Syllabus
for
M. A. / M. Sc. in Geography
Choice Based Credit System (CBCS)

REVISED IN 2016: EFFECTIVE FROM THE ACADEMIC SESSION 2016-2017

Department of Geography

Sidho Kanho Birsha University

Purulia

Ranchi Road, Post Office: Purulia Sainik School
District : Purulia, West Bengal
PIN: 723 104. INDIA

DIVISION OF MARKS
Total marks: 1050 (Core) + 150 (Elective)

For Internal Students				*Elective*	*Total*
Semesters	*Theoretical*	*Practical*	*Total*		
Semester- I	200	100	300	---	**300**
Semester- II	200	100	300	---	**300**
Semester- III	150	50	200	100	**300**
Semester- IV	150	100	250	50	**300**
Total	**700**	**350**	**1050**	**150**	**1200**

STRUCTURE OF SYLLABUS

SEMESTER-I
(Duration: July – December)

Type	Code	Course Title (Module)	Marks			Credit	Class Hours / Week
			End-term Assessment	Internal Assessment	Paper Total		
THEORETICAL	*MGEOCCT101*	***Geotectonics and Geomorphology***	**40**	**10**	**50**	**4**	**4**
	MGEOCCT102	***Climatology***	**40**	**10**	**50**	**4**	**4**
	MGEOCCT103	***Economic Geography***	**40**	**10**	**50**	**4**	**4**
	MGEOCCT104	***Social & Cultural Geography***	**40**	**10**	**50**	**4**	**4**
PRACTICAL	*MGEOCCS105*	***Surveying and Preparation of Maps***	**50**	**---**	**50**	**8**	**8**
	MGEOCCS106	***Interpretation of Maps***	**50**	**---**	**50**	**8**	**8**

Note: M: Masters, GEO: Geography, CC: Core Paper, T/ S: Theory/ Practical; 1: 1st Sem, 01 - Module.

SEMESTER-II
(Duration: January – June)

Type	Code	Course Title (Module)	Marks			Credit	Class Hours / Week
			End-term Assessment	Internal Assessment	Paper Total		
THEORETICAL	*MGEOCCT201*	***Hydrology and Oceanography***	**40**	**10**	**50**	**4**	**4**
	MGEOCCT202	***Soil and Bio Geography***	**40**	**10**	**50**	**4**	**4**
	MGEOCCT203	***Population and Settlement Geography***	**40**	**10**	**50**	**4**	**4**
	MGEOCCT204	***Urban Geography and Developmental Issues***	**40**	**10**	**50**	**4**	**4**
PRACTICAL	*MGEOCCS205*	***Quantitative Techniques***	**50**	**---**	**50**	**8**	**8**
	MGEOCCS206	***Field Report***	**50**	**---**	**50**	**8**	**8**

Note: M: Masters, GEO: Geography, CC: Core Paper, T/ S: Theory/ Practical; 2: 2nd Sem, 01 - Module.

SEMESTER-III
(Duration: July – December)

Type	Code	Course Title (Module)	Marks			Credit	Class Hours / Week
			End-term Assessment	Internal Assessment	Paper Total		
THEORETICAL	*MGEOCCT301*	***Geographical Thought***	**40**	**10**	**50**	**4**	**4**
	MGEOCCT302	***Environmental Geography and Disaster Management***	**40**	**10**	**50**	**4**	**4**
	MGEOCCT303	***Historical and Political Geography***	**40**	**10**	**50**	**4**	**4**
	MGEOET -305	***Land and People***	**40**	**10**	**50**	**4**	**4**
PRACTICAL	*MGEOCCS304*	***Remote Sensing & GIS***	**50**	**---**	**50**	**8**	**8**
	MGEOOPP306	***Outreach Programme***	**50**	**---**	**50**	**8**	**8**

Note: M: Module, GEO: Geography, C: Core Paper, E: Elective Paper, T/ S: Theory/ Practical; 3:3rd Sem, 01 - Module.

SEMESTER-IV
(Duration: January – June)

Type	Code	Course Title (Module)	Marks			Credit	Total Class Hours
			End-term Assessment	Internal Assessment	Paper Total		
THEORETICAL	*MGEOCCT401*	***Regional Geography of India and West Bengal***	**40**	**10**	**50**	**4**	60 hours
	MGEOMET402	***Special Paper***	**40**	**10**	**50**	**4**	60 hours
	MGEOMET403	***Special Paper***	**40**	**10**	**50**	**4**	60 hours
PRACTICAL	*MGEOMES404*	***Special Paper – Practical***	**50**	**---**	**50**	**4**	60 hours
	MGEOMEP405	***Term Paper – Special Paper***	**50**	**---**	**50**	**8**	120 hours
	MGEOACP406	***Add on Courses***	**50**	**---**	**50**	**8**	120 hours

Note: M: Module, GEO: Geography, C: Core Paper, S: Special Paper, E: Elective Paper, T/ S/P: Theory/ Practical/ Term Paper; 4: 4th Sem, 01 - Module.

PG – BOS passed 5 nos. of Special Paper (i.e. Population Geography (a), Advanced Geomorphology (b), Regional Planning and Urban geography (c), Environmental Geography (d) and Advanced Cartography (e). Special Paper availability will depend upon the availability of the Teaching Faculties of the Department of Geography, SKBU.

SIDHO-KANHO-BIRSHA UNIVERSITY

Syllabus of M.A. /M.Sc. Course in Geography

1st SEMESTER

Module: MGEOCCT101

:: GEOTONICS AND GEOMORPHOLOGY ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: CONCEPTS IN GEOTECTONICS

1.1. Spatial Scale, Temporal Scale and Concept of Systems Feedback, Equilibrium and Threshold
1.2. Concept of Dating, Geological Time Scale and Major Events of Earth History
1.3. Plate Tectonics as a Unified Theory of Global Tectonics
1.4. Principles of Measuring Landform and monitoring the Evolution

Unit: II: EVOLUTION OF LANDFORMS

2.1. Coastal Morphodynamic Variables and their Influence on Evolution of Coastal Landforms.
2.2. Classification and Evolution of Aeolian Landforms
2.3. Classification and Evolution of Glacial and Periglacial Landforms
2.4 Process and Models of Slope Evolution: Davis, Penck, King

Unit: III: RIVERS AND RIVER HYDRAULICS

3.1. River Hydraulics: Fluvial System, Sediment Yield and Sediment Supply, Flow and Energy, Channel Geometry
3.2. Catchment Process and Fluvial Process: Entrainment Capacity, Competency, Transportation and Deposition of Sediments
3.3. Channel Forms, Adjustment, Channel Bed Geomorphic Evolution
3.4. Floodplain: Geomorphic Evolution, Process and Landforms

Unit: IV: APPLIED GEOMORPHOLOGY

4.1. Concept and Evolution of Applied Geomorphology
4.2. Major Change in River Courses of Bengal and its Effect on Surrounding Environments, Concept of Channelisation
4.3. Decay of Rivers and its Effect on Agricultural and Industrial Economy
4.4. Factor, Vulnerability, Consequences and Management of Earthquake, Landslide, Flood and Riverbank Erosion

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOCCT102

:: CLIMATOLOGY ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: ATMOSPHERIC PROCESSES

