

Academic Calendar 2022-23

Department of Geography

Gokhale Memorial Girls' College

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SL. NO	<b>2.1 GEO-A-CC-1-01-TH-Geotectonics and Geomorphology</b> ✧60Marks/4Credits	No. of lectures	Faculty
	Unit I: Geotectonics		
1	Earth's tectonic and structural evolution with special reference to geological time scale	3	KR*
2	Earth's interior with special reference to seismology. Isostasy: Models of Airy, Pratt and their application	3	KR
3	Plate tectonics as a unified theory of global tectonics: Processes and landforms at plate margins and hotspots	10	KR
4	Folds and Faults – origin and types	4	MD*
	Unit I: Geomorphology		
5	Degradational processes: Weathering, mass wasting and resultant landforms	5	KR
6	Processes of entrainment, transportation and deposition by different geomorphic agents. Role of humans in landform development	4	MD
7	Development of river network and landforms on uniclinal and folded structure. Surface expression of faults	6	MD
8	Development of river network and landforms on granites, basalts and limestones	5	MD
9	Coastal processes and landforms	4	KR
10	Glacial and glacio-fluvial processes and landforms	4	MD
11	Aeolian and fluvio-aeolian processes and landforms	4	KR
12	Role of time and systems approach in geomorphology. Models on landscape evolution: Views of Davis, Penck, King and Hack	8	MD

SL. NO	<b>2.1 GEO-A-CC-1-01-P–Geotectonics and Geomorphology</b> ✧60Marks/4Credits	No. of lectures	Faculty
1	Measurement of dip and strike using clinometer	6	MD
2	Megascopic identification of (a) mineral samples: bauxite, calcite, chalcopyrite, feldspar, galena, gypsum, hematite, magnetite, mica, quartz, talc, tourmaline; and (b) rock samples: granite, basalt, dolerite, laterite, limestone, shale, sandstone, conglomerate, slate, phyllite, schist, gneiss, quartzite, marble	14	KDG*
3	Extraction and interpretation of geomorphic information from Survey of India 1:50k topographical maps of plateau region: Delineation of drainage basin, construction of relief profiles (superimposed, projected and composite), relative relief map, slope map (Wentworth's method), stream ordering (Strahler) and bifurcation ration on a drainage basin	30	IS*, KR, MD
4	Construction of hypsometric curve and derivation of hypsometric integer from Survey of India 1:50k topographical maps of plateau region	10	IS
5	Viva-voce based on laboratory notebook	5	

(KR—Dr. Krishnakali Roy, MD- Dr. Mahua Dutta, KDG—Smt. Kamalini Dasgupta & IS—Dr. Md. Iqbal Sultan)

SL. NO	<b>2.1 GEO-A-CC-1-02-TH-Cartographic Techniques</b> ✧60Marks/4Credits	No. of lectures	Faculty
1	Maps: Components and classification [4]	4	IS
2	Concept and application of scales: Plain, comparative, diagonal and Vernier [8]	8	KR
3	Coordinate systems: Polar and rectangular[6]	6	KDG
4	Concept of generating globe[2]	2	KDG
5	Grids: Angular and linear systems of measurement[5]	5	KDG
6	Bearing: Magnetic and true, whole-circle and reduced[5]	5	KDG
7	Concept of geoid and spheroid with special reference o Everest and WGS-84[4]	4	KDG
8	Map projections: Classification, properties and uses[8]	8	KR & IS
9	Concept and significance of UTM projection[2]	2	KDG
10	Representation of data using dots, spheres and divided proportional circles[5]	5	IS
11	Representation of data using isopleth, choropleth, and chorochromatic maps[5]	5	MD
12	Survey of India topographical maps: Reference scheme of old and open series. Information on the margin of maps[6]	6	MD

SL NO.	<b>2.1 GEO-A-CC-1-02-P–Cartographic Techniques</b> <b>Lab ✧ 30Marks/2Credits</b>	No. of lectures	Faculty
1	Graphical construction of scales: Plain, comparative, diagonal and Vernier[16]	16	KR
2	Construction of projections: Polar Zenithal Stereographic, Simple Conic with one standard parallel, Bonne’s, Cylindrical Equal Area, and Mercator’s	20	KDG, IS, KR
3	Thematic maps: Proportional squares, pie diagrams with proportional circles, dots and spheres[12]	12	KR, MD
4	Thematic maps: Choropleth, isopleth, and chorochromatic maps [12]	12	IS, MD
5	Viva-voce based on laboratory notebook (5 Marks)		

SL NO.	<b>2.1 GEO-A-CC-2-03-TH-Human Geography</b> ✧60Marks/4Credits	No. of lectures	Faculty
1	Nature, scope and recent trends. Elements of human geography [4]	4	KR
2	Approaches to Human Geography: Resource, locational, landscape, environment [6]	6	KR
3	Concept and classification of race. Ethnicity [5]	5	IS
4	Space, society, and cultural regions (language and religion) [5]	5	IS
5	Evolution of human societies: Hunting and food gathering, pastoral nomadism, subsistence farming, and industrial society [6]	6	KDG
6	Human adaptation to environment: Case studies of Eskimo, Masai and Maori [4]	4	MD
7	Population growth and distribution, composition; demographic transition [5]	5	KDG
8	Population–resource regions (Ackerman) [5]	5	KDG
9	Development–environment conflict [5]	5	MD
10	Types and patterns of rural settlements [5]	5	KDG
11	Rural house types in India [5]	5	KR
12	Morphology and hierarchy of urban settlements [5]	5	IS

