage, Divorce, Maintenance and Dowry Prohibition act.

4.3 Women's Human Rights and Law Reform.

4.4 Gender biased laws in India

Module-419: GENDER GEOGRAPHY–III (optional special paper)
(Practical: Written Exam: 40 marks + Viva-voce & Laboratory Notebook: 5+5 marks)

Unit 1.0 : Analysis of Gender Data

1.1 Male –Female growth differentials, growth rate and Projection

1.2 Temporal changes in sex ratio in developed and developing countries

1.3 Gender differences at birth rate in rural and urban areas

1.4 Gender Development index, Gender inequality Index, Gender gap index

Unit 2.0: Preparation and Interpretation of maps related to Gender

2.1 Work participation gender wise in Primary, Secondary and Tertiary sectors

2.2 Wage differentials gender wise in agriculture, industry and Service sector

2.3 Gender disparity in education: Primary, secondary and tertiary

2.4 Gender wise poverty differentials

Unit 3.0: Perception Survey Techniques

3.1 Preparation of Questionnaire related to gender issues (crime against women, problems at work place)

3.2 Women and the city: perception mapping

3.3 Quality of life of women in rural and urban areas

3.4 Gender differential in access to basic services

Module 420 SPECIAL PAPER DISSERTATION

Report and Seminar Presentation on specific problem by individual student based on Special Paper

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