



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

Effective from the Academic Session: 2022-2023

Department of Geography
Sidho-Kanho-Birsha University
Purulia, West Bengal
Pin – 723 104

Revised Syllabus as approved by the Syllabus Committee of Geography,
Sidho-Kanho-Birsha University on 27-28 July 2022.

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Sidho-Kanho-Birsha University – Geography Postgraduate Syllabus

Structure of the Syllabus								
Sem.	Type	Module	Module	Marks Distribution			Credits	Class Hours
				Internal Assessment	End-Term Assessment	Total Marks		
Semester - I (July – December)	Theoretical	MGEOCCT101	PHILOSOPHY OF GEOGRAPHY	10	40	50	4	60
		MGEOCCT102	GEOTECTONICS AND GEOMORPHOLOGY	10	40	50	4	60
		MGEOCCT103	HYDROLOGY AND OCEANOGRAPHY	10	40	50	4	60
		MGEOCCT104	ECONOMIC GEOGRAPHY	10	40	50	4	60
	Practical	MGEOCCS105	SURVEYING AND PREPARATION OF MAPS	10	40	50	4	120
		MGEOCCS106	GEOSPATIAL ANALYSIS	10	40	50	4	120
Semester - II (January – June)	Theoretical	MGEOCCT201	CLIMATOLOGY	10	40	50	4	60
		MGEOCCT202	SOIL AND BIO-GEOGRAPHY	10	40	50	4	60
		MGEOCCT203	SETTLEMENT AND REGIONAL PLANNING	10	40	50	4	60
		MGEOCCT204	POPULATION AND SOCIETY	10	40	50	4	60
	Practical	MGEOCCS205	STATISTICAL TECHNIQUES	10	40	50	4	120
		MGEOCCS206	FIELD REPORT	10	40	50	4	120
Semester - III (July – December)	Theoretical	MGEOCCT301	ENVIRONMENTAL GEOGRAPHY AND DISASTER MANAGEMENT	10	40	50	4	60
		MGEOCCT302	POLITICAL AND HISTORICAL GEOGRAPHY	10	40	50	4	60
		MGEOCCT303	MAJOR ELECTIVE (A/B/C)	10	40	50	4	60
		MGEOCCOET304	OPEN ELECTIVE: HAZARD & DISASTER	10	40	50	4	60
	Practical	MGEOCCS305	GEOINFORMATICS	10	40	50	4	120
		MGEOCCS306	RESEARCH METHODOLOGY & COMMUNITY OUTREACH	10	40	50	4	120
Semester - IV (January – June)	Theoretical	MGEOCCT401	CONTEMPORARY GEOGRAPHY	10	40	50	4	60
		MGEOCCT402	REGIONAL GEOGRAPHY OF INDIA	10	40	50	4	60
		MGEOCCT403	MAJOR ELECTIVE (A/B/C)	10	40	50	4	60
		MGEOACP404	ADD-ON COURSE	10	40	50	4	60
	Practical	MGEOCCS405	MAJOR ELECTIVE (A/B/C) PRACTICAL	10	40	50	4	120
		MGEOCCS406	DISSERTATION PAPER - MAJOR ELECTIVE	10	40	50	4	120
Total				240	960	1200	96	1920

Note.

1. Major Elective Papers:

- A. Advanced Geomorphology
- B. Population Geography
- C. Regional Planning & Urban Geography

2. Abbreviations:

- A. GEO: Geography
- B. CC: Core Course
- C. T: Theory Paper
- D. S: Practical Paper
- E. OET: Open Elective (CBCS Option for other Department)
- F. ACP: Add-On (Option given by other Department)

Sidho-Kanho-Birsha University – Geography Postgraduate Syllabus

About the Department:

The Department of Geography, Sidho-Kanho-Birsha University, established in the year 2012, offers postgraduate courses leading to the Degrees of Master of Arts (M.A.)/Master of Science (M.Sc.) course in Geography. In addition to the master's programme in Geography, the Ph.D. degree programme is also conducted by the Department. Experienced faculty members of the Department are devoted to teaching and research in their respective domains. Sri Mrinal Mandal and Dr. Debasis Ghosh, who led the Department from 2012 to 2016, was followed by Prof. Suman Paul (2016-2022). Under their inspiring leadership, the department achieved academic success and developed a unique identity in West Bengal, India, and the global society. Departmental laboratories are well equipped to carry out experimental work in various branches of Geography. The Department has, over the years, developed a suitable base for inter-disciplinary collaboration in key areas, namely Geomorphology, Population Geography, Urban Geography and Regional Planning.

The Programme:

The department's master's programme, the "Master of Science in Geography," lasts two years, is divided into four semesters, and entails 24 courses with a combined credit value of 96 (4 credits per course). The 24 courses are split into two groups: Core (which all must be taken) and Elective (3 courses of 12 credits, which must be chosen from 3 courses). In lieu of up to one elective course offered by the department, open elective courses worth a maximum of 4 credits may be selected from major elective courses offered by other departments. Over the course of two years, a student is required to complete 24 credits in each semester, along with major electives in semesters three and four and open electives in semester.

