## DEPARTMENT OF GEOGRAPHY
### GUJARAT UNIVERSITY

**SYLLABUS FOR M.A./M.Sc., GEOGRAPHY**

**SEMESTER-I**

<table>
<thead>
<tr>
<th>Code No. GEO401</th>
<th>Title: Advanced &amp; Applied Geomorphology</th>
<th>No. of Periods: 45</th>
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No. of Credits: 4

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<thead>
<tr>
<th>Sr. No.</th>
<th>Topics</th>
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<tbody>
<tr>
<td>1.</td>
<td>Introduction to Geomorphology as a science and its brief history; Fundamental concepts in geomorphology, main branches of geomorphology.</td>
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**References:**


4. Climate and the physical environment – soil, and water resources, flora and fauna, Urban climate – industrial transport and commercial activities, environmental change, air pollution problems.

5. Climate and Human comfort: clothing, health, human energy balance, impacts on performance and behaviour, morbidity and mortality. Climate change: Data sources, methods and theories.

References:

Topics

1. Environmental Science: Introduction, scope, approaches to study of environment, biogeography: scope, development, Biosphere, physiography, interdisciplinary sub-fields.

2. Ecology and Ecosystem: Ecological hierarchy, structure and developmental energy and nutritional flux, food chain and food web, bio-chemical cycles, nitrogen, carbon-dioxide, oxygen, phosphorus, biotic and abiotic, functioning and development of eco system, energy transfer, energy loss.


References:

Topics

Nature of economic geography, Approaches to the study of economic geography.

Economic concepts and principles, Hypotheses in economic geography, Economic Landscape, Evolution of World Economy.

Factors of production, Rostow’s model of economic development, Economic growth and development.

Modes of transport; Cost of transport.

Characteristics of international trade, Comparative cost trade theory, Globalization.

References:


Code No. GEO405PR  Title: Cartographic Methods  No.of Practicals: 4

Topics

Relief and climatic diagrams: Cross profiles – superimposed projected and composite profile, Long profile; Altimeric curve, 3-D models, Toposheet interpretation.

Hythergraph, climograph, polargraph, composite wind rose, Ishohyet and Isotherm maps, cyclone track and interpretation of weather charts.

Cartograms: Use of socio-economic data, circle and sphere methods, square and block methods, choropleth maps, flow diagrams, triangular graph, Lorenz curve and Gini’s concentration Index.

Indices of transport network analysis – Detour Index and shape index.

References:


Topics

Geographical data: Discrete and continuous series, scales of measurements, frequency distribution, histogram, Frequency curve and ogive curves.

Measures of Central tendency – Mean, Median, Mode, skewness, measures of dispersion – Mean deviation, standard deviation, quartile deviation, measures of relative variability, coefficient of variation.

Theory of probability and sampling, theoretical probability, distributions. Binomial, poisson and normal, introduction to sampling theory, sampling distributions and standard error.

Correlation co-efficient, rank correlation, simple regression and trend line analysis, time series analysis.

Formulation of Hypothesis, ‘t’ test, f-test, chi-square test and 2-test.

References:


Topics

1. Basic Frame and concepts – Man-Environment interaction: New Environmentalism; Concepts: Space, Place, environment, time and spatial organization; Region, and regional typology; culture and cultural landscape.

2. Modern Approaches. Dualism in Geography, Quantitative revolution and challenges, philosophy and Geography: Contributions of – Vidal de la Blache and care saver, Humanistic and phenomenological Geography – contributions of Yi-Fu Tuan, Literary Geography: landscape as text.


5. Ancient – Indian geography and scientific outlook; Future of Indian geography: problems perspective and prospects.

References:

Code No. GEO408   Title: Principles and Applied Oceanography   No.of Periods: 45

No. Credits: 4

Topics

Nature and Scope of Oceanography – Major features of Ocean basins, continental margin and deep ocean basins – Bottom relief of Indian, Atlantic and Pacific Oceans.

Physical and chemical properties of sea water, sources and factors affecting the distribution of temperature and salinity.

Circulation patterns in the ocean – ocean currents, watermasses, waves, tides and tsunamis, their types and theories of origin.