Sl no.	<b>2.1 GEO-A-CC-2-03-P-Human Geography</b> <b>Lab</b> ✧ 30Marks/2Credits	No. of lectures	Faculty
1	-Spatial variation in continent- or country-level religious composition by divided proportional circles [12]	12	IS
2	Measuring arithmetic growth rate of population comparing two decadal datasets [15]	15	MD
3	Types of age-sex pyramids (progressive, regressive, intermediate, and stationary): Graphical representation and analysis [20]	20	MD
4	Nearest neighbour analysis from Survey of India 1:50k topographical maps of plain region (c. 5' x 5') [13]	13	IS
5	Viva-voce based on laboratory notebook (5 Marks)		

Si no.	<b>2.1 GEO-A-CC-2-04-TH – Thematic Mapping and Surveying</b> ⇨ 60Marks/4Credits	No. of lectures	Faculty
1	Concepts of rounding, scientific notation. Logarithm and anti-logarithm. Natural and log scales [4]	4	MD
2	Concept of diagrammatic representation of data [2]	2	IS
3	Preparation and interpretation of geological maps [5]	5	KR
4	Preparation and interpretation of weather maps [5]	5	MD
5	Preparation and interpretation land use land cover maps [5]	5	IS
6	Preparation and interpretation of socio-economic maps [5]	5	IS
7	Principal national agencies producing thematic maps in India: NATMO, GSI, NBSSLUP, NHO, and NRSC / Bhuvan [5]	5	MD
8	Basic concepts of surveying and survey equipment: Prismatic compass [5]	5	KDG
9	Basic concepts of surveying and survey equipment: Dumpy level [7]	7	KDG
10	Basic concepts of surveying and survey equipment: Theodolite [7]	7	KDG
11	Basic concepts of surveying and survey equipment: Abney level [5]	2	MD
12	Basic concepts of surveying and survey equipment: Laser distance measurer [5]	5	MD

Sl no.	<b>2.1 GEO-A-CC-2-04-P-Thematic Mapping and Surveying Lab</b> ✧30Marks/2Credits	No. of lectures	Faculty
1	Traverse survey using prismatic compass [10]	10	KDG
2	Profile survey using dumpy Level [12]	12	KDG
3	Height determination of base accessible and inaccessible (same vertical plane method) objects by theodolite [18]	18	KDG
4	Interpretation of geological map with uniclinal structure, folds, unconformity, and intrusions [20]	20	KR
5	Viva-voce based on laboratory notebook (5 Marks)		



Sl no.	<b>2.1 GEO-A-CC-3-05-TH-Climatology</b> ✧60 Marks / 4 Credits	No. of lectures	Faculty
1	Nature, composition and layering of the atmosphere [4]	4	KR
2	Insolation: Controlling factors. Heat budget of the atmosphere [6]	6	KR
3	Temperature: horizontal and vertical distribution. Inversion of temperature: types, causes and consequences [6]	6	KR
4	Overview of climate change: Greenhouse effect. Formation, depletion, and significance of the ozone layer [4]	4	KR
5	Condensation: Process and forms. Mechanism of precipitation: Bergeron-Findeisen theory, collision and coalescence. Forms of precipitation [6]	6	KR
6	Air mass: Typology, origin, characteristics and modification [4]	4	KR
7	Fronts: Warm and cold, frontogenesis, and frontolysis [5]	5	MD
8	Weather: Stability and instability, barotropic and baroclinic conditions [5]	5	MD
9	Circulation in the atmosphere: Planetary winds, jet streams, index cycle [5]	5	MD
10	Atmospheric disturbances: Tropical and mid-latitude cyclones, thunderstorms [5]	5	MD
11	Monsoon circulation and mechanism with reference to India [5]	5	MD
12	Climatic classification after Thornthwaite (1955) and Oliver [5]	5	MD

Sl no.	<b>2.1 GEO-A-CC-3-05-P-Climatology Lab</b> ✧ 30 Marks / 2 Credits	No. of lectures	Faculty
1	Measurement of weather elements using analogue instruments: Mean daily temperature, air pressure, relative humidity, and rainfall [15]	15	MD
2	Interpretation of a daily weather map of India (any two): Pre-Monsoon, Monsoon, and Post-Monsoon [20]	20	KR
3	Construction and interpretation of hythergraph and climograph (G. Taylor) [15]	15	IS
4	Construction and interpretation of wind rose [10]	10	MD
5	Viva-voce based on laboratory notebook (5 Marks)		

Sl no.	<b>GEO-A-CC-3-06-TH-Hydrology and Oceanography</b> ✧ 60Marks/4Credits	No. of lectures	Faculty
1	Systems approach in hydrology. Global hydrological cycle: Its physical and biological role [5]	5	IS
2	Run off: controlling factors. Infiltration and evapo-transpiration. Run off cycle [5]	5	IS
3	Drainage basin as a hydrological unit. Principles of water harvesting and watershed management [5]	5	IS
4	Groundwater: Occurrence and storage. Factors controlling recharge, discharge and movement [5]	5	IS
5	Major relief features of the ocean floor: Characteristics and origin according to plate tectonics [6]	6	IS
6	Physical and chemical properties of ocean water [4]	4	IS
7	Water mass, T-S diagram [4]	4	MD
8	Air-Sea interactions, ocean circulation, wave and tide [8]	8	MD
9	Ocean temperature and salinity: Distribution and determinants [4]	4	MD
10	Coral reefs: Formation, classification and threats [5]	5	MD
11	Marine resources: Classification and sustainable utilisation [4]	4	MD
12	Sea level change: Types and causes [5]	5	MD