1.1. Concept, nature and scope of climatology and its relationship with Meteorology
1.2. Climate system, variations of atmospheric composition, temperature, pressure
1.3. Nature of radiation and radiation laws; Energy budget of the Earth atmospheric system
1.4. Controlling forces of wind motion; Pressure gradient force; Coriolis force, Frictional force, Convergent and Divergent forces

Unit: II: CONDENSATION AND PRECIPITATION

2.1. The role of water vapour with Atmosphere, evaporation condensation by Adiabatic, isothermal processes
2.2. Water budgets, Global and Regional water balance
2.3. Theories of Rain Drop Formation
2.4. Monsoon: origin, characteristics and relationship with Jet streams, Numerical model of monsoon; MONEX, Walker circulation and ENSO phenomena

Unit: III: WEATHER DISTURBANCES AND FORECASTING

3.1. Air mass; Fronts and Tornadoes
3.2. Temperate and tropical cyclones and anti-cyclones
3.3. Techniques of weather forecasting; short, medium and long range
3.4. Climatic hazards / disturbances

Unit: IV: CLASSIFICATION AND APPLIED ISSUES

4.1. Classification of world climate – Thornthwaite, Trewartha
4.2. Climatic changes and cycle, recent climate changes and their effects
4.3. Agro-climatic regions, Basis of identification of Agro-climatic regions
4.4. Micro climate: Urban heat islands, hot spots, forest climate, cloud burst

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOCCT103

:: ECONOMIC GEOGRAPHY ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: CONCEPT OF RESOURCES

1.1. Concept and distribution of land, water and biotic resources
1.2. Functional theory of resources
1.3. Concept of Resource analysis in geography – Regional approach, production approach, ecological approach
1.4. Energy Resources – Renewable and Non-renewable development and utilization of resources

Unit: II: AGRICULTURAL GEOGRAPHY

2.1. World Agricultural Economics – Distribution and Pattern
2.2. Agricultural Regions: Concept, technique and delimitation, theory of Vonthunen, Sinclair
2.3. Land and Land reforms in relation to Agriculture in India, Green Revolution
2.4. Food grain production: Indian scenario

Unit: III: INDUSTRIAL GEOGRAPHY

3.1. Theories of Industrial location – Weber, Hoover, Palander
3.2. Major Industrial Regions of India
3.3. Industrial policy in the process of Liberalization, Privatization and globalization
3.4. Recent progressive industries – Petrochemical and IT

Unit: IV: TRANSPORT TRADE AND COMMERCE

4.1. Concept of distance, connectivity, accessibility – Intra-regional and inter-regional graph theory and development of transport network
4.2. Significance of Trade in National and International Economy – WTO, TRIPS, TRIMS, ASEAN, Concept of EPZs & SEZs
4.3. Modes of transport and transportation cost; comparative cost advantage
4.4. Network analysis, graph theory and development of transport network

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOCCT104

:: SOCIAL AND CULTURAL GEOGRAPHY ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: SOCIAL GEOGRAPHY

1.1. Social Geography: definition, scope, content, Social Geography in the realm of social sciences and its relation with Sociology and Anthropology
1.2. Elements of social geography, Social structure, Social processes and Social space
1.3. Concept of welfare and social well-being, indicators of social well-being, social well-being in India; Social security, Social change, Social justice and Social inequality
1.4. Region as a social unit; city region

Unit: II: ELEMENTS OF SOCIAL GEOGRAPHY

2.1. Major racial groups of the world and their distribution
2.2. Social elements: Ethnicity, Caste and Tribe
2.3. Religion: World and India
2.4. Distinction between dialects and languages and classification and geographical pattern

Unit: III: CULTURAL GEOGRAPHY

3.1. Concept and development of cultural geography
3.2. Cultural Hearth and Realm; Cultural system and diffusion
3.3. Culture, technology and development
3.4. Cultural segregation and cultural diversity

Unit: IV: CULTURAL RELATIONS

4.1. Three fold divisions of societies
4.2. Socio-cultural transformation: Environment and culture
4.3. Acculturation, metropolitan culture and cultural globalization
4.4. Cultural regions of world and India

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOCCS105

:: SURVEYING AND PREPARATION OF MAPS ::
(8 Credit Hours/ weekly)

Time: 4 Hours **Full Marks: 50**

Unit: I: CARTOGRAMS AND THEMATIC MAPPING

1.1. Hypsometric curve, Area Height diagram
1.2. Ergo graph, Crop calendar, Sex Ratio, Rank Size Rule
1.3. Weber's crop combination, Crop diversification,
1.4. Location quotient, Nearest Neighbour Analysis, Lorenz curve and Gini co-efficient,

Unit: II: PROJECTION

2.1. Concept and properties of map projection
2.2. Gnomonic and Stereographic (Equatorial case)
2.3. Mercator, Gall's, Mollweide, Sinusoidal
2.4. Choice and uses of Map Projections, Problems of scale variation related to projection

Unit: III: SURVEYING AND PREPARATION GEOGRAPHICAL MAPS

3.1. Plain Table Survey with two point and three point problems
3.2. Theodolite Survey: Traversing and Triangulation Survey, Determination of height of an object by oblique plane
3.3. Tachometric survey for finding difference of level, Reciprocal levelling with level
3.4. Total Station and GPS Survey

Unit: IV: LABORATORY NOTE BOOK AND VIVA-VOCE

Module: MGEOCCS106

:: INTERPRETATION OF MAPS ::

(8 Credit Hours/ weekly)

Time: 4 Hours **Full Marks: 50**

Unit: I: INTERPRETATION OF GEOLOGICAL MAPS

1.1. Basic concepts of Geological Map and Identification of Geological structures
1.2. Simple horizontal and uniclinal structure
1.3. Geological maps for folded and faulted structure
1.4. Interpretation of Geological Map

Unit: II: INTERPRETATION OF TOPOGRAPHICAL MAPS

2.1. Principle of topographical map numbering system
2.2. Interpretation of physical and cultural landscapes based on physical and cultural features; Profiles – Serial, superimposed, projected and composite; Drainage pattern and controlling factors
2.3. Delineation of Basin, Morphometric techniques – Relative relief, average slope, ruggedness index, dissection index, drainage density, stream frequency, vegetation density, Stream ordering
2.4. Correlation Analysis, Transact Charts

Unit: III: INTERPRETATION OF AERIAL PHOTOGRAPHS AND SATELLITE IMAGES (VISUAL)

3.1. Principles of Aerial photography, concept of stereoscopic view, determination of effective area
3.2. Identification of physio-cultural features, preparation of land use / land cover maps and interpretation
3.3. Principles of Remote Sensing, basic concept, generation of satellite data
3.4. Identification of various spatial features, preparation of land use / land cover maps and interpretation.