Marine biological environment, biozones – Plankton, Nekton and Benthos, ocean deposits, coral reef, theories of their origin.

Impacts of Humans on the Marine Environment – Laws of the sea, marine resources, development and pollution, EEZ and resource utilization.

References:

David Ross (1973): Introduction to Oceanography.
Singh Savindra (20): Oceanography, Allahabad.
Topics


References:

Topics

1. Physical aspects and Resources: Making of India through geological times, structure and relief, physiographic divisions, drainage systems and watersheds, climate characteristics, mechanism of the Indian monsoon, soil-water resources, forest types, distribution and utilization.


3. Industries: Salient features of Indian industry, industrial complexes and regions, major industries, industrial policies, globalization and liberalization, problems and prospects, transport development: Rail, Road, and Ports, Tourism in India.

4. Population structure and composition – size, distribution and density; biological, economic and socio-cultural characteristics, dynamics of population – Migration and urbanization, population policy.

5. Dynamic, prospective and problem regions of India, Regional disparities in the levels of economic development, Globalisation and its impact on Indian economy and society.

References:

Topics

1. Use of computers: Introduction of computers, physical components, software tools, creation of folders, saving files.

2. Spreadsheets / Database Maintenance through Microsoft Excel, Data input, use of formulae, calculation of sum, mean, median and mode, percentages, Growth rates, Generating Bar Diagram, Pie-charts, Line graphs, etc.

3. Application of statistical software SPSS: Data Input, Recoding Data calculation of minimum, maximum, range, mean standard deviation.

4. Frequency Tables, Cross Tabulations, Correlation, etc.

References:


Code No. GEO412PR        Title: Research Methods & Field Survey        No.of Practicals: 4
No. Credits: 4

Topics

1. Framework of Research: Concept and significance of research in geography, research approaches and choices: Empiricism, Positivism, Behaviourism, Inductive and Deductive approaches.

2. Planning the research and Data generation: Primary data and secondary data, Data collection and classification, Research design, participatory research planning and framing pilot/research project, survey-questionnaire making of form and design, village and household survey and reporting.

3. Theories and Techniques: Model making; Application of system theory; Use of GPs; Application and relevance of statistical and cartographic techniques, Application of computer and GIS.

4. Analysis, writing and Dissemination, Production and arrangement of data and maps; Quantitative and Qualitative interpretations; Use of writing Manuals (arranging themes, maintaining coherence, cross-comparison, concluding, referencing noting); proof marks and marked proof, report writing: a case study of heritage planning of Ahmedabad.

References:

Topics

1. Nature and scope of Tourism, history of tourism, factors affecting tourism, types of tourism.

2. Infrastructure and support system for tourism, evaluation of tourism potential, development and planning for tourism.

3. Economic, social physical and cultural impact of tourism.

4. Environmental laws and tourism, globalization and tourism.

5. Case studies of tourist centres
   1) Religious centres, 2) Historical centres, 3) Resort, 4) Dams, 5) Sanctuaries and National Parks.

References:


Topics


5. Contemporary issues of water management – urban and rural areas – large dams, multipurpose projects, check dams, linking of rivers – Environmental, economic and social dimension; issues of water governance.

References:


Topics

1. Urbanisation and Development, Demographic, economic and social aspects of urbanization – capitalism, industrialization, urbanization and urban development.


4. Organisation of urban space – urban morphology and landuse – contemporary urban frontiers – urban renewal, transformation of urban space, spatial order, crisis in urban space, emerging issues.

5. Urban expansion and the periphery – suburbanization and urban sprawl – urban development in the fringe contemporary issues in urban planning.

References:


Topics


2. Origin and dispersal of agriculture, place of agriculture in the world and regional economies.


5. Land Use: Surveys and Land classification, agricultural regionalization measures of agricultural productivity, policies, reforms and core-strategies of agricultural development.

References:


Topics


2. Geographic basis of social interaction and relations, formations of social groups, community and society, concept of social space, socio-cultural region.

3. The role of race, ethnicity, religion, caste and language in the evolution of social regions. Aspects of unity in diversity in Indian society, social transformation, sanskritisation, role of rural-urban interaction.

4. Space and society – contribution of social geography to social theory, power relations and space, gender disparities and their spatial expressions.