Sl no.	<b>2.1 GEO-A-CC-3-06-P-Hydrology and Oceanography Lab</b> ✧ 30Marks/2Credits	No. of lectures	Faculty
1	Construction and interpretation of rating curves [10]	10	MD
2	Construction and interpretation of hydrographs and unit hydrographs [15]	15	MD
3	Construction and interpretation of monthly rainfall dispersion diagram (Quartile method), Climatic water budget and Ergograph [25]	25	KR
4	Construction of Thiessen polygon from precipitation data [10]	10	IS
5	Viva-voce based on laboratory notebook (5 Marks)		

Sl no.	<b>2.1 GEO-A-CC-3-07-TH-Statistical Methods in Geography</b> ✧60Marks/4Credits	No. of lectures	Faculty
1	Importance and significance of statistics in Geography [4]	4	KDG
2	Discrete and continuous data, population and samples, scales of measurement (nominal, ordinal, interval and ratio) [5]	5	KDG
3	Sources of geographical data for statistical analysis [4]	4	KDG
4	Collection of data and preparation of statistical tables [5]	5	KDG
5	Sampling: Need, types, significance, and methods of random sampling [4]	4	KDG
6	Theoretical distribution: Frequency, cumulative frequency, normal, and probability [6]	6	KDG
7	Central tendency: Mean, median, mode, and partition values [6]	6	KDG
8	Measures of dispersion range, mean deviation, standard deviation, and coefficient of variation [6]	6	KDG
9	Association and correlation: Product moment correlation and rank correlation, [5]	5	MD
10	Regression: Linear and non-linear [5]	5	MD
11	Time series analysis: Moving average [5]	5	KDG
12	Hypothesis testing: Chi-square test and T-test [5]	5	MD

Sl no.	<b>2.1 GEO-A-CC-3-07-P-Statistical Methods in Geography Lab</b> ✧ 30Marks/2Credits	No. of lectures	Faculty
1	Construction of data matrix with each row representing an areal unit (districts / blocks /mouzas / towns) and corresponding columns of relevant attributes [15]	15	KDG
2	Based on the above, a frequency table, measures of central tendency, and dispersion would be computed and interpreted using histogram and frequency curve [15]	15	KDG
3	From the data matrix, a sample set (20%) would be drawn using random, systematic, and stratified methods of sampling and the samples would be located on a map with an explanation of the methods used [15]	15	KDG
4	Based on the sample set and using two relevant attributes, a scatter diagram and linear regression line would be plotted and residual from regression would be mapped with a short interpretation [15]	15	KDG
5	Viva-voce based on laboratory notebook (5 Marks)		

Sl no.	<b>4.1 GEO-A-SEC-A-3-02-TH – Tourism Management</b> ✧90 <b>Marks / 2 Credits</b>	No. of lectures	Faculty
1	Scope and Nature: Concepts and issues, tourism, recreation and leisure inter-relations; Factors influencing tourism, Types of Tourism: Ecotourism, cultural tourism, adventure tourism, medical tourism, pilgrimage, international, national [10]	10	IS
2	Use of information on factors (historical, natural, socio-cultural and economic; motivating factors for pilgrimages) to plan destination marketing; tourism products. Niche tourism planning[5]	5	IS
3	Tourism impact assessment, Sustainable tourism, Information Technology and Tourism, Tour operations planning and guiding[8]	8	IS
4	Increasing Global tourism; Tourism in India: Tourism infrastructure, access, planning for different budgets for case study sites of Western Himalayas, Goa, Chilka / Vembanad, Jaipur[7]	7	KDG

Sl no.	<b>2.1 GEO-A-CC-4-08-TH–Economic Geography</b> ✧ 60Marks/4Credits	No. of lectures	Faculty
1	Meaning and approaches to economic geography [4]	4	KDG
2	Concepts in economic geography: Goods and services, production, exchange, and consumption [6]	6	KDG
3	Concept of economic man. Theories of choices [6]	6	KDG
4	Economic distance and transport costs [4]	4	KDG
5	Concept and classification of economic activities[4]	4	KDG
6	Factors affecting location of economic activity with special reference to agriculture (von Thünen), and industry (Weber)[6]	6	MD
7	Primary activities: Agriculture, forestry, fishing, and mining[6]	6	MD
8	Secondary activities: Classification of manufacturing ,concept of manufacturing regions, special economic zones and technology parks[6]	6	MD
9	Tertiary activities: Transport, trade and services[6]	6	MD
10	Transnational sea-routes, railways and highways with reference to India[4]	4	MD
11	International trade and economic blocs[4]	4	MD
12	WTO and BRICS: Evolution, structure and functions[4]	4	KDG



