

## **ASSISTANT PROFESSOR IN GEOGRAPHY IN COLLEGIATE EDUCATION**

### **SYLLABUS**

#### **Module 1: CONCEPTS AND TRENDS IN GEOGRAPHY**

Nature and scope of Geography - History of development of Geographic Thoughts – Contributions of Greek, Roman, Arab, Indian, French, American, German and British Geographers – Dualism and dichotomies – Recent trends in geography – Approaches in Geography – Positivism, Pragmatism, Functionalism, Existentialism, Idealism, Marxism, Radicalism, Behaviouralism and Humanism – Welfare Geography – Quantitative Revolution - Laws, Theories and models in Geography, Spatial analysis, Locational analysis, Systems approach - Inductive, Deductive approaches, reasoning, Multi disciplinary approach, Welfare Geography, Human Ecology, Geography of Gender, Time and space, Postmodernism and Geography – Paradigm shift in Geography

#### **Module 2: GEOMORPHOLOGY**

History of geomorphic thought- Origin of the earth - Isostasy – Continental drift and plate tectonics - Endogenism and exogenism – Earthquakes and volcanoes - Weathering and Mass wasting – Soils - Mountain building - Geomorphic processes and forms - Agents of Erosion and deposition – Land form and slope evolution theories – Morphogenetic regions and climatic geomorphology – Applied geomorphology

#### **Module 3: CLIMATOLOGY**

Composition and Structure of the Atmosphere – Insolation – Heat Budget of the Earth – Temperature Inversion - Pressure belts- Atmospheric Stability and Instability - General Circulation of the Atmosphere – Meridional circulation – Winds – Jet Streams – Atmospheric Moisture – Humidity – forms of condensation – Precipitation - Tropical and Temperate Weather Systems – Air Masses and Fronts – Temperate Cyclones – Tropical Cyclones – Tornadoes and waterspouts - Thunderstorms – Monsoons - Climatic Classifications of Koeppen, Trewartha and Thornthwaite - Ocean – Atmosphere Interaction – El-Nino - and Southern Oscillations – La Nina - Climate Changes – Evidences, Past and Present – Possible Causes – Ozone Depletion – Global Warming and its Impacts- Applied Climatology – Climate and Agriculture – Weather Relations of crops – Weather and Diseases

#### **Module 4: ENVIRONMENTAL GEOGRAPHY**

Ecosystem – structure, classification, biomes, Nutrient cycle. Natural disruptions of the ecosystem - Biodiversity, Natural hazards – Floods, Drought - Man’s modification of the Biosphere – Man’s impact on land, water and air - Environmental problems – Urban environment and pollution - Emerging environmental issues - Eco-crisis – Environmental management and planning - Environmental quality - Environmental law and protection – Environmental impact assessment – Environmental movements

#### Module 5: URBAN GEOGRAPHY

Origin and Evolution of Urban Centres -Location and Siting of Urban Centres - Classification of Urban Centres - Different Approaches to the Study of Urban Geography – Factors associated with the growth of Cities - Classification of Urban Centres on the basis of a)Size, b)Function – Rank-Size Rule – Primate city - Harris and Nelson’s Scheme of Classification – Classification of Indian Cities by Ashok Mitra - Urban Centers – Their Spatial and Functional Relationships – Central Place Theory – Urban Morphology – Land Use Models – Theories of Burgess, Harris and Hoyt – Central Business District and its Characteristics – Morphology of Indian Cities – Urban Housing – Urban Housing Policies and Programmes in India - Urban Slums – Urban Fringe – Its Characteristics and Development - Salient Features of the Processes of Urbanisation in India and Kerala– Problems and Prospects.