Introduction To CBCS (Choice Based Credit System):

Scope:

With the CBCS, students have the option to select courses from a list of required core and elective courses. The grading method used in the evaluation of the courses ensures consistency in the computation of the cumulative grade point average (CGPA), which is based on the performance of the student in the examinations and allows the student to transfer across institutions of higher learning. Potential employers can evaluate the performance of the candidates thanks to the universality of the evaluation process.

Definitions:

Academic Programme: An full course of study, including its programme structure, course information, assessment systems, etc., that is intended to be taught and evaluated in a teaching Department/Centre or jointly under more than one such Department/Centre, is referred to as a "Academic Programme."

Course: An academic program's component of a course is a unit of study.

Program Structure: "Program Structure" is a list of courses (Core, Elective, and Open Elective) that make up an academic programme, specifying the syllabus, credits, hours of instruction, evaluation and examination schemes, minimum number of credits required for successful completion of the programme, etc., and prepared in accordance with university rules, as well as eligibility requirements for admission.

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Core Course: A "Core Course" is a course that cannot be replaced by another course and that a student accepted to a certain programme must successfully complete in order to earn the degree.

Minor Elective: A "Minor Elective" is a course that a student can choose from among those that are given by another Department or Center.

Major Elective: A Major Elective course that is open to students in the same department is referred to as a "Major Elective." Students from the mother Departments may enroll in these courses as long as they meet the requirements for eligibility set forth by the Department providing the course.

Credit: "Credit" refers to the grade given to a course, which describes the quality of instruction.

One Credit: "One Credit" is equivalent to a weekly one- or two-hour lecture, lesson, or practical. Credit for a practical may be requested as a standalone practical course or as a component of a larger course.

SGPA: SGPA stands for Semester Grade Point Average, which is computed for each semester separately.

CGPA: CGPA stands for Cumulative Grade Point Average, which is determined using all of the students' previously, completed courses. Every year, the combined grade point average (CGPA) for both semesters is calculated.

Course & Program Outcomes of Post Graduation in Geography under CBCS:

The study of places and people's interactions with their surroundings is known as geography. Geographers study the physical features of the Earth's surface as well as the human societies that live there. They also look at how human culture interacts with the natural environment, as well as how such places and locations might affect individuals.

Geography tries to figure out where things are, why they're there, and how they evolve and change over time. The study of the Earth's surface's various environments, places, and spaces, as well as their relationships. It aims to provide answers to why things are the way they are now. The current academic field of geography is based on ancient practice, and it is concerned with the features of places, particularly their natural environments and peoples, as well as their interactions.

Choice Based Credit System (CBCS): Syllabus in Geography

The Postgraduate syllabi for Geography was framed into a Choice Based Credit System, mostly following the model syllabus prepared by the West Bengal State Council of Higher Education, in accordance with recent directions from the University Grants Commission on 2016-17.

The primary goal of this new curriculum is to provide students with a comprehensive understanding of the topic by giving equal weight to the basic content and methodologies employed in Geography. The syllabus attempts to balance the relevance of the two major fields of geography: physical and human geography. One of the major goals of the syllabus is to help students find employment at the end of their postgraduate studies. On the other hand, initiatives have been taken through syllabus for UGC-NET, CSIR-NET, WEST BENGAL SET, and Civil Services (i.e. UPSC, WBCS etc.) success. With this in mind, and in keeping with the ever-changing character of Geography, sufficient focus is placed on applied parts of the topic, such as developing mapping techniques and field-based data production, particularly in the special papers. The syllabus emphasizes the development of fundamental topic abilities, so that no one is forced to pursue further education in order to find professional involvement or work.

LEARNING OUTCOMES:

The purpose of this syllabus is to provide basic knowledge of geography as a spatial science and to prepare undergraduates for careers in geospatial analysis, development and planning, mapping, and surveying.

PROGRAM OUTCOMES:

- a) To comprehend the extent and evolution of Geography as a discipline. Identify, integrate, and appraise a wide range of methods, arguments, and approaches that are relevant to the study of human-environment issues. Summarize the societal importance of geographic knowledge and how it can be implemented in the real human-environment issues.
- b) An insight and understanding of the threats that undermine the ecological systems of the planet. This contributes to a better understanding of the significance of human - caused climate change for many of the disasters and risks that threaten life on this planet.
- c) Students get the ability to respond to both natural and man-made disasters, as well as managerial abilities. This is accomplished through the study and analysis of hazards, disasters, their impact, and management as part of the curriculum.
- d) Capacity to do research in interdisciplinary studies and on problems or situations that are not precisely within the scope of geography. This is due to the curriculum's diverse nature, which includes the study and analysis of concepts from sub-disciplines and related disciplines such as geology, seismology, pedology, hydrology, environmental studies, disaster management, resource sustainable management, regional planning and development studies, and so on.

Program Specific Outcomes:

PSO 1:

Physical geography will be learned by the students. They will gain a general awareness of the geomorphologic and geotectonic processes and formation, as well as the fundamental concepts of geography. Analyze landform formation, crustal mobility and tectonics, and climate change to gain knowledge, skills, and a holistic understanding of the Earth, atmosphere, oceans, and planet.