Sl no.	<b>2.1 GEO-A-CC-4-08-P–Economic Geography Lab</b> ✧ 30Marks/2Credits	No. of Lectures	Faculty
1	Choropleth mapping of state-wise variation in GDP [10]	10	MD
2	State-wise variation in occupational structure by proportional divided circles [15]	12	MD
3	Time series analysis of industrial production (India and West Bengal) [20]	20	KDG
4	Transport network analysis by detour index and shortest path analysis [15]	15	KDG
5	Viva-voce based on laboratory notebook (5 Marks)		

Sl no.	<b>2.1 GEO-A-CC-4-09-TH-Regional Planning and Development</b> ✧ 60Marks/4Credits	No. of lectures	Faculty
1	Regions: Concept, types, and delineation[4]	4	IS
2	Regional Planning: Types, principles, objectives, tool and techniques[6]	6	IS
3	Regional planning and multi-level planning in India[6]	6	IS
4	Concept of metropolitan area and urban agglomeration[4]	4	IS
5	Concept of growth and development, growth versus development[6]	6	IS
6	Indicators of development: Economic, demographic, and environmental[6]	6	IS
7	Human development: Concept and measurement[4]	4	KR
8	Theories and models for regional development: Cumulative causation (Myrdal)[4]	4	KR
9	Models and theories in regional development: Stages of development (Rostow), growth pole model (Perroux)[6]	6	KR
10	Under development: Concept and causes[4]	4	KR
11	Regional development in India: Disparity and diversity[5]	5	KR
12	Need and measures for balanced development in India[5]	5	KR

Sl no.	<b>2.1 GEO-A-CC-4-09-P–Regional Planning and Development Lab</b> ✧ 30Marks/2 Credits	No. of lectures	Faculty
1	Delineation of formal regions by weighted index method[15]	15	IS
2	Delineation of functional regions by breaking point analysis[15]	15	IS
3	Measurement of inequality by location quotient[15]	15	KR
4	Measuring regional disparity by Sopher index[15]	15	KR
5	Viva-voce based on laboratory notebook (5Marks)		

Sl no.	<b>2.1 GEO-A-CC-4-10-TH-Soil and Biogeography</b> ✧ 60Marks/4Credits	No. of lectures	Faculty
1	Factors of soil formation[3]	3	KDG
2	Definition and significance of soil properties: Texture, structure, and moisture[5]	5	KDG
3	Definition and significance of soil properties: pH, organic matter, and NPK[5]	5	KDG
4	Soil profile. Origin and profile characteristics of lateritic, podsol and chernozem soils[6]	6	KDG
5	Soil erosion and degradation: Factors, processes and management measures. Humans as active agents of soil transformation[5]	5	KDG
6	Principles of soil classification: Genetic and USDA. Concept of land capability and its classification[6]	6	KDG
7	Concepts of biosphere, ecosystem, biome, ecotone, community and ecology[5]	5	IS
8	Concepts of trophic structure, food chain and food web. Energy flow in ecosystems[5]	5	IS
9	Classification of world biomes (Whittaker). Geographical extent and characteristics of tropical rain forest, savanna, hot desert, taiga and coral reef biomes[8]	8	IS
10	Bio-geochemical cycles with special reference to carbon di oxide and nitrogen[4]	4	IS
11	Deforestation: Causes, consequences and management[4]	4	IS
12	Biodiversity: Definition, types, threats and conservation measures[4]	4	IS

Sl no.	<b>2.1 GEO-A-CC-4-10-P–Soil and Biogeography</b> <b>Lab</b> ✧ 30Marks/2Credits	No. of lectures	Faculty
1	Determination of soil reaction (pH) and salinity using field kit[15]	15	KDG
2	Determination of soil type by ternary diagram textural plotting[15]	15	IS
3	Plant species diversity determination by matrix method[10]	10	IS
4	Time series analysis of biogeography data[20]	20	KDG
5	Viva-voce based on laboratory note book (5Marks)		

Sl no.	<b>4.1 GEO-A-SEC-B-4-03-TH – Rural Development</b> ✧ 90 Marks /2 Credits	No. of lectures	Faculty
1	Rural Development: Concept, basic elements, measures of level of rural development [5]	5	KR
2	Paradigms of rural development: Gandhian approach to rural development Lewis model of economic development, 'big push' theory of development, Myrdal's model of 'spread and backwash effects' [10]	10	KR
3	Area based approach to rural development: Drought prone area programmes, PMGSY, SJSY, MNREGA, Jan DhanYojana [10]	10	MD
4	Rural Governance: Panchayati Raj System and rural development policies and Programmes in India [5]	5	MD

Sl no.	<b>2.1 GEO-A-CC-5-11-TH-Research Methodology and Fieldwork</b> ✧ 60Marks/4Credits	No. of lectures	Faculty
1	Research in Geography: Meaning, types and significance[5]	5	MD
2	Literature review and formulation of research design[5]	5	MD
3	Defining research problem, objectives and hypothesis[6]	6	MD
4	Research materials and methods[4]	4	MD
5	Techniques of writing scientific reports: Preparing notes, references, bibliography, abstract, and keywords[6]	6	MD
6	Plagiarism: Classification and prevention[4]	4	MD
7	Fieldwork in Geographical studies: Role and significance .Selection of study area and objectives. Pre-field academic preparations. Ethics of field work[6]	6	KDG
8	Field techniques and tools: Observation (participant, non-participant), questionnaires (open, closed, structured, non-structured). Interview[5]	5	KDG
9	Field techniques and tools: Landscapes survey using transects and quadrants, constructing a sketch, photo and video recording[5]	5	KDG
10	Positioning and collection of samples. Preparation of inventory from field data[4]	4	KDG
11	Post- field tabulation, processing and analysis of quantitative and qualitative data[5]	5	KDG
12	Field work: Logistics and handling of emergencies[5]	5	KDG