Unit: IV: LABORATORY NOTE BOOK AND VIVA-VOCE

2nd SEMESTER

Module: MGEOCCT201

:: HYDROLOGY AND OCEANOGRAPHY::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: PURE HYDROLOGY

1.1. Emergence, Scope and Concept of Hydrology; Global Hydrological Cycle and System Approach

1.2. Surface Hydrology: Delineation, Properties, Run-off, Components and Cycle

1.3. Hydrological Parameters: Instrumentation and Management (Velocity, Discharge, Precipitation, Evaporation and Transpiration)

1.4. Groundwater Hydrology: Characteristics and Classification, Aquifer, Groundwater Storage and Management (Application of Darcy's Law)

Unit: II: APPLIED HYDROLOGY

2.1. Sustainable Use of Water: Rainwater Harvesting, Surface Water Conservation and Recharging of Ground Water

2.2. Principles of integrated River Basin Management **2.3.** Aquifer Distribution, Composition, Water Quality and Availability

2.4 Concept and Application of Hydrograph, Unit Hydrograph and Rating Curve and their Significance

Unit: III: MORPHOLOGY AND STRUCTURE OF OCEAN BASINS

3.1. Origin and Bottom relief of Oceans – Continental Shelf, Continental Slope, Abyssal Plain

3.2. Origin of the Major Structural and Morphological Features of the Ocean Floor with reference to Plate Tectonics

3.3. Submarine Canyons – Morphology and Origin; Oceanic Sediments

3.4. Coral Reefs: Types, Factors and Evolution.

Unit: IV: PROPERTIES OF OCEAN WATER AND SIGNIFICANCE OF OCEAN

4.1. Properties of Ocean Water – Physical and Chemical Properties

4.2. Tides, Waves and Current Generating Forces, Theory of Tide Formation

4.3. Sea Level Change: Causes and consequences, Importance of EEZ and CRZ

4.4. Marine Pollution and Its Effects, Geopolitics of Oceanic Resources with special reference to Asia-Pacific Region

Unit: V: INTERNAL ASSESSMENT **10 Marks**

Module: MGEOCCT202

:: SOIL AND BIO-GEOGRAPHY ::

(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: SOIL GEOGRAPHY

1.1. Soil as a component of Biosphere; Concept of land and soil; Plant-water soil relationship
1.2. Soil nutrients and organisms; Role of physico-chemical properties in soil fertility and productivity
1.3. Classification and world pattern of soil
1.4. Soil erosion and degradation **:** causes and consequences; Conservation and management

Unit: II: PLANT GEOGRAPHY

2.1. Plant Ecology: habitat factors; Plant responses to environment; Adaptation, succession and climax; Domestication of plants
2.2. Forest types: Phyto-Geographical regions; Concept of plant species, family and genera.
2.3. Biodiversity – controlling factors, depletion and its significance
2.4. Causes and consequences of deforestation; forest conservation; social forestry and participatory management of forest

Unit: III: ZOO GEOGRAPHY

3.1. Evolution of species; critique of Darwinism, origin of Neo-species
3.2. Dispersal and migration of animals; means and barriers; aquatic life and marine – fauna
3.3. Distribution of animals in different geological periods: Distant past, Pleistocene and post-glacial changes
3.4. Principles of animal ecology; wild life management; relevance of sanctuaries and National Parks with special reference to India

Unit: IV: ECO-SYSTEM AND ECOLOGY

4.1. Forms and functions of major National Eco Systems; forest, grassland, mountain and marine eco-system
4.2. Principles of physical and human ecologies
4.3. International Biological Programme; Man and Biosphere Programme
4.4. Eco-system models; population dynamics of organizers and problems of their Abundance and Extinction

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOCCT203

:: POPULATION AND SETTLEMENT GEOGRAPHY ::

(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: POPULATION

1.1. Trends of population growth of the World and India

1.2. Determinants of population growth – physical, biological and socio-economic, Dynamics of population growth – Birth rate, Death rate, Migration

1.3. Theories of Population Growth – Malthus, Marx, Saddler, Demographic Transition Theory, Neo-Malthusian.

1.4. Migration – types, pattern, Diaspora

Unit: II: POPULATION AND DEVELOPMENT

2.1. Concept of over population, under population, optimum population, equilibrium population

2.2. Population Resource Region, Rostow's Model.

2.3. Population characteristics and policies of Developed and Developing world

2.4. Population related issues: Food & Energy crisis in Future, Poverty and Famine and Mal-nutrition, HDI- concepts and issues.

Unit: III: RURAL SETTLEMENT

3.1. Development of Settlement Geography, Human Settlement as a system

3.2. Evolution and growth of rural settlements and their causes

3.3. Site, location, types and pattern of rural settlement, morphology of rural settlement

3.4. Rural house types: Plans and architectural style in different geographical environment, Monsoon Asia, Arid zone, Frigid zone

Unit: IV: URBAN SETTLEMENT

4.1. Origin and evolution of urban settlement, characteristics of urban settlement – Pre-industrial and Industrial

4.2. Morphology of urban settlements (characteristics of internal structure and external forms, theories explaining internal morphological structure of cities)

4.3. Settlement hierarchy, factors contributing to hierarchy with special reference to central place theory, Size and spacing of urban settlement – Rank size Rule, Law of primate cities

4.4. Rural urban fringe, structure, characteristics and functions, rural urban interaction, Forms processes of rural-urban interaction: changes and adjustment in the fringe areas

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOCCT204

:: URBAN GROWTH AND DEVELOPMENTAL ISSUES ::

(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: URBAN GROWTH

1.1. Development of urban geography as a systematic discipline: Scope, content and recent trends.

1.2. Concept and definitions of urban system: Urban, urbanization, urbanism and urban ecology

1.3. Today's cities and suburbs: suburban sprawl, smart growth, exurbs, the new cities and gated communities

1.4. Origin and growth of urban living: bases and processes, Historical perspectives on world urbanization

Unit: II: DEVELOPMENTAL ISSUES

2.1. Changing spatial and temporal scenario of metropolitan development in India.

2.2. The economy of urban areas: structure of urban economy (basic and non-basic), urban change within global economy (TNC, MNC, new production systems, deindustrialization)

2.3. Social environment of the city: Social stratification, social class diversity, suburban social class, poverty, strangers, crowding, crime and homelessness.

2.4. Urban environment problems: Heat island, drainage, sewerage, sanitation, transport, congestion, pollution and health, the city's ecological footprint, Urban Liveability Index

Unit: III: POPULATION AND SOCIETY

3.1. Population outcomes: Population size, Migration, Age-sex structure and spatial distribution

3.2. Developmental processes: Consumption of goods and services, human and physical capital utilisation, public expenditure

3.3. Developmental outcomes: Income, employment, education, nutritional status, environmental quality

3.4. Social development and Human rights

Unit: IV: URBANISATION IN INDIAN CONTEXT

4.1. Urban Trends in India, Projected Urban Population of India, Status of Urban Infrastructure, Finances and Performance of ULB's in India

4.2. Innovative Financing and PPP, Governments Response, Strategy for Urban Development

4.3. Urban Land Use and Development Control, Environmental Pollution in Urban Area

4.4. Megacity, Satellite Township, Smart city, Challenges of Urban Growth in India

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOCCS205

:: QUANTATIVE TECHNIQUES AND COMPUTER APPLICATION ::
(8 Credit Hours/ weekly)

Time: 4 Hours **Full Marks: 50**

Unit: I: SAMPLING, HYPOTHESIS TESTING AND SPATIAL ANALYSIS

1.1. Nature and types of geographical data, standardization of data; Rank and Z-scores
1.2. Sampling techniques; purposive, random, systematic, stratified and multistage
1.3. Hypothesis testing; test of significance chi-square test, t-test. F-test; probability statement
1.4. Determination and location of mean centre of population over time; calculation of standard distance from mean centre of population