PSO 2:

Attempting to conflate landforms with structure and process, developing man-environment interactions, and investigating Geography's location and role in relation to other social and earth sciences Students can easily connect their physical geography knowledge to their understanding of human geography. They will look at issues in both rural and urban locations, both physically and culturally. They'll also try to figure out what steps they can take to address the issues.

PSO 3:

Better understand how global economies, geopolitics, global strategic and economic perspectives, and political systems work.

PSO 4:

Taking a long-term approach for the ecosystem and biosphere with the goal of preserving natural systems and ecological balance of earth atmosphere.

Semester – I (July to December)

MGEOCCT101: PHILOSOPHY OF GEOGRAPHY [4 Credits – 60 hours]

Course Objectives:

1. This course is designed to crater knowledge of disciplinary developments from ancient period to modern time.
2. It is intended to enable students to contextualize the conceptual traditions that the subject nurtures being influenced by major philosophies.
3. It helps in understanding the needs of paradigm shifts of the subject from time to time in the study and research.

Course Learning Outcomes:

1. A chronologically consistent nature of knowledge related to growth and development of the subject.
2. New theories and approaches developed and adopted within the discipline.
3. The dynamicity of the subject helps it to be emerged as a subject of synthesis.

:: Course Content ::

Unit: 1	Evolution of Geographical Thought	[15]
1.1	Geographical knowledge of ancient period: Greek-Roman Period	
1.2	Geographical knowledge of medieval period: Indian and Arab geographers	
1.3	Place of geography in the classification of knowledge: After Varenius and Kant	
1.4	Emergence of scientific geography: After Humboldt and Ritter	
Unit: 2	Dichotomy and Dualism in Geography	[15]
2.1	General geography and systematic geography; physical and Human geography	
2.2	Idiographic and nomothetic; qualitative and quantitative	
2.3	Inductive and deductive; subjective and objective	
2.4	Schaefer-Hartshorne debate; areal differentiation and spatial organization	
Unit: 3	Philosophical Influences in Modern Geographical Thought	[15]
3.1	Positivism and empiricism; Quantitative revolution in geography and its challenges	
3.2	Emergence of humanistic and welfare geography	
3.3	Behaviouralism- perception and cognition	
3.4	Radicalism and development of critical geography	
Unit: 4	Contemporary Trends in Geographical Thought	[15]
4.1	Geography of Gender: Feminist Movement, Gender and organization of Geographical space	
4.2	Colonialism, Imperialism and Post-colonialism in Geography	
4.3	Geography of Inequality and Welfare Geography: Social and Territorial Justice	
4.4	Geo-spatial Technology and Contemporary Trends	

Full Marks- 50 (End term Examination- 40 and Internal Assessment- 10). Number in parenthesis indicating the class hours.

Pattern of setting questions:

Candidate have to answer 4 questions (with division) with 10 marks, taking one (1) from each unit.

Semester – I (July to December)

MGEOCCT102: GEOTECTONICS AND GEOMORPHOLOGY [4 Credits – 60 hours]

Course Objectives:

1. The principal objectives of course like geomorphology and geotectonics are focused on landform and broadly landscape evolution over time.
2. Major tectonic events on the earth have also been discussed in this course.
3. Similarly, this course is also discussed about the causes of principal geomorphological issues like flood, drought, river bank erosion and landslides.

Course Learning Outcomes:

1. After completion of this course, students can interpret and explain the causes and consequences of any tectonic events which have been occurred in the earth.
2. After completion of this course, students will definitely assist to people regarding risk reduction from any kind of geomorphic hazards and select suitable sites for sustainable land uses.

:: Course Content ::

Unit: 1	CONCEPTS IN GEOMORPHOLOGY	[15]
1.1	Spatial scale, temporal scale and related concepts: Systems, feedback, equilibrium and threshold	
1.2	Models of slope evolution	
1.3	Measurement and monitoring of landform evolution in fluvial and coastal environments; Significance of process studies and simulation modeling	
1.4	Plate tectonics as a unified theory of global tectonics; Planetary geomorphology	
Unit: 2	RIVERS AND RIVER BASINS	[15]
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, Fluid and sediment dynamics	
2.3	Adjustment of channel forms and patterns to morphodynamic variables	
2.4	Fluvial landforms: Genetic classification, ordering, formation and evolution, Extra channel environments, Humans and rivers	
Unit: 3	EVOLUTION OF LANDFORMS	[15]
3.1	Coastal morphodynamic variables and their influence on evolution of coastal forms	
3.2	Classification and evolution of Glacial and Periglacial Landforms	
3.3	Impact of Pleistocene on landform evolution. Quaternary climatic changes and landforms	
3.4	Arid and semi arid geomorphology: Classification and evolution of Aeolian landforms	
Unit: 4	APPLIED GEOMORPHOLOGY	[15]
4.1	Applied Geomorphology: Meaning and concept, Applied Geomorphology w.r.t. Indian context	
4.2	Geomorphology and hazard management: Earthquakes, Tsunamis, Landslides, Flood, Riverbank erosion, Storm surges	
4.3	Geomorphology and urbanization	
4.4	Geomorphology and engineering works	

Full Marks- 50 (End term Examination- 40 and Internal Assessment- 10). Number in parenthesis indicating the class hours.