5. Processes of industrialization, urbanization, modernization and globalization and their impact on Indian society – family structure, disparity level of living and values.

References:


Topics

1. Marketing Geography – Meaning, scope and subject matter, system of production, distribution and exchange and development of market centres, system of central places in complex economies, systematic variations of the hierarchy.

2. Approaches to a theory – classical central place, modern theoretical departures – periodic markets in peasant societies.

3. Reciprocal and redistributive exchange in the simplest societies, emergence of local and long distance trade, change in peasant marketing.

4. Modern urban hierarchies – change within metropolitan regions, emergence of new metropolitan form.

5. Theories of marketing – presenting market and marketing data, evaluating markets, delineating trading and selling areas and selecting channels of distribution and locations for wholesale, retail or service establishment, role of market centres in regional and national development.

References:


Topic

1. Fundamentals: Concept, nature and scope of regional planning, methods of regional planning, different approaches to regional planning, planning regions, concept and types; methods of delimitation, planning regions of India, regional policies in India.

2. Conceptual Outlook: Regional planning and national development; economic development and regional development, regional disparity and regional diversity; production processes and cycles; regional economic complexes, inter-regional and intra-regional functional interactions; regional disparities in India.

3. Approaches: Approaches to integrated regional planning at different levels; local regional and national; multi-level planning in India: State, District, Block level planning; planning for tribal, agricultural, industrial and urban (metropolitan) regions.


5. Regional Development and Planning Strategies – Concentration versus dispersal – case studies from developed and developing countries.

References:


1. South Asia as a territorial entity – Geo-Political evolution of SAARC countries; Salient Features of natural features and resources – Major issues in resource mobilization and infrastructure development.


5. People and cultural mosaic – spatial pattern and density – Regional Socio-cultural formations, ethnicity, language and religion, politics of culture and resultant pattern – Differential roles of centres of political and economic activities – Civil society, and governance – quality of life and index of social economic well being, regional variations.

References:


Topic

1. Fundamentals of GIS: Concepts and definitions, component elements of GIS, Tasks of GIS, Functional and Logical relationships among geographic features and their attributes, types of attributes, data quality and sources of errors – Hardware and software requirements of GIS.

2. Map projection, spherical coordinate system, Datum Plane – Information on various scales, need of projection, properties of map projections.

3. Conceptual models of spatial information – Raster Data model, vector data model comparative overview; Preparation of vector and raster data base and maps, manual method for point, line and area entities.


5. Structuring of spatial data – scanning, digitizing, error detection and correction, topology, encoding raster data: full grid, chain code, run length, block code.

References:


Topic


2. Sources of data for mapping: Traditional and modern sources – data acquired by remote sensing and GPS technologies – GIS database – web based resources – Integration of data from different sources – some basic statistical techniques for processing and organization of data – conversion into mappable form.


References:


Topic

1. Spectral Characteristics of common natural objects, Atmospheric effects on remote sensing data; spectral signatures and special response patterns, resolutions of remote sensing data.

2. Characteristics of Remote Sensing platforms and sensors; Indian Remote sensing satellites and sensors; Micro-wave remote sensing data: characteristics, interpretation and application.

3. Preparation of keys from satellite imageries, thematic mapping through satellite imageries for geomorphology, land-use/land cover, ground water potential zones, lithology and structure, soil and forest types.


5. Satellite image interpretation in terrain and resource evaluation, environmental monitoring; Land use/land cover mapping; water and forest; Lithology and structure; Remote Sensing and GIS.

References:


Code No.506PRB   Title: Global Positioning System and Surveying   No. of Practicals: 
No. of Credits: 4

Topic

1. Global Positioning System, Concept, meaning and applications.

2. GPS Measurements as data inputs for GIS

3. Acquisition of Digital data by GPS – Satellite based surveying system – A kinematic GPS Surveying, Stop-and-go GPS surveying, A real time GPS surveying.

References:


Topic

1. Resources: Concept, functional operational theory, process, need for study, principals of resource adequacy and resource scarcity, classification of resources and resource appraisal.

2. Distribution of resources – water, soil, forest, mineral and energy in India and world.

3. Utilization and