Unit: II: QUANTITATIVE TECHNIQUES IN GEOGRAPHY

2.1. Dominant Distinctive Function, Gravity Model
2.2. Concept of partial and multiple correlation, Principle Component Analysis, Determinants, Matrices, Path Analysis
2.3. Determination of Mean, Median and Mode**,** Standard Deviation and Co-efficient of variation
2.4. Regression analysis; Spearman's Rank correlation co-efficient and Pearson's product moment coefficient of correlation, Linear (including residual mapping), Parabola, Geometric curve, Exponential curves

Unit: III: COMPUTER APPLICATION

3.1. Fundamentals of computer
3.2. Computer components and operating systems
3.3. Work on Microsoft Excel / SPSS: Data entry, tabulation and analysis (Sum, Average, Median, and Mode)
3.4. Graphical representation of data: scatter diagram with trend line, time series with trend line, bar graph, pie graph and histograms

Unit: IV: LABORATORY NOTE BOOK AND VIVA-VOCE

N.B. ***Quantitative Techniques and Computer application in the Laboratory Note Book in a Spatial Area (Unit-I, Unit-II and Unit-III)***

Module: MGEOCCS206

:: FIELD REPORT ::

(8 Credit Hours/ weekly)

Time: 4 Hours **Full Marks: 50**

Unit: I:	**FIELD REPORT**	**50 Marks**
1.1.	Field Report	**30**
1.2.	Seminar Presentation (Internal Assessment)	**10**
1.3.	Viva-voce	**10**

Guidelines on execution

- The work is to be based mainly on processing of primary data collected from field with the help of appropriate schedules for physical and socio-economic survey, stressing on any local problem or any contemporary issue.
- The following are to be taken as base maps, subject to availability: (a) cadastral maps, (b) 1:50,000 and/or 1:25,000 toposheets and (c) Satellite imageries and/or data.
- Interrelations between different aspects of the study should be the focus of the Report.
- Text of the Report should not exceed 6,000 words and should ideally be divided into the following sections: Introduction, Statement of problem(s) and Objectives, Materials and methods, Results Discussions, Conclusion, References / Bibliography and Appendices (if any).
- Maps, diagrams and sketches, excluding photographs, should not exceed 50 pages of A4 size paper.
- Handwritten Report duly endorsed by the Supervisor(s) is to be produced individually by the students. Photocopying and computer typing are strictly restricted.

3rd SEMESTER

Module: MGEOCCT301

:: GEOGRAPHICAL THOUGHT ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: EVOLUTION OF GEOGRAPHICAL THOUGHT

1.1. Place of Geography in the classification of knowledge.

1.2. Pre-Scientific ideas in Ancient and Medieval period; the emergence of Scientific Geography – Humboldt & Ritter.

1.3. Changing emphasis in Geography – Ratzel & Richtofen ; colonial expansion and development of Geography

1.4. Background of the current problem in Geography. Conceptual and Methodological development during 20th Century; Impact of World War in the development of Geography; Quantitative Revolution & Geographical Information System.

Unit: II: GEOGRAPHY AS SOCIAL SCIENCE

2.1. Spatial Organization and Critique of Geometric Spatial Structure.

2.2. Emergence of Humanistic Geography and Welfare Geography.

2.3. Geography of Inequality & Geography of Gender.

2.4. Quantitative revolution and challenges; Philosophy & Geography; Humanistic and phenomenological Geography: Contribution of Yi-Fu Tuan; Indian Geography.

Unit: III: PARADIGMS IN GEOGRAPHY

3.1. Dichotomies in Geography: Physical and Human, Systematic and Regional, Determinism and Possibilism

3.2. Environmental Determinism of Huntington and Ratzel ; Possibilism of Vidal-de-la-Blache.

3.3. Landscape Morphology – Cultural expression of Carl-O-Sauer; Hartshorne – Schaefer debate.

3.4. Ecological, Nomothetic and Idiographic approaches in Geography.

Unit: IV: CONTEMPORARY TRENDS

4.1. Qualitative paradigm, Behavioural Revolution: perception and cognition, mental maps.

4.2. Marxism; post modernism, post structuralism & post colonialism.

4.3. Radicalism and Development of Critical Geography.

4.4. Evolution of the study of man; Metaphysics, Empiricism and Positivism.

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOCCT302

:: ENVIRONMENTAL GEOGRAPHY & DISASTER MANAGEMENT :: (4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: ENVIRONMENTAL GEOGRAPHY

1.1. Environmental Conservation and Economic Development, Global resource Scarcity, Renewable Energy Resources and Green Technology

1.2. Concept of Environment; Importance of Environmental Studies in Geography, Physical and Socio-cultural Components of Environment

1.3. Sustainable Development: Concepts and Models; EIA: Concepts and Application.

1.4. Environmental Management: Case Studies of East Calcutta Wet Land and Chillika; Environmental Management Plans.

Unit: II: ENVIRONMENTAL POLICY AND MANAGEMENT IN INDIA

2.1. Environmental Perception, Ethics, Law and Policies.

2.2. Environmental Movement: Chipko, Silent Valley, Narmada and Green Valley.

2.3. Participatory Management of Forests in India w.r.t. West Bengal.

2.4. Legal intervention, Govt. policy, Institutional setup and role of NGO's in Environmental Management in India, Bhopal Gas Tragedy and Ganga Action Plan

Unit: III: HAZARD AND DISASTER – CONCEPT AND CLASSIFICATION

3.1. Significance of Hazard and Disaster Studies, Risk and Vulnerability.

3.2. Natural Hazards – Earthquake, Landslide, Tsunami, Cyclone.

3.3. Quasi-natural Hazards: Coastal erosion, River bank erosion, Drought, Flood, Bio-degradation of Forest w.r.t. Man-animal Conflict.

3.4. Anthropogenic Issues: Poverty, Crime, Terrorism.

Unit: IV: HAZARD AND DISASTER MANAGEMENT

4.1. Education for Hazard and Disaster Risk Reduction.

4.2. Essentials of Pre, during and post recovery Planning.

4.3. Implementation Technology for Disaster Management

4.4. Modelling for Disaster Reduction.

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOCCT303

:: HISTORICAL AND POLITICAL GEOGRAPHY ::

(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: HISTORICAL GEOGRAPHY

1.1. Nature, scope, content and approaches of Historical geography
1.2. Relationship with History and other branches of Geography.
1.3. Literature, Travel accounts, Archives and chronicles as source materials.
1.4. Evolution of maps in the making of Historical Geography.

Unit: II: HISTORICAL GEOGRAPHY OF INDIA

2.1. Ancient and Puranic period: Geographical materials, Territorial organization of the Janapada, Urbanization.
2.2. Medieval period: Travel accounts of Huen Tsiang and Ibn-e-Batuta, Regional and Economic Geography of India.
2.3. Mughal period: Territorial organization of the Empire, Industry, Agriculture, Trade and Urbanization.
2.4. Colonial period with particular reference to Eastern India: Trends in Agriculture, Industrialization and Urbanization, Trade, Colony's economy, Development of transport network and its Port orientation; Origin and Development of Gateway Cities.