Pattern of setting questions:

Candidate have to answer 4 questions (with division) with 10 marks, taking one (1) from each unit.

Semester – I (July to December)

MGEOCCT103: HYDROLOGY AND OCEANOGRAPHY [4 Credits – 60 hours]

Course Objectives:

1. The main objective of the course is to highlight the basic hydrological components and hydrological instruments for fluvio-hydrological and environmental measurements.
2. This course also focuses the fundamental principles and various contemporary issues regarding oceanography as well as marine science such as coral bleaching, sea level rise and rising ocean salinity and temperature.

Course Learning Outcomes:

1. After completion of the course, students will be able to apply various instruments for the measurement of different hydrological parameters.
2. Consequently, students will help the people who are residing along the coast or coastal environment. Moreover, they will explain about the causes and consequences of different ocean related issues and hazards.

:: Course Content ::

Unit: 1	PURE HYDROLOGY	[15]
1.1	Evolution of hydrological concepts, forms, occurrence and properties of water	
1.2	Surface and subsurface hydrology: concept, properties, components and measurement of Run-off, runoff cycle and infiltration	
1.3	Hydrological parameters: Concept, measurement, management of precipitation, evaporation, evapotranspiration and velocity and discharge of rivers	
1.4	Groundwater hydrology: Concept and Classification, Aquifer, Aquifer distribution, Groundwater Storage and fluctuation and Management (Application of Darcy's Law)	
Unit: 2	APPLIED HYDROLOGY	[15]
2.1	Application of hydrological knowledge for flood and riverbank erosion control	
2.2	Water management in tropical cities: Techniques and approaches. Rainwater harvesting	
2.3	Principles of integrated basin management with reference to micro-watershed planning and check dam construction	
2.4	Surface water and groundwater quality assessment and management	
Unit: 3	MORPHOLOGY OF OCEAN BASIN	[15]
3.1	Origin, morphology and structures of continental shelf, continental slope, abyssal plain and sub-marine canyon	
3.2	Origin, structure and bottom topography of Indian ocean	
3.3	Properties of ocean water – Physical and chemical properties, Air-sea interactions. sea interactions, Origin, types and evolution theories of tide, Wave and coral reef	
3.4	Oceanic sediments- origin, types and significance	
Unit: 4	CONTEMPORARY ISSUES IN OCEANOGRAPHY	[15]
4.1	Ocean as resource: Exploration and anthropogenic utilization of the oceans	
4.2	Sea level change: Causes and consequences and evidences	
4.3	EEZ and CRZ: delimitation, significance and policy issues	
4.4	Geopolitics of Oceanic Resources with special reference to Asia-Pacific Region, Belt and Road Initiatives – Maritime route	

Full Marks- 50 (End term Examination- 40 and Internal Assessment- 10). Number in parenthesis indicating the class hours.

Pattern of setting questions:

Candidate have to answer 4 questions (with division) with 10 marks, taking one (1) from each unit.

Semester – I (July to December)

MGEOCCT104: ECONOMIC GEOGRAPHY [4 Credits – 60 hours]

Course Objectives:

1. This paper will offer knowledge about the concepts of resources, classification, models of natural resource processes, their conservation and management of resources for sustainable development.
2. Give in-depth understanding the theories, concepts and methods used by geographers to analyze the location of economic activities.
3. Understand economic processes such as globalization, trade and transportation and their impacts on economic, cultural and social activities.

Course Learning Outcomes:

1. Students will be able to conceptualise the meaning, classification of resources and will learn conservation methods and techniques
2. Students will be able to explain the variations in economic activities
3. Students would be able to understand how in the globalized world, economic activities occur and how the neoliberal policies are generating uneven geography of capitalist development

:: Course Content ::

Unit: 1	CONCEPT OF RESOURCE	[15]
1.1	Resource and its Dynamism; Resource potential and stock, Carrying capacity of resource	
1.2	Distribution of land, water and biotic resources	
1.3	Approaches– Regional approach, production approach, ecological approach	
1.4	Resource conservation and management, geopolitics of Energy Resources	
Unit: 2	ECONOMIC ACTIVITIES	[15]
2.1	Types of Economic Activities: Factors affecting spatial organisation of economic activities	
2.2	Agriculture: - Cropping Pattern: Methods of delineating crop combination regions (Weaver, Doi and Rafiullah), Crop diversification, Von Thunen's Model of Land Use Planning.	
2.3	Industries: - Factors of Industrial Location; Theories of Industrial Location (A. Weber, E.M. Hoover, A. Losch)	
2.4	Service Sectors: Growth of Information and Communication Technology (ICT) and Knowledge Production (Education and R & D) Industries, Knowledge cluster	
Unit: 3	TRADE AND COMMERCE	[15]
3.1	Economics of global trade: Balance of payment, role of WTO, IMF and World Bank	
3.2	Regional blocks in international trade-EU, ASEAN, NAFTA/BRICS	
3.3	Trade policy: Liberalization, Privatization and Globalization; PPP approach	
3.4	Market network and linkages: Market centres, periodic and daily marketing, retailing and whole-selling, E-commerce	
Unit: 4	TRANSPORT AND ECONOMY	[15]
4.1	Geography of Transportation and its significance, Modes of transport and Comparative cost advantages	
4.2	Measures and Indices of connectivity and accessibility	
4.3	Spatial Flow Models: Graph Theory; Network and nodal connectivity (Inter-regional and Intra-regional), Travel-Demand Forecasting Model	
4.4	Environment and transport: Inter linkages and consequences	

Full Marks- 50 (End term Examination- 40 and Internal Assessment- 10). Number in parenthesis indicating the class hours.