#### Module 6: ECONOMIC GEOGRAPHY

Resource and Economic Development - A Global Perspective - Classification of Resources according to Distribution, Utilisation and Potentials - Agriculture Location Theories - Von Thunen's Agricultural Location Model - Sinclair's Theory - Oloff Jonasson's Theory - Whittlesay's Classification – Crop combination, cropping pattern, crop diversification, cropping intensity, agricultural efficiency - Industrial Location Theories - Least Cost Approach - Webers Theory - Maximum Revenue Approach - Toad Palender, Edgar Hoover, August Losch, David M Smith, Harold Hotelling - Behavioural Approach - Allan Pred, Product Life Cycle - Structural Approach - World Trade - Laftla - EEF - EFTA - World's Major Trade Zones - Western Europe, North America, Latin America, Australia, Russia and Eastern Europe, Asia.

#### Module 7: ADVANCED CARTOGRAPHY

Map functions and types – Geodesy - Directions and their functions – Map projections, scale and co-ordinate systems – Cartographic data and processing – sources of image processing – digital database – cartographic database management - Phases of cartographic processes – Map compilation – Graphic and conceptual process and tools - Lettering and Typography - topographic data mapping and charting organizations - Cartographical data analysis – Digital cartography

#### Module 8. REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM

EMR and remote sensing; Spectral regions, interaction of EMR with atmosphere and earth surface features - Types of Remote sensing, platforms, orbit - Ideal & real remote sensing – Aerial Photography – basic principles of Photogrammetry - satellite remote sensing – types of satellites - Remote sensors - ; types of sensor system, scanning and orbiting mechanism, Resolution- spatial, Spectral, radiometric and temporal resolution. Resolution aspects of LANDSAT, SPOT, IRS and IKONOS satellites - Satellite photographic systems; Thermal infrared remote sensing, microwave remote sensing, Hyper spectral remote sensing - Digital image processing – Indices -Vegetation Index, NDVI, BUI - Development of Remote sensing in India- Developments - Satellite programmes – Applications of remote sensing - GIS – Components - GIS : Definition, Components, Data in GIS - Spatial Data, Attribute Data - Data input and editing - Error Rectification, Transformation and Generalisation - Spatial Data Models - Spatial Data Management : Database Management System – RDBMS – Query Models – Reclassification – Buffer Analysis – Neighborhood functions- Overlay Analysis and Boolean Operators - Spatial Analysis : Spatial Interpolation and surface analysis - Modeling Surfaces - Trend surfaces and Digital Elevation Models. - Modeling Networks : Network analysis - Web GIS and Mobile GIS - Open source software QGIS-, ILWIS, SAGA GIS, Geo Server, Open data sources for GIS analysis – Open Street Map, USGS Earth Explorer, NASA's Socioeconomic Data and Applications Center (SEDAC), United Nations Environmental Data Explorer, FAO Geo Network. Location Allocation and Facility Management using GIS.

## Module 9: GEOGRAPHY OF INDIA WITH SPECIAL REFERENCE TO KERALA

Location – Physiography – Stratigraphy – Climate – Drainage – Soils – Natural Vegetation – Land utilisation – Irrigation – Agriculture – Mineral and Power Resources - Industries – Transport and Trade – Population - Geography of Kerala – Location – Physiography and drainage – Climate and natural vegetation – Soils – Minerals - Agriculture – Fisheries – Industries – Irrigation and Power – Transport and Communication - Population – Ecology and environment

## Module 10: RESEARCH METHODS IN GEOGRAPHY

Types of Research – Applied and fundamental Research in Geography – Concepts of Theories and Laws in Geography - Research Design - Identification of Problems – Review of Literature – Hypothesis – Testing of Hypothesis in Geography – use of Models and Empirical Techniques in the Analysis of Geographical Problems - Sampling : Types of Sampling – Significance of Sampling in Geographical Research - Data Acquisition and Analysis : Collection of data – Primary and Secondary data \_ Alternative Sources of data – Data Preparation Process - Thesis Writing :

Organisation of the Thesis – Drafting of the Thesis – Preparation of Bibliography – Writing of Abstracts