**2.22 GEO-A-CC-5-11-P—Research Methodology and Fieldwork**

**Lab** ✧ 30Marks/2Credits—KDG, IS, KR, MD



Sl no.	<b>2.1 GEO-A-CC-5-12-TH-Remote Sensing, GIS and GNSS</b> ⇨ 60Marks/2Credits	No. of lectures	Faculty
1	Principles of Remote Sensing (RS): Types of RS satellites and sensors[5]	5	IS
2	Sensor resolutions and their applications with reference to IRS and Landsat missions[5]	5	IS
3	Imager referencing schemes and acquisition procedure of free geospatial data from NRSC / Bhuvan and USGS[5]	5	IS
4	Preparation of False Colour Composites from IRS LISS-3 and Landsat TM /OLI data.[5]	5	IS
5	Principles of image interpretation. Preparation of inventories of landuse landcover (LULC) features from satellite images[5]	5	IS
6	Acquisition and utilisation of free Digital Elevation Model data: Car to DEM, SRTM and ALOS[5]	5	IS
7	GIS data structures types: Spatial and non-spatial, raster and vector[5]	5	KR
8	Principles of preparing attribute tables, data manipulation, and overlay analysis[6]	6	KR
9	Principles and significance of buffer preparation[4]	4	KR
10	Principles and significance of overlay analysis[5]	5	KR
11	Principles of GNSS positioning and waypoint collection[5]	5	KR
12	Principles of transferring of GNSS waypoints to GIS. Area and length calculations from GNSS data[5]	5	KR

Sl no.	<b>2.1 GEO-A-CC-5-12-P-Remote Sensing, GIS and GNSS Lab</b> ✧ 30Marks/2Credits	No. of lectures	Faculty
1	Image geo referencing and enhancement. Preparation of reflectance libraries of LULC features across different image bands of IRS L3 or Landsat OLI data[15]	15	IS
2	Supervised image classification, class editing, and post-classification analysis[15]	15	MD
3	Digitisation of features and administrative boundaries. Data attachment, overlay, and preparation of annotated thematic maps[20]	20	KDG
4	Way point collection from GNSS receivers and exporting to GIS database[10]	10	KR
5	Viva-voce based on laboratory notebooks(5Marks)		

no.	<b>3.1 GEO-A-DSE-A-5-02-TH-Climate Change: Vulnerability and Adaptations</b> ♦60Marks	No. of lectures	Faculty
1	The science of climate change: Origin, scope and trends [5]	5	KR
2	Climate change with reference to the geological time scale [6]	6	KR
3	Evidences and factors of climate change: The nature–man dichotomy [4]	4	KR
4	Greenhouse gases and global warming [5]	5	KR
5	Electromagnetic spectrum, atmospheric window, heat balance of the earth [5]	5	KR
6	Global climatic assessment: IPCC reports [5]	5	KR
7	Climate change and vulnerability: Physical; economic and social [5]	5	MD
8	Impact of climate change: Agriculture and water; flora and fauna; human health and morbidity [5]	5	MD
9	Global initiatives to climate change mitigation: Kyoto Protocol, carbon trading, clean development mechanism COP, climate fund [5]	5	MD
10	Climate change vulnerability assessment and adaptive strategies with particular reference to South Asia [5]	5	MD
11	National Action Plan on climate change [5]	5	MD
12	Role of urban local bodies, panchayats, and educational institutions on climate change mitigation: Awareness and action programmes [5]	5	MD

Sl. no	GEO-A-DSE-A-5-02-P-Climat Change: Vulnerability and Adaptations Lab ✧ 30Marks	No of lectures	Faculty
1	Analysis of trends of temperatures (maximum and minimum of about three decades) of any Indian Meteorological Department (IMD) station[10]	10	MD
2	Comparative analysis of seasonal variability of rainfall on the basis of monthly data of any two IMD stations[15]	15	MD
3	Annual rainfall variability of about three decades for any two representative climatic regions of India[15]	15	KR
4	Preparation of an inventory of extreme climatic events and mitigation measure of any climatic region / country of South Asia for a period of one decade on the basis of secondary information[20]	20	KR
5	Viva-voce based on laboratory notebook (5Marks)		

Sl. no.	<b>3.1 GEO-A-DSE-A-5-02-TH-Cultural and Settlement Geography</b> ✧60Marks	No. of lectures	Faculty
1	Definition, scope and content of cultural geography [5]	5	KDG
2	Development of cultural geography in relation to allied disciplines [6]	5	KDG
3	Cultural hearth and realm, cultural diffusion of major world religions and languages[4]	6	KDG
4	Cultural segregation and cultural diversity, culture, technology and development. [5]	5	KDG
5	Races and racial groups of the world [5]	5	KDG
6	Cultural regions of India[5]	4	KDG
7	Rural settlement: Definition, nature and characteristics [5]	3	IS
8	Morphology of rural settlements: site and situation, layout-internal and external[5]	5	IS
9	Rural house types with reference to India, Social segregation in rural areas; Census categories of rural settlements [5]	7	IS
10	Urban settlements: Census definition (Temporal) and categories in India [5]	3	IS
11	Urban morphology: Models of Burgess, Hoyt, Harris and Ullman[5]	7	IS
12	City-region and conurbation. Functional classification of cities: Schemes of Harris, Nelson and McKenzie[5]	5	IS