Pattern of setting questions:

Candidate have to answer 4 questions (with division) with 10 marks, taking one (1) from each unit.

Semester – I (July to December)

MGEOCCS105: SURVEYING AND PREPARATION OF MAPS [4 Credits – 120 hours]

Course Objectives:

1. Map projections are required for generating maps of the Earth or parts of the Earth that are portrayed on a plane such as a piece of paper since the Earth is roughly the shape of an oblate spheroid.
2. Drawing out a plan and a portion of the location to be surveyed is the first step in surveying.
3. These prepared maps and sections can be used to calculate the best possible alignment, quantity of earthwork, and other important information based on the nature of the project.

Course Learning Outcomes:

1. After completion of this course, a candidate should be able to perceive the nature of projection needed for any large or small scale maps in geography.
2. Students should be able to evaluate the uses of different survey instruments for detailed topography of the area and this will enable them for policy planning regarding architectural design.

:: Course Content ::

Unit: 1 MAP PROJECTION [30]

- 1.1 Concept and properties of map projection
- 1.2 Gnomonic and Stereographic (Equatorial case)
- 1.3 Gall's, Sinusoidal, UTM
- 1.4 Choice and uses of Map Projections, Problems of scale variation related to projection

Unit: 2 SURVEYING AND PREPARATION OF MAPS [30]

- 2.1 Basic principles of survey
- 2.2 Theodolite Survey: Traversing and Triangulation Survey, Object height determination by oblique plane
- 2.3 Total Station and GPS Survey
- 2.4 Drone Survey and Mapping

Unit: 3 THEMATIC MAPPING [30]

- 3.1 Soil Survey and mapping
- 3.2 Weber's crop combination, Cropping intensity
- 3.3 Location quotient, Quality of Life Index
- 3.4 Gravity model, Dominant Distinctive Functions

Unit: 4 ENVIRONMENTAL DATA ANALYSIS AND MAPPING [30]

- 4.1 Soil Sample collection and analysis of physico-chemical properties
- 4.2 Water Sample collection and analysis of physico-chemical properties
- 4.3 Air Pollution data and Measuring Ambient Air Quality
- 4.4 Assessment of Human health and Nutrition

Full Marks- 50 (End term Examination- 40 and Internal Assessment- 10). Number in parenthesis indicating the class hours.

Pattern of setting questions:

Candidate has to answer 4 Compulsory questions (with at least 2 divisions in question) with 7.5 marks, from each unit.

Semester – I (July to December)

MGEOCCS106: GEOSPATIAL ANALYSIS (Visual) [4 Credits – 120 hours]

Course Objectives:

1. The goal of this course is to introduce students to make understand geologic structures like faults and folds and the relationship between structure and earth landscapes.
2. On the next portion, Topographical sheet makes a clear view of physico-cultural relationship of any region. Using Satellite images in the study curriculum, student can easily differentiate the present and past changes.
3. The purpose of vulnerability mapping is to teach students about different types of hazard vulnerabilities.

Course Learning Outcomes:

1. After completion of this course, a candidate should be able to perceive the functions of sub-aerial denudation processes and how the landscape origin controlled by any geological structure.
2. Students should be able to differentiate the changes of landscape and cultural attributes over the time frame using Toposheet and Satellite Images.
3. Students will be able to comprehend the hazard exposure and sensitivity for different hazards occurring in the earth surface.

:: Course Content ::

Unit: 1	GEOLOGICAL MAP	[30]
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: 2	ANALYSES OF TOPOGRAPHICAL MAPS	[30]
2.1	Numbering of topographical maps, Comparative utility of topographical maps, aerial photos and satellite images as sources of geographical data	
2.2	Interpretation of physical and cultural landscapes: (a) Relief, (b) Drainage, (c) Vegetation, (d) Settlement and (e) Transport	
2.3	Basin Morphometry: Relief and Drainage character through Average Slope, Ruggedness Index, Drainage Density, Braiding index, Sinuosity index, Radius of curvature; Stream ordering	
2.4	Nearest Neighbour Analysis, Shortest path matrix, Correlation analysis, Transect chart	
Unit: 3	ANALYSES OF AERIAL PHOTOGRAPHS	[30]
3.1	Principles of Aerial Photographs, Aerial Photograph, Toposheet and Satellite Image	
3.2	Geometry of Aerial Photograph: Photo scale, height of flight, Endlap and Sidlap, Relief Displacement	
3.3	Extraction and interpretation of physical features from Aerial Photographs	
3.4	Extraction and interpretation of cultural features from Aerial Photographs	
Unit: 4	VULNERABILITY AND RISK ASSESSMENT	[30]
4.1	Landslide Vulnerability zonation	
4.2	Flood Hazard Vulnerability zonation	
4.3	River bank erosion Vulnerability zonation	
4.4	Coastal Hazard vulnerability	

Full Marks- 50 (End term Examination- 40 and Internal Assessment- 10). Number in parenthesis indicating the class hours.