Unit: III: POLITICAL GEOGRAPHY

3.1. Nature, scope and content; Relationship with Political Science ; Political Geography in the era of Globalization; Concept of Geopolitics, Critical Geopolitics and evolution of Geo-Strategic views.
3.2. Geographical perspectives on formation of State, Organic Theory of State, Nation and Nation-State, Core and Peripheral Areas, Capitals, Frontiers and Boundaries, Border lands, Buffer zones and Buffer states, Land Locked states.
3.3. Electoral Geography: Regional Stability and Realignments; System model and Revised models.
3.4. Politics of world Resources, Politics of Immigration, Political and Economic blocks, Political Geography of Foreign Trade.

Unit: IV: POLITICAL GEOGRAPHY OF INDIA

4.1. Boundary dispute and Geo-Political setting of India—SAARC.
4.2. Bases of Re-organization of Indian states since Independence.
4.3. Federalism in India and Center-state relation.
4.4. National and International water Disputes.

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOCCS304

:: GEOINFORMATICS ::
(8 Credit Hours/ weekly)

Time: 4 Hours **Full Marks: 50**

Unit: I: DIGITAL IMAGE PROCESSING

1.1. Concept of Digital Images, Digital Data Format and Meta Data.
1.2. Image registration.
1.3. Image enhancement and spatial filtering.
1.4. Image Classification: Supervised and Unsupervised.

Unit: II: FUNDAMENTALS OF GEOGRAPHICAL INFORMATION SYSTEM

2.1. Definitions, Concepts, Components of G.I.S., Data type, Data structure.
2.2. Georeferencing – Image to Image, Map to Image and Image to Map, Creation of Layers.
2.3. Integration of Spatial and non-Spatial data, Creation of Map.
2.4. Data Manipulation and Analysis

Unit: III: GLOBAL NAVIGATION SATELLITE SYSTEM

3.1. Principals of GNSS positioning with special reference to GPS.
3.2. Collection and retrieval of GNSS positions.
3.3. Preparation of map from GNSS data.
3.4. Length and area measurement from GNSS data.

Unit: IV: INTERNAL ASSESSMENT

Module: MGEOOET305

:: LAND AND PEOPLE ::
(ELECTIVE PAPER – for Other Stream)
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: EARTH SURFACE

1.1. Fundamentals of Geomorphology, Concept of scale – Spatial and Temporal
1.2. Continental Drift, Plate Tectonics, Sea Floor Spreading
1.3. Landforms evolution by Glacial, Fluvial and Aeolian processes
1.4. Hydrological Cycle – Global and Basin, Water Management of Dry Land Area

Unit: II: CLIMATE

2.1. Weather and Climate, Elements of Climate, Energy Budget of the Earth Atmospheric System
2.2. Controlling Forces of Wind Motion – Coriolis Force, Pressure Gradient Force, Frictional Force, and Convergent-divergent Force; General Wind Circulation
2.3. Cyclones and Anti-cyclones, Jet Streams, Monsoon and ENSO Phenomena
2.4. Green House Effect, Global Warming and Climate Change

Unit: III: RESOURCE

3.1. Concept and Classification of Resource, Renewable and non-renewable resource development and their utilization
3.2. Human Resource: Concept, Migration and types
3.3. Major Industrial Regions of India, Iron and Steel, Petro-chemical and Cotton Textile Industries in India, Development of IT Industry in Indian Context
3.4. Agricultural regions of India, Land reforms, Green Revolution

Unit: IV: JUNGLE MAHAL

4.1. Geographical Significance, Physical Setup
4.2. Surface, Sub-surface and Groundwater distribution, availability and quality
4.3. Human Resource
4.4. Regional Problems: Management and Possibilities

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOOPP306

:: OUTREACH PROGRAMME ::
(ELECTIVE PAPER – for Other Stream)
(8 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

PART – A — Full Marks: 20

Unit: I: RESEARCH METHODOLOGY — 10 Marks

1.1. Research – Qualitative and Quantitative Approach, Research Design, Book / Article Review, Style of Reference
1.2. Sampling Techniques
1.3. Questionnaire and Schedule
1.4. Report Writing

Unit: II: DATA REPRESENTATION — 10 Marks

2.1. Data Tabulation and Computation
2.2. Representation of Data
2.3. Composition of Maps – Small Scale and Large scale
2.4. Representation of Maps

PART – B — Full Marks: 30

1.1. Project Report – based on any Rural or Urban unit with specific research design. 20
1.2. Seminar presentation. 10

SIDHO-KANHO-BIRSHA UNIVERSITY

Syllabus of M.A. /M.Sc. Course in Geography

4th SEMESTER

Module: MGEOCCT401

:: REGIONAL STUDY – INDIA, WEST BENGAL & RARH BENGAL ::

(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: INDIA – PHYSICAL SET UP

1.1. Evolution of Himalaya, it's structure & geology; Physiography of Peninsular India
1.2. Characteristics of the drainage system in the North & the South India
1.3. Mechanism of the Monsoon in India; Impact of soil in cropping pattern in India
1.4. Interstate river conflict, Flood Control & mitigation.

Unit: II: INDIA – ECONOMIC SCENARIO

2.1. Distribution of mineral resources, Factors for uneven distribution of population in India
2.2. Indian industrial policy for the backward region of India
2.3. Development of major industries – Automobile, cement, petrochemical, Impact of transport system & development of marketing of various product
2.4. Impact of Globalization & Liberalization in Indian Economy

Unit: III: WEST BENGAL – GEOGRAPHICAL ACCOUNT

3.1. Physiographic Division, Climate, Vegetation, Agro Climatic Zone, Agriculture & Irrigation
3.2. Mineral Resources, Factors for location of Industrial zones- Hoogly & Durgapur-Asansol
3.3. Distribution and density of Population, Urbanisation and Migration, Partition and its Impact
3.4. Problems of hazards and disaster in West Bengal – Coastal, Flood and Landslide.

Unit: IV: GEOGRAPHY OF RARH BENGAL

4.1. Demarcation of Rarh Bengal and Jungle Mahal: Physiography and Relief of the regions; Drainage system
4.2. Floods and water resource potential, vegetation and soil, drought
4.3. Impact on different aspects of development: Demographic and Social characteristics
4.4. Resource utilization, Management and Possibilities.

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOMET402 (A)

:: POPULATION GEOGRAPHY ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: POPULATION DYNAMICS

1.1. Concept and scope of Population Geography
1.2. Difference between population Geography and Demography
1.3. Factors affecting Population distribution
1.4. Population dynamics- Fertility, mortality, Migration, Age-sex structure and gender inequality

Unit: II: POPULATION THEORIES

2.1. Theories of Fertility and Mortality.
2.2. Theories of Migration.
2.3. Economics, Social and Demographic Transition Theories.
2.4. Recent trends on content, techniques in population studies.

Unit: III: DEVELOPMENT: SOCIAL AND ECONOMIC

3.1. Population resource region of the world.
3.2. Concept of over population, under population and optimum population and their effect on resource utilisation
3.3. Population problem of third world countries and backwardness and poverty in Developing countries.
3.4. Trends of urbanization with special reference to population.

Unit: IV: POPULATION POLICIES

4.1. Population policies in developed countries with special reference to Switzerland, U.S.A. and Japan.
4.2. Population policies affecting mortality in the developing countries.
4.3. Migration and population policies in major developed countries.
4.4. UNO's world population policies.