Sl. no	GEO-A-DSE-A-5-02-P-Cultural and Settlement Geography Lab ✧ 30Marks	No of lectures	Faculty
1	Mapping language distribution of India [10]	10	KDG
2	CD block-wise housing distribution in any district of West Bengal using proportional square [20]	20	IS
3	Identification of rural settlement types from toposheet [15]	15	IS
4	Social area analysis of a city (Shevky & Bell) [15]	15	KDG
5	Viva-voce based on laboratory notebook (5Marks)		

Sl. no	<b>GEO-A-CC-6-13-TH- Evolution of Geographical Thought</b> ✧ 60Marks/4Credits	No. of lectures	Faculty
1	Development of pre-modern Geography: Contributions of Greek, Chinese, and Indian geographers[5]	5	KDG
2	Impact of 'Dark Age' in Geography and Arab contributions[5]	5	KDG
3	Geography during the age of 'Discovery' and 'Exploration' (contributions of Portuguese voyages, Columbus, Vasco da Gama, Magellan, Thomas Cook)[5]	5	KDG
4	Transition from cosmography to scientific Geography (contributions of Bernard Varenius and Immanuel Kant). Dualism and Dichotomies (General vs. Particular, Physical vs. Human, Regional vs. Systematic, Determinism vs. Possibilism, Ideographic vs. Nomothetic)[7]	7	KDG
5	Evolution of Geographical thoughts in Germany, France, Britain, and United States of America[5]	5	KDG
6	Contributions of Humboldt and Ritter[3]	3	KDG
7	Contributions of Richthofen, Hartshorne– Schaeffer, Ratzel, La Blaché[6]	6	KR
8	Trends of geography in the post World War-II period: Quantitative revolutions, systems approach[7]	7	KR
9	Structuralism and historical materialism[3]	3	KR
10	Changing concept of space with special reference to Harvey[5]	5	KR
11	Evolution of Critical Geography: Behavioural, humanistic, and radical[5]	5	KR
12	Towards post modernism: Geography in the 21s century[5]	5	KR

Sl no.	<b>2.1 GEO-A-CC-6-13-P-Evolution of Geographical Thought Lab</b> ✧ 30Marks/2Credits	No. of Lectures	Faculty
1	Changing perception of maps of the world (Ptolemy, Ibn Batuta, Mercator)	-	KDG
2	Mapping voyages; Columbus, Vasco da Gama, Magellan, Thomas Cook	-	KDG
3	Group Presentation of five to ten students on any selected school of geographical thought (20 marks)	-	KDG, IS, KR, MD
4	Viva-voce based on laboratory notebook on topics 1 and 2 (10 Marks)		



Sl no	<b>2.1 GEO-A-CC-6-14-TH-Hazard Management</b> ✧60Marks/4Credits	No. of lectures	Faculty
1	Classification of hazards and disasters. Hazard continuum[4]	4	MD
2	Approaches to hazard study: Risk perception and vulnerability assessment. Hazard paradigms[6]	6	MD
3	Responses to hazards: Preparedness, trauma, and aftermath. Resilience, capacity building[5]	5	MD
4	Hazards mapping: Data and geospatial techniques (for hazards enlisted in Unit II and GEO-A-CC-6-14-P)[5]	5	MD
5	Earthquake: Factors, vulnerability, consequences, and management[5]	5	MD
6	Landslide: Factors, vulnerability, consequences, and management[5]	5	MD
7	Land subsidence: Factors, vulnerability, consequences, and management[5]	5	IS
8	Tropical cyclone: Factors, vulnerability, consequences, and management [5]	5	IS
9	Flood: Factors, vulnerability, consequences, and management[5]	5	IS
10	River bank erosion: Factors, vulnerability, consequences, and management[5]	5	IS
11	Fire: Factors, vulnerability, consequences, and management[5]	5	IS
12	Bio hazard: Classification, vulnerability, consequences, and management[5]	5	IS

Sl no.	<b>3.1 GEO-A-DSE-A-6-04-TH-Resource Geography</b> ✧60Marks/4Credits	No. of lectures	Faculty
1	Natural resources: Concept and classification[4]	4	KDG
2	Approaches to resource utilization: Utilitarian, conservational, community based adaptive[6]	6	KDG
3	Significance of resources: Backbone of economic growth and development[5]	5	KDG
4	Pressure on resources. Appraisal and conservation of natural resources[5]	5	KDG
5	Problems of resource depletion: global scenario (forest, water, fossil fuels)[7]	7	KDG
6	Sustainable resource development[3]	3	KDG
7	Distribution, utilisation, problems and management of metallic mineral resources: Iron ore, bauxite, copper[6]	6	IS
8	Distribution, utilisation, problems and management of non-metallic mineral resources: Limestone, mica, gypsum[6]	6	IS
9	Distribution, utilisation, problems and management of energy resources :Conventional and non-conventional[6]	6	IS
10	Contemporary energy crisis and future scenario[4]	4	IS
11	Politics of power resources[3]	3	IS
12	Limits to growth and sustainable use of resources. Concept of resource sharing[5]	5	IS