Pattern of setting questions:

Candidate has to answer 4 Compulsory questions (with at least 2 divisions in question) with 7.5 marks, from each unit.

Semester – II (July to December)
MGEOCCT201: CLIMATOLOGY [4 Credits – 60 hours]

Course Objectives:

1. The essentials of comprehending the climate system are covered in this course.
2. By studying the fundamental aspects of surface pressure distribution, the general circulation model, and sea surface temperature (SST) change.
3. Students will acquire insight into the space-time scale fluctuation of weather and climate.

Course Learning Outcomes:

1. Students will obtain a better grasp of how the Earth's meteorological and climatic systems work, which will help them assess and anticipate weather events and threats.
2. According to UNDP's SDG-Climate Actions (13), they will be allowed to participate in hazard and disaster management programmes that demand hours.

:: Course Content ::

Unit: 1	ATMOSPHERIC PROCESSES	[15]
1.1	Concept, nature and scope of climatology and its relationship with Meteorology	
1.2	Global 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: 2	CONDENSATION AND PRECIPITATION	[15]
2.1	Water vapour and Atmosphere, Evaporation and Condensation, Stability and Instability in Atmosphere, isothermal processes, Theories of Rain Drop Formation	
2.2	Water budgets, Global and Regional water balance, Water crisis in Urban India	
2.3	Monsoon: origin, characteristics and relationship with Jet streams, Numerical model of monsoon; MONEX, Walker circulation and ENSO phenomena, Indian Ocean Dipole (IOD)	
2.4	Precipitation and inundation: Urban, Coastal; Cloud Burst and Flooding	
Unit: 3	WEATHER DISTURBANCES AND FORECASTING	[15]
3.1	Classification of world climate – Thornthwaite, Trewartha	
3.2	Air mass; Fronts and Tornadoes, Temperate and tropical cyclones and anti-cyclones	
3.3	Weather forecasting: Methods, Tools and Techniques	
3.4	Atmospheric Health, Urban Heat Island	
Unit: 4	CLIMATE ACTIONS	[15]
4.1	Climatic changes and cycle, recent climate changes and their effects: Drought, Flood, Sea Level Rise, Sea Surface Temperature	
4.2	Exposure, Sensitivity, Resilience and Adaptive Capacity to Climate related Hazards and Disasters	
4.3	IPPC-Assessment Report: AR-4, AR-5 and AR-6	
4.4	Education, Awareness and Capacity Building for Climate Change Mitigation: Individual, institutional and Social responses	

Full Marks- 50 (End term Examination- 40 and Internal Assessment- 10). Number in parenthesis indicating the class hours.

Pattern of setting questions:

Candidate have to answer 4 questions (with division) with 10 marks, taking one (1) from each unit.

Semester – II (January to June)

MGEOCCT202: SOIL AND BIO-GEOGRAPHY [4 Credits – 60 hours]

Course Objectives:

1. The main course objective is to know in detailed about the basic principles of soil and land. Similarly, this course will discuss about the causes and consequences of soil and land degradation.
2. Consequently, this course is also focused on evolution of plant, animal and their bio-geographical regions.
3. Besides, this course will focus on causes and status of ecosystem health and causes of deterioration of various ecosystem services.

Course Learning Outcomes:

1. After completion of this course. Students will definitely understand the present status of soil and land and they will try to give solutions to local people as well as govt. regarding soil and land mapping and conservation strategies for sustainable land use planning.
2. After completion of this course, students will know about the ground reality regarding deforestation, wild habitat fragmentation and ecosystem services degradation. Consequently, they will definitely create awareness program for the conservation and protection of nature capitals.

:: Course Content ::

Unit: 1	SOIL GEOGRAPHY	[15]
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: 2	PLANT GEOGRAPHY	[15]
2.1	Plant Ecology: habitat factors; Plant responses to environment; Adaptation, succession and climax; Domestication of plants, TAXONOMY	
2.2	Biodiversity and its conservation, Biodiversity hotspots, Concept of deep ecology	
2.3	Deforestation, Habitat fragmentation, forest policy, Forest health assessment	
2.4	Forest and wild habitat conservation: Partiiatory forest management, JFM	
Unit: 3	ZOO GEOGRAPHY	[15]
3.1	Theory of evolution of species and its critics.es and its critics	
3.2	Dispersal of animals 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: 4	ECOSYSTEM AND ECOLOGY	[15]
4.1	Concept of ecology, landscape ecology, basic principles of ecology, ecological threshold and ecological extinction	
4.2	Ecosystem classification, types and functions	
4.3	Ecosystem services, ecosystem modelling, ecotone, ecotope and eutrofication	
4.4	Energy flow models and ecosystem instability through destruction and conflict	

Full Marks- 50 (End term Examination- 40 and Internal Assessment- 10). Number in parenthesis indicating the class hours.