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOMET402 (B)

:: ADVANCED GEOMORPHOLOGY ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: PERSPECTIVES IN GEOMORPHOLOGY

1.1. Evolution of Geomorphological thoughts and ideas: A General Review.
1.2. Concept of spatial scale, temporal scale, Equilibrium and Threshold.
1.3. Approaches to Geomorphology: Structural, Climatic, Applied and Systems approach.
1.4. Principles of Landform classification: Genetic and Hierarchical.

Unit: II: FLUVIAL PROCESSES AND FORMS

2.1. Hydraulic and Hydrological properties of Channels: Regime, Velocity, Discharge and Energy; Factors controlling Entrainment, Transportation and Deposition by running water.
2.2. Morphological properties of channel: profile, planforms and patterns; effect of floods in channel Modification and characterisation.
2.3. Formation, System of change and Classification of Fluvial Landform with special reference to Badlands, Terraces, Alluvial Fans and Accretional Topography.
2.4. Slope Processes in Fluvial Landscape: factors and processes of Bank Erosion and Valley Walls.

Unit: III: COASTAL PROCESSES AND ANTHOPOGENIC IMPACT

3.1. Coastal Morphodynamics: Factors, Characteristics and relative dominance of Wave, Tidal and Fluvial processes in coasts.
3.2. Processes and effect of Bioturbation, Bio-Tidal accretion, Coral formation and Storm surge/ Tsunamis in coasts.
3.3. Formation, System of change and Classification of Coastal Landforms with special reference to Rhythmic Beach Topography, Coastal Dunes and Deltas.
3.4. Humans as Geomorphic agent: Effect of River control, Coastal modification and Landuse change in Mountainous region.

Unit: IV: TROPICAL GEOMORPHOLOGY

4.1. Definition and boundary of Humid and Tropics; Climate and Vegetation characteristics and their Control on Tropical Landforms.
4.2. Factors and process of Deep Weathering with special reference to formation of Tors, Domed Inselbergs and Laterite Duricrusts
4.3. Characteristics of Tropical Streams with special reference to large rivers.
4.4. Urban Geomorphology of Humid Tropics: scope, content and significance in town Planning.

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOMET402 (C)

:: REGIONAL PLANNING AND URBAN GEOGRAPHY ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: PLANNING REGION

1.1. Concept of planning region, economic planning.
1.2. Planning Regions of India; purpose and methods of delineation of Planning Region.
1.3. State as a Planning unit; Criteria for dividing a State into Economic Region; West Bengal as a case study.
1.4. Micro Level Planning at District Level: West Bengal & Tamil Nadu.

Unit: II: RURAL DEVELOPMENT

2.1. Tribal Area Development.
2.2. Rural Development Strategies, case studies from India.
2.3. Backward Region: Identification and Development.
2.4. Rural Development in India: Programmes and Policies.

Unit: III: URBAN DEVELOPMENT

3.1. Metropolitan concept, Metropolis, Metropolitan area, Metropolitan region, Mega-city & Primate city. Need, Importance and Concept of Urban Planning
3.2. Urban Planning in India: Kolkata, Mumbai and Delhi; City region: Problem of planning
3.3. Planned Town: concept; New Towns of India.
3.4. National Policies on Urbanisation, Urban Renewal vs. Urban Redevelopment; 74th Constitutional Amendment.

Unit: IV: REGIONAL DEVELOPMENT

4.1. Economic Base, Resource Potentials.
4.2. Role of Agriculture in Regional Development.
4.3. Role of Industries in Regional Development
4.4. Transport, Trade and Commerce and Regional development.

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOMET402 (D)

:: ENVIRONMENTAL GEOGRAPHY ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: CONCEPTS

1.1. Scope and content of Environmental Studies in Geography.
1.2. Fundamental Ideas: Environment, Ecosystem, Ecology, Homeostasis, Cybernatics, Ecological Equilibrium, Ecological Foot print, Carrying capacity, Ecological stress.
1.3. Symbiosis between Man & Environment; Effect of Environment on Man: Biophysical, Resource Availability, Perceptional, Behavioural.
1.4. Physical, Ecological and Human Ecological Issues, Organisimic & Holistic Approach to Environment.

Unit: II: ATMOSPHERIC CHANGE AND BIOSPHERE

2.1. Climatic factors shaping the Geographical zonality and Periodicity.
2.2. Changing Climate of the World: Theories of climate change & Human impact.
2.3. Climatic Hazards and Management.
2.4. Social response to climatic Hazard.

Unit: III: MASS, ENERGY & ENVIRONMENT

3.1. Ecosystem Approach in Environmental Studies.
3.2. Energy and Biomass Pyramid, Exchanges among Ecosystems and changes of Ecosystems.
3.3. Population growth Dynamics.
3.4. Ecological Relationship: Principal of Animal & Human Ecology.

Unit: IV: SPECIFIC ENVIRONMENTAL ISSUES

4.1. Industrialization and atmospheric changes.
4.2. Biodiversity Depletion.
4.3. Energy crisis and future concerns of Energy.
4.4. Conservation of wetlands.

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOMET402 (E)

:: ADVANCED CARTOGRAPHY ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: CONCEPTS IN CARTOGRAPHY AND FIELD ASTRONOMY

1.1. Basic concepts in Cartography; Geomatics-Cartography relationship.
1.2. History and development of cartography.
1.3. Field Astronomy: Celestial Sphere, Co-ordinates of celestial bodies; Equation of time and its application.
1.4. Determination of latitude, longitude and azimuth of celestial bodies.

Unit: II: GEODESY AND SPHERICAL TRIGNOMETRY

2.1. Geodesy- shape and size of the earth, Radius of curvature
2.2. Concept of datum
2.3. Spherical trigonometry: spherical triangle, Napier's Rule, Spherical excess.
2.4. Determination of distance, azimuth and area of the earth surface.

Unit: III: GROUND SURVEY AND POSITIONING

3.1. Traverse surveying.
3.2. Triangulation survey.
3.3. Tacheometric survey.
3.4. Reciprocal levelling.

Unit: IV: REMOTE SENSING AND AREAL PHOTOGRAPHY

4.1. Principles of Remote sensing, Electro-magnetic Radiation.
4.2. Remote sensing: Platforms, Sensors, Orbiting satellites, Image Resolutions.
4.3. Aerial photographs: Types, Edge information, Elements of Air Photo interpretation
4.4. Photogrammetry: Scale, Relief displacement, Calculation of photographs for aerial coverage; Parallax and determination of height of photo features.

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOMET403 (A)

:: POPULATION GEOGRAPHY ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: ECONOMIC DEVELOPMENT AND INEQUALITIY

1.1. Factor responsible for uneven growth and development (Human)
1.2. Population characteristics and economic development in developed & developing countries.
1.3. Impact of Migration in urban areas and their effects
1.4. International & intra-national population policies of migration

Unit: II: SOCIAL INEQUALITY

2.1. Basic indicators of Human Development.
2.2. Gender issues and gender empower measures.
2.3. Different Measures of poverty line and poverty alleviation policies and programmes
2.4. Economic basis and indicator of social wellbeing.

Unit: III: ECONOMIC AND HUMAN DEVELOPMENT IN INDIA

3.1. Factors for population growth and their impact on society
3.2. Intra urban inequality in India.
3.3. Regional differences of gender inequality in India
3.4. Measures of poverty alleviation in India, Participation of labour force in economic activity in India.