Sl. no	<b>3.1 GEO-A-DSE-A-6-04-P – Resource Geography Lab</b> ✧ 30 Marks / 2 Credits	No. of lecture	Faculty
1	Mapping and area estimate of changes in forest or vegetation cover from maps and /or satellite images[15]	15	KD
2	Mapping and number estimate of changes in water bodies from maps and / or satellite images[15]	15	KD
3	Decadal changes in state-wise production of coal and iron ore[15]	15	IS
4	Computing Human Development index: Comparative decadal change of top five Indian states[15]	15	IS
5	Viva-voce based on laboratory note book (5Marks)		

Sl. no	<b>3.1 GEO-A-DSE-B-6-07-TH – Urban Geography</b> ✧60 Marks /4 Credits	No. of lecture	Faculty
1	Urban Geography: Nature and scope, different approaches and recent trends in urban geography [5]	5	MD
2	Origin of urban places in ancient, medieval, modern and post-modern periods: Factors, stages, and characteristics [7]	7	MD
3	Theories of urban evolution and growth: Hydraulic theory and economic theory [3]	3	MD
4	Aspects of urban places: Location, site, and situation. Size and spacing of cities: Rank size rule, law of primate city [5]	5	MD
5	Urban hierarchies: Central place theory. August Lösch's theory of market centres [5]	5	MD
6	Patterns of urbanisation in developed and developing countries [5]	5	MD
7	Ecological processes of urban growth, Urban fringe. City-region[5]	5	KR
8	Models on urban structure: Political economy, bid-rent curve, social area analysis[5]	5	KR
9	Urban issues :Problems of housing, slums, civic amenities (water and transport)[7]	7	KR
10	Patterns and trends of urbanisation in India[3]	3	KR
11	Policies on urbanisation. Urban change in post-liberalised period in India[5]	5	KR
12	Case studies of Delhi ,Kolkata, and Chandigarh with reference to landuse[5]	5	KR

Sl no.	<b>3.1 GEO-A-DSE-B-6-07-P – Urban Geography</b> <b>Lab</b> ✧ 30 Marks / 2 Credits	No. of lectures	Faculty
1	Hierarchy of urban settlements: Rank-size rule[15]	15	MD
2	State-wise variation and trends of urbanisation[15]	15	MD
3	Temporal analysis of urban growth using Census of India data[15]	15	KR
4	Preparation of urban landuse landcover map from satellite images[15]	15	KR
5	Viva-voce based on laboratory notebook (5Marks)		

Sl no.	<b>5.1 GEO-G-CC-1-01-TH-Physical Geography</b> ✧60 Marks*/ 4 Credits	No. of lectures	Faculty
1	Earth's interior with special reference to seismology[3]	3	KR
2	Plate Tectonic as a unified theory of global tectonics. Formation of major relief features of the ocean floor and continents according to Plate Tectonics[7]	7	KR
3	Folds and faults: Classification and surface expressions[6]	6	MD
4	Degradational processes: Weathering, mass wasting, and resultant landforms[4]	4	KR
5	Principal geomorphic agents. Classification and evolution of fluvial, coastal, aeolian, and glacial landforms[12]	12	MD
6	Basic models of slope evolution: Decline, replacement, and retreat. Systems approach and its significance in geomorphology [6].	6	MD
7	Global hydrological cycle: Its physical and biological role[2]	2	IS
8	Run off: Controlling factors. Concept of ecological flow[3]	3	IS
9	Drainage basin as a hydrological unit. Principles of watershed management[3]	3	IS
10	Physical and chemical properties of ocean water. Distribution and determinants of temperature and salinity[4]	4	IS
11	Ocean circulation, wave, and tide[7]	7	KR
12	Marine resources: Classification and sustainable utilisation[3]	3	KDG

Sl. no	<b>5.1 GEO-G-CC-1-01-P – Physical Geography Lab</b> ✧ 30 Marks / 2 Credits	No. of lectures	Faculty
1	Megascopic identification of <i>mineral samples</i> : Bauxite, calcite, chalcopyrite, feldspar, galena, hematite, mica, quartz, talc, tourmaline[8]	8	KDG
2	Megascopic identification of <i>rock samples</i> : Granite, basalt, laterite, limestone, shale, sandstone, conglomerate, slate, phyllite, schist, gneiss, quartzite[12]	12	KDG
3	Extraction of physiographic information from Survey of India 1:50k topographical maps of plateau region: Construction and interpretation of relief profiles (superimposed, projected and composite), Construction and interpretation of relative relief map (c. 5'×5') [20]	20	MD
4	Extraction of drainage information from Survey of India topographical maps of plateau region: Extraction and interpretation of channel features and drainage patterns, Construction of channel profiles[20]	20	KR & IS
5	Viva-voce based on laboratory notebook(5Marks)		