Pattern of setting questions:

Candidate have to answer 4 questions (with division) with 10 marks, taking one (1) from each unit.

Semester – II (January to June)

MGEOCCT203: SETTLEMENT AND REGIONAL PLANNING

[4 Credits – 60 hours]

Course Objectives:

1. This paper will show you how to do a spatial analysis of rural and urban functions. The social and economic characteristics of cities and suburbs will be covered in this research.
2. The environmental and ecological effects of urban land usage will be examined. The essentials of urban geography, such as city definitions, central place theory, and classic urban spatial structure models, will be covered in this module.

Course Learning Outcomes:

1. Understanding and recognizing regions is a crucial part of geography. Recognize the many aspects of development as well as geographical differences in order to design balanced development.
2. Students will gain understanding of rural and urban development as historic, geographic, social, and environmental impact of rural and urban issues related to Geography and Planning.

:: Course Content ::

Unit: 1	RURAL SETTLEMENT	[15]
1.1	Nature, scope, significance and approaches to study Settlement Geography, Development of Settlement Geography	
1.2	Theories of evolution of settlements and Geographical factors affecting growth of settlement distribution, Types of Rural Settlement	
1.3	Site, location, types and pattern of Rural Settlement, Morphology of rural settlement	
1.4	Rural House types: planned and architectural style in different geographical environment, Types and Pattern of rural settlements with reference to Hills (Darjeeling), Plateau (Chotanagpur) and Coast (Sundarban)	
Unit: 2	RURAL DEVELOPMENT	[15]
2.1	Rural Development: Concept , TYPES , DYNAMICS and Objectives; Rural-Urban Differences;	
2.2	Lewis Theory of Development; Theory of Big Push; Marxian Concept of Development; Schultz's Transformation of Traditional Agriculture	
2.3	Concept of Rural Area, Size and structure of Indian rural economy; Characteristics of rural sectors; Role of agricultural and non-agricultural sector; Causes of Rural Backwardness	
2.4	Types of Rural Poverty; Incidence of Rural Poverty; Measurement of Rural Poverty; Poverty Estimates; Causes and Consequences of Rural Poverty; Poverty eradication policies	
Unit: 3	URBAN GEOGRAPHY	[15]
3.1	Origin of the cities: Ancient and Medieval, Industrial growth and urban expansion	
3.2	Functional classification of urban centres: Harris and Nelson, Functional classification of Indian cities: Ashok Mitra & others	
3.3	Settlement Hierarchy and Policies: Rural service center, Central Place theory (Christaller), Theory of Losch and its application, Rank Size Rule and Primate City	
3.4	Urban growth in India since Independence, Problems and Prospects of Urbanisation in India	
Unit: 4	URBAN PLANNING	[15]
4.1	Conceptualize Urban, urbanization, urbanism and urban ecology, Rural urban fringe: structure, characteristics and functions, rural urban interaction, gentrification and degentrification	
4.2	Cities and suburbs: Suburban Sprawl, Smart growth, Exurbs, the New Cities and Gated communities	
4.3	Manifestations of Poverty in Cities: Slums, Informal Sectors, Crime and Social exclusion	
4.4	Urban Transport, Urban Governance, Urban poverty, JNNURM & AMRUT	

Full Marks- 50 (End term Examination- 40 and Internal Assessment- 10). Number in parenthesis indicating the class hours.

Pattern of setting questions:

Candidate have to answer 4 questions (with division) with 10 marks, taking one (1) from each unit.

Semester – II (January to June)

MGEOCCT04: POPULATION AND SOCIETY [4 Credits – 60 hours]

Course Objectives:

1. The goal of this course is to introduce students to interdisciplinary viewpoints on population concerns at various geographic dimensions.
2. It will educate the student about the importance of spatial perspectives in illustrating population changes and their impact on the economy, community, nature, and governance in diverse locations with special emphasis on SDG-5.
3. This course will enhance the understanding of social cultural issues.

Course Learning Outcomes:

1. After completion of this course, a candidate should be able to perceive the active function of population geography as a distinct discipline of human geography.
2. Students should be able to evaluate population change's numerous components, as well as its drivers and implications.
3. Students will be able to develop analytical capability to read contemporary issues of culture.

:: Course Content ::

Unit: 1	INTRODUCTION TO POPULATION	[15]
1.1	Chronological Development of Population Geography	
1.2	Trends, Pattern and Distribution of population growth in world and India	
1.3	Theories of Population growth-Malthus, Marx, Saddler, Ricardo and Demographic Transition Theory	
1.4	Migration-concept, types, patterns, causes and consequences	
Unit: 2	POPULATION AND DEVELOPMENT	[15]
2.1	Sources of Population data (Census, Sample surveys and Vital statistics)	
2.2	Population resource region; Rostow's model; Demographic dividend, Burden & bonus	
2.3	Population & development outcomes: Educational attainment, employment and Poverty	
2.4	Population polices and planning in lower/middle/upper countries	
Unit: 3	SOCIAL GEOGRAPHY	[15]
3.1	Social Geography: definition, scope, content, Social Geography in the realm of social sciences and its relation with Sociology and Anthropology	
3.2	Elements: Social structure, Social processes and Social space	
3.3	Social well-being: Concepts and indicators, Social change, Social justice and inequality	
3.4	Social Planning: Constitutional provisions, Inclusive growth and its measures; spatial implications	
Unit: 4	CULTURAL GEOGRAPHY	[15]
4.1	Concept and development of cultural geography, Cultural Hearth and Cultural Realm	
4.2	Components and structure of Culture	
4.3	Politics of Difference: Caste, class, Race and gender	
4.4	Cultural regions of world and India	

Full Marks- 50 (End term Examination- 40 and Internal Assessment- 10). Number in parenthesis indicating the class hours.