Unit: IV: POPULATION POLICIES – INDIA

4.1. Population policies during pre-independence and post- independence period in India.
4.2. Insecurity of child labour, unemployed youth and superannuated person in India.
4.3. Human Development Index, its measures and level of development in the states of India.
4.4. Determination of quality of life in India

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOMET403 (B)

:: ADVANCED GEOMORPHOLOGY ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: APPLIED GEOMORPHOLOGY

1.1. Methods and uses of Rainwater Harvesting and check dams
1.2. Geomorphic consequences of sea level change in Coast and Estuaries.
1.3. Application of Geomorphology in Terrain Evaluation, EIA and EMP.
1.4. Principles of Integrated Drainage Basin Management and Integrated Coast Zone Management with reference to Coastal Regulation Zones.

Unit: II: CASE STUDIES OF LANDFORMS AND LANDUSE

2.1. Badlands on laterite Duricasts: Garhbeta and Santiniketan, West Bengal.
2.2. Tors and Inselberges: Chhotonagpur plateau and surrounding, Jharkhand and West Bengal.
2.3. Alluvial fans: sub-Himalayan West Bengal
2.4. Deltas and Estuaries: Lower Ganga Delta, West Bengal.

Unit: III: MANAGEMENT OF GEOMORPHIC ISSUES

3.1. Management of Mining Subsidence with special reference to Coal Belts of Raniganj and Darjiling Hills.
3.2. Management of River Discharge and its effect with special reference to Damodar Valley Corporation and Farakka Barrage project.
3.3. Management of Urban water supply and Disposal with special reference to Kolkata.
3.4. Management of Reclaimed Coastal areas with special reference to Indian Sundarban.

Unit: IV: MANAGEMENT OF GEOMORPHIC HAZARDS

4.1. Management of Landslides with special reference to Northern West Bengal.
4.2. Management of Floods with special reference to Northern Piedmont areas and Padma-Bhagirathi Interfluve of west Bengal.
4.3. Management of Riverbank Erosion with special reference to Ganga and Bhagirathi in West Bengal.
4.4. Management of coastal Erosion with Special reference to Digha Township and Sagar island of West Bengal.

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOMET403 (C)

:: REGIONAL PLANNING AND URBAN GEOGRAPHY ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: EVOLUTION OF URBAN GEOGRAPHY

1.1. Emergence of Urban Geography as a discipline: changing approaches and methodological foundations.
1.2. Origin of the cities: ancient and medieval (the city in history)
1.3. Capitalism and urban development: Industrial growth and Urban expansion, Urbanisation and the industrialized world, Political economy of urbanisation.
1.4. Urbanisation in the Third World -- Concept of peripheral urbanisation- Salient characteristics-slums and urban poverty, Globalisation and Third World urbanisation.

Unit: II: URBAN CHARACTERISTICS

2.1. Urban morphology: land use and the economics of land use change
2.2. Urban economy and its problems: deindustrialization, growth of the service economy
2.3. The Process of Suburbanisation, the Peri-urban Interface: critical issues, Sprawl versus Compact City.
2.4. Urban renewal – Gentrification, Revanchism; Strategies for the Global South

Unit: III: URBAN STRUCTURE, SOCIAL AND BUILT-UP ENVIRONMENT

3.1. Models of spatial structures: the pre-industrial (Sjoberg) and industrial city (Marx, Fordist)
3.2 Social Space and polarisation: meaning, differentiation, congregation and segregation
3.3. Neighbourhood changes and residential mobility
3.4. Social Justice and the city

Unit: IV: URBAN ENVIRONMENT: CONTEMPORARY ISSUES

4.1. Physical Environment: pollution and degradation of ecosystems
4.2. Social Environment: poverty and crime
4.3. Urban Ecology: concept and implications
4.4. Sustainable Urban Planning: policy and practice

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOMET403 (D)

:: ENVIRONMENTAL GEOGRAPHY ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: ENVIRONMENTAL PHYLOSOPHY

1.1. Recent trends of Environmentalism: Shallow Ecology, Deep Ecology, EF (Earth First)
1.2. Environment & Development with special emphasis on Tragedy of the commons.
1.3. Philosophical perspective of Environment: Spaceship Earth, Gaia Hypothesis.
1.4. Green Development.

Unit: II: HUMAN ACTIVITY AND ENVIRONMENTAL CONSTRAINTS

2.1. World civilization and Environment
2.2. Production Technology and environmental change with special emphasis on modern technology.
2.3. Human impact on Environment: Modern Agriculture, Industrialization.
2.4. Problem of Solid waste, Nuclear Fall out.

Unit: III: ENVIRONMENTAL CONCERNS

3.1. Big Dams and River valley planning.
3.2. Urban Development and Ecological consequence.
3.3. Pollution and Degradation of coastal Ecosystem.
3.4. Carbon sink, carbon sequestration and Environmental purification.

Unit: IV: ENVIRONMENTAL POLICY, PLANNING AND MANAGEMENT

4.1. Environmental Ethics, Policy, Act, Laws.
4.2. Environment Policy and Laws concerning Forest, Air & Ocean.
4.3. Environmental Impact Management.
4.4. Environmental Audit, Environmental Management Plan.

Unit: V: INTERNAL ASSESSMENT 10 Marks

Module: MGEOMET403 (E)

:: ADVANCED CARTOGRAPHY ::
(4 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: MAPPING ELEMENTS AND THEMATIC MAPPING

1.1. Plane and spherical co-ordinates; UTM and UPS grid system.
1.2. Cartographic generalization: Elements, Controls and Manipulations.
1.3. Cartographic Symbolization: Point, Line, Area, Volume symbols.
1.4. Choropleth Map: Selection of class interval & accuracy assessment

Unit: II: MAP PROJECTION- DISTANCE, AZIMUTH AND SCALE VARIATION

2.1. Conical Equal Area Projection with two standard parallels.
2.2. Conical Orthomorphic Projection with two standard parallels.
2.3. Homolosine Projection.
2.4. Transverse Mercators Projection.

Unit: III: DIGITAL IMAGE PROCESSING

3.1. Basic concepts: Image rectification- radiometric & geometric corrections
3.2. Image Enhancement: Magnification, Reduction, Contrast Enhancement & Spatial Filtering.
3.3. Image Transformation: Asiltmetric operation, Image Fusion.
3.4. Image classification: Types and Classifiers.

Unit: IV: GEOINFORMATICS

4.1. G.I.S – Definitions, Components; Recent trends and Applications.
4.2. Data type, Data structure; Meta Data.
4.3. Data Manipulation and Spatial Analysis.
4.4. Geoinformatics: Concept, integration of Remote Sensing with GIS and GPS; Concept of Differential Global Positioning System

Unit: V: INTERNAL ASSESSMENT **10 Marks**

Module: MGEOMES404 (A)

:: POPULATION GEOGRAPHY ::
(8 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: MEASURES OF TEMPORAL & SPATIAL CHANGES

1.1. Growth rate of population: Absolute and Compound, Population projection.
1.2. Spatial distribution of population density by different method
1.3. Rural and urban population (representation), correlation between the area and population.
1.4. Sex Ratio and literacy rate

Unit: III: MEASURES OF DEVELOPMENTS

2.1. Infant and Child mortality rate, Maternal mortality rate & life expectancy at birth
2.2. Locational analysis of infrastructure in any region
2.3. Method to measure poverty and their gaps.
2.4. Preparation of questionnaire for population census.