Sl no.	<b>5.1 GEO-G-CC-2-02-TH – Environmental Geography</b> ✧60 Marks / 4 Credits	No. of Lectures	Faculty
1	Insolation and Heat Budget. Horizontal and vertical distribution of atmospheric temperature and pressure[5]	5	KR
2	Overview of planetary wind systems. Indian Monsoons: Mechanisms and controls[6]	6	MD
3	Atmospheric disturbances: Tropical and temperate cyclones. Thunderstorms[7]	7	MD
4	Overview of global climatic change: Greenhouse effect. Ozone depletion[5]	5	KR
5	Scheme of world climatic classification by Köppen[2]	2	KDG
6	Factors of soil formation[4]	4	KDG
7	Soil profile development under different climatic conditions: Laterite, Podsol, and Chernozem[6]	6	KDG
8	Physical and chemical properties of soils: Texture, structure, pH, salinity, and NPK status[6]	6	IS
9	USDA classification of soils. Soil erosion and its management[4]	4	IS
10	Ecosystem and Biomes. Distribution and characteristics of tropical rainforest; Savannah, and hot desert biomes[6]	6	MD
11	Plant types, occurrence and ecological adaptations :Halophytes, xerophytes, hydrophytes, and mesophytes[5]	5	MD
12	Biodiversity: Types, threats and management with special reference to India[4]	4	IS



Sl no.	<b>5.1 GEO-G-CC-2-02-P – Environmental Geography</b> <b>Lab ✧ 30 Marks / 2 Credits</b>	No. of lectures	Faculty
1	Interpretation of daily weather map of India (anyone): Pre-Monsoon or Monsoon or Post-Monsoon[20]	20	KR
2	Construction and interpretation of hythergraph, climograph (G. Taylor) and windrose (seasonal)[20]	20	MD
3	Determination of soil type by ternary diagram textural plotting[10]	10	IS
4	Preparation of peoples' biodiversity register[10]	10	All
5	Viva-voce based on laboratory notebook(5Marks)		

Sl no.	<b>5.1 GEO-G-CC-3-03-TH – Human Geography</b> ✧60 Marks / 4 Credits	No. of lectures	Faculty
1	Sectors of the economy: Primary, Secondary, Tertiary and Quaternary. Factors affecting location of economic activities[5]	5	KDG
2	Location of economic activities: Theories of Von Thünen, Lösch, and Weber[5]	5	KDG
3	Location of industries with special reference to India: Cotton, Iron and Steel[5]	5	KR
4	Globalisation and integration of world economies[5]	5	KR
5	Human Society: Structure, functions, social systems. Population and migration: overview, causes and effects[5]	5	MD
6	Types and characteristics of social organisations: Primitive, hunting–gathering, agrarian, industrial[5]	5	KDG
7	Race, Language and Religion: Origin, characteristics and spatial variations[6]	6	IS
8	Social Issues: Diversity, conflict and transformation[5]	5	KR
9	Carl Sauer: cultural landscape and its elements[6]	6	IS
10	Rural and urban settlements: Differentiation in cultural landscapes[5]	5	MD
11	Cultural regions and cultural realms[5]	5	IS
12	Diffusion of culture and innovations[4]	4	MD

Sl no.	<b>5.1 GEO-G-CC-3-03-P – Human Geography Lab</b> ✧ 30 Marks / 2 Credits	No. of lectures	Faculty
1	State-wise variation in occupational structure by proportional divided circles[15]	15	KR
2	Time series analysis of industrial production using any two manufactured goods from India[20]	20	KDG
3	Measuring arithmetic growth rate of population comparing two datasets[15]	15	MD
4	Nearest neighbour analysis: Rural example from Survey of India 1:50k topographical maps[10]	10	IS
5	Viva-voce based on laboratory notebook(5Marks)		

Sl. no	<b>5.1 GEO-G-CC-4-04-TH –Cartography</b> ✧60 Marks / 4 Credits	No. of lectures	Faculty
1	Maps: Classification and types. Scales: Types, significance, and applications[3]	3	IS
2	Coordinate systems: Polar and rectangular. Bearing: Magnetic and true, whole-circle and reduced[3]	3	IS
3	Map projections: Classification, properties and uses. Concept and significance of UTM projection[8]	8	IS
4	Survey of India topographical maps: Reference scheme of old and open series. Information on the margin of maps[4]	4	MD
5	Representation of data by dots and proportional circles[4]	4	MD
6	Representation of data by isopleths and choropleth[4]	4	MD
7	Principal national agencies producing thematic maps in India: GSI, NATMO, NBSSLUP, NHO, and NRSC. Acquaintance with Bhuvan platform[5]	5	MD
8	Basics of Remote Sensing: Types of satellites, sensors, bands, and resolutions with special reference to the ISRO missions[10]	10	KR
9	Principles of preparing standard FCCs and classified raster images[5]	5	KR
10	Principles of Geographical Information System: Concepts of vector types, attribute tables, buffers, and overlay analysis[6]	6	KR
11	Basic concepts of surveying and survey equipment: Prismatic compass[6]	6	KDG
12	Basic concepts of surveying and survey equipment: Dumpy level[6]	6	KDG

Sl. No.	5.1 <b>GEO-G-CC-4-04-P –Cartography Lab</b> ✧30 Marks / 2 Credits	No. of lectures	Faculty
1	Graphical construction of scales: Plain and comparative [10]	10	KR
2	Construction of projections: Simple Conic with one standard parallel, Cylindrical Equal Area, and Polar Zenithal Stereographic [20]	20	IS
3	Construction of thematic maps: Proportional squares, proportional circles, choropleths, and isopleths [20]	20	MD
4	Preparation of annotated thematic overlays from satellite standard FCCs of 1:50k [10]	10	KDG
5	Viva-voce based on laboratory notebook (5 Marks)		