Pattern of setting questions:

Candidate have to answer 4 questions (with division) with 10 marks, taking one (1) from each unit.

Semester – II (January to June)
MGEOCCS205: STATISTICAL TECHNIQUES
[4 Credits – 120 hours]

Course Objectives:

1. The course covers both fundamental and advanced statistics and is a fantastic place to start.
2. It covers probability distribution fundamentals, as well as advanced linear modeling and matrix solutions for multivariate linear and nonlinear models.
3. These concepts are essential for anyone who is just starting out in Geography and wants to strengthen their analytical skills in both the physical and social aspects of the subject.

Course Learning Outcomes:

1. Be acquainted with the importance of statistics in geography and how they might be used.
2. Comprehend the significance of data in geography and how to use it effectively.
3. To gain a holistic picture of geographical phenomena, interpret statistical data.

:: Course Content ::

Unit: 1	BASIC STATISTICS	[30]
1.1	Data Processing and Frequency Distribution	
1.2	Spatial Sampling Techniques and Estimation – Point and Areal, Rank Score, Weighted Score, Likert's scale	
1.3	Probability in Problem Solving - Elementary Probability Theory; Random Variables and Probability Distributions; Normal Distribution; Binomial Distribution; Poisson Distribution	
1.4	Testing Hypotheses in a Geographic Context - Point and Interval Estimation; Key Steps in Testing Hypotheses; Statistical Significance; Two Samples: The t Test; Analysis of Variance (ANOVA), Post-Hoc analysis	
Unit: 2	STATISTICAL APPROACH IN GEOGRAPHY	[30]
2.1	Correlation Analysis - Product Moment Correlation; Non-Parametric Correlation; Areal Association; Spatial Autocorrelation	
2.2	Principal Component Analysis and Mapping, Matrices and Determinants	
2.3	Model building in geography: Population Potential, AHP, DEMATEL	
2.4	Partial and Multiple Correlation, Surface Trend Analysis	
Unit: 3	COMPUTER APPLICATION IN GEOGRAPHY : I	[30]
3.1	Fundamentals of computer, Work on Microsoft Excel / SPSS/ R: Data entry, tabulation	
3.2	Data analysis (Central Tendencies, Regression analysis, time-series plotting, Dendogram)	
3.3	Application of SPSS in Geography: Descriptive Statistics, One-way & Two-way ANOVA	
3.4	Bi-variate regression, Partial regression, Multinomial regression	
Unit: 4	COMPUTER APPLICATION IN GEOGRAPHY : II	[30]
4.1	Data mining from internet sources: Preparation of an inventory	
4.2	Tabulation of data and its graphical representation from: Census of India (PCA)	
4.3	Tabulation of data and its graphical representation from: Socio-Economic Caste Census (SECC)	
4.4	Tabulation of data and its graphical representation from: National Family & Health Survey (NHFS)	

Full Marks- 50 (End term Examination- 40 and Internal Assessment- 10). Number in parenthesis indicating the class hours.

Pattern of setting questions:

Candidate has to answer 4 Compulsory questions (with at least 2 divisions in question) with 7.5 marks, from each unit.

Semester – II (January to June)

MGEOCCS206: FIELD REPORT [4 Credits – 120 hours]

Course Objectives:

1. This course will introduce students to the principles of geography as a field science.
2. Students will strengthen their observation abilities, field survey data collection, data analysis utilising various technologies, and advanced techniques.
3. Have expertise in determining a study area, methodology, quantitative and qualitative analysis, and drawing conclusions about the area - all of which are crucial in geographical research.

Course Learning Outcomes:

1. Students will be able to visualise spatial data utilising a variety of cartographic and mapping approaches as well.
2. A hands-on practical training is practiced through rigorous involvement in all levels of pre-field, field, and post-field activities.

:: Course Content ::

Field Report	25
Internal Assessment (Group Study)	10
Viva-voce	15

Guidelines on execution:

- a. The place of study must be select within the state West Bengal or neighbouring states.
- b. 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.
- c. 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.
- d. Interrelations between different aspects of the study should be the focus of the Report.
- e. Text of the Report should not exceed 5,000 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).
- f. Maps, diagrams and sketches, excluding photographs, should not exceed 50 pages of A4 size paper.
- g. Handwritten Report duly endorsed by the Supervisor(s) is to be produced individually by the students. Photocopying and computer typing are strictly restricted.

Full Marks- 50 (End term Examination- 40 and Internal Assessment- 10)

Field Report & Viva-voce by External Expert: 15+10 = 25

Field Report & Viva-voce by Internal Faculty(s): 10+5= 15