Unit: III: QUANTITATIVE TECHNIQUES

3.1. Population potential.
3.2. Participation of labour force.
3.3. Different measures of migration in rural urban area.
3.4. Application of GIS in population mapping.

Unit: IV: LABORATORY NOTE BOOK AND VIVA-VOCE

Module: MGEOMES404 (B)

:: ADVANCED GEOMORPHOLOGY ::
(8 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: ANALYSIS OF CHANNEL PLANFORMS AND SEDIMENTS

1.1. Computation of Braiding index, Sinuosity index, Meander wavelength and Radius of curvature.
1.2. Computation of River profile – Long and Cross Profiles.
1.3. Collection and analysis of Coastal or Riverine Sediment using Ø- graded sieves and chemicals Electronic balance.
1.4. Analysis of Pebble-grade Fluvial and Coastal sediment for shape, size and materials.

Unit: II: GEOMORPHIC MAPPING

2.1. Preparation of Geomorphic maps from field data using standard symbols and colour.
2.2. Preparation of overlay from Topographical maps showing Geomorphic features.
2.3. Extraction of geomorphic features from Satellite FCCs in overlay.
2.4. Extraction of relative height of Geomorphic features from Aerial Photopairs using parallax Bar.

Unit: III: HAZARD MAPPING AND ZONATION

3.1. Landslide: sites and Vulnerability zones.
3.2. Floods: inundation and Risk zone.
3.3. Riverbank erosion: quantification of Eroded area and Vulnerability zonation.
3.4. Coastal erosion: quantification of Eroded area and Vulnerability zonation.

Unit: IV: LABORATORY NOTE BOOK AND VIVA-VOCE

Module: MGEOMES404 (C)

:: REGIONAL PLANNING AND URBAN GEOGRAPHY AND ::

(8 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: REGIONAL CONCENTRATION AND DISPARITIES

1.1. Measurement of Development by Kendall's Method
1.2. Concentration by Location Quotient.
1.3. Rank – Size distribution of Population
1.4. Regional Disparity by Sopher's Index.

Unit: II: TRANSPORT AND REGIONAL DEVELOPMENT

2.1. Infrastructure and Regional development.
2.2. Accessibility by Detour Index.
2.3. Measurement of Transport Accessibility by Shortest Path Matrix.
2.4. Regional Growth by analysis of Time series data.

Unit: III: SPATIAL URBAN PHENOMENA AND MAPPING URBAN ENVIRONMENT

3.1. City-size Distribution and Correlation between associated variables
3.2. Quality of Life Index for Urban Residential Areas, Delineation of urban sphere of influence
3.3. Mapping of Urban Land Cover and Land Use
3.4. Urban Expansion Mapping**,** Attribute Data Interfaces – mapping of services (using the Ward as an unit)

Unit: IV: LABORATORY NOTE BOOK AND VIVA-VOCE

Module: MGEOMES404 (D)

:: ENVIRONMENTAL GEOGRAPHY ::
(8 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: LABORATORY TECHNIQUES TO DETECT ENVIRONMENTAL POLLUTION

1.1. Acidity and Alkalinity of Soil and Water
1.2. Nitrate and Phosphate content in Water
1.3. BOD and Total hardness in Water
1.4. Dust fall and Measurements of Air-pollutants, Noise pollution

Unit: II: ENVIRONMENTAL SURVEY AND MAPPING TECHNIQUES

2.1. Sampling Procedures
2.2. Preparation of Questionnaire for Perception Survey on Environmental Problems (Natural and Social Hazards)
2.3. Environmental Mapping Techniques, Population—Development—Environment interrelationship
2.4. Preparation and Interpretation of Environmental Maps in Micro-level

Unit: III: TRANSPORT AND REGIONAL DEVELOPMENT

3.1. Identification and study of an Environmental Problem in field
3.2. Regression Analysis, Correlation and (bi-variate) Time Series Analysis of Environmental data, Concentration by Lorenz Curve
3.3. Cartographic presentation of Primary/Secondary data and collation of Environmental Maps
3.4. Preparation of the Environmental Management Plan (EMP)

Unit: IV: LABORATORY NOTE BOOK AND VIVA-VOCE

Module: MGEOMES404 (E)

:: ADVANCED CARTOGRAPHY ::
(8 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Unit: I: LOCATION OF POINTS AND DETERMITIONS OF AREA

1.1. Use of GPS for Planimetric and Altimetric Location of point.
1.2. Theodolite survey for vertical distance
1.3. Thacheometric survey for determine difference in height.
1.4. Preparation of map using Total Station.

Unit: II: CONSTRUCTION OF GRATICULES OF SELECTED PROJECTION

2.1 Modified International and Interrupted Sinusoidal Projection.
2.2 Conical Equal Area and Conical Orthomorphic Projections with two standard parallels.
2.3 Cylindrical Equal Area Projection with two standard parallels and transverse Mercator Projection.
2.4 Homolosine and Cubic Gnomonic Projection.

Unit: III: GEOGRAPHICAL INFORMATION SYSTEM AND DIGITAL IMAGE PROCESSING

3.1. Registration, Raster to Vector conversion, Integration of Spatial and non-spatial data.
3.2. Preparation of Thematic Maps.
3.3. Georeferencing using ortho-images and GNSS data, Generation of spectral library of land use/land cover features.
3.4 Image classification: Supervised and Unsupervised.

Unit: IV: LABORATORY NOTE BOOK AND VIVA-VOCE

Module: MGEOMEP405

:: TERM PAPER (on Special Paper) :: (8 Credit Hours/ weekly)

Time: 2 Hours **Full Marks: 50**

Written Report: 30

Seminar Presentation: 10

Discussion: 10

The Term Paper on respective special paper will be a comprehensive work based on conceptual aspects, field work analysis of primary and secondary data in the laboratory. It should mention the objectives, sources of information, methods and approaches. Interrelations between different aspects of the study should be the focus of the term paper.

Text of the term paper should not ***exceed 10,000 words*** and should ideally be divided into the following sections:

- **Introduction**
- **Statement of problem(s) and Objectives**
- **Information and Analysis,**
- **Results**
- **Discussions**
- **Conclusions**
- **References / Bibliography**
- **Acknowledgement (if any).**
- **Appendices (if any).**

Maps, diagrams and sketches, excluding photographs, should not exceed 50 pages of A4 size paper.

- Each of the Term Paper is to be produced individually by the students and this must be stated clearly in a certificate from the ***supervisor(s)***.
- Photocopying (Plagiarism) is not to be allowed in any form.

Module: MGEOACP406

:: Communicative English / Computer Application :: (8 Credit Hours/ weekly)

Time: -- Hours **Full Marks: 50**

PROPOSED ADD-ON COURSES

Add-on Course title	***Responsible Department***
Communicative Sanskrit	Sanskrit
Statistical Analysis	**Commerce and Economics**
Value Based Education	Philosophy
Communicative English	**English**
Computer Application	Maths
Basic Law (Consumer protection act, RTI, citizen right)	**Pol. Sc.**
Indian Constitution	Pol Sc
Book Keeping	**Commerce**
Health, hygiene, sanitization	Zoology
Environmental Protection	**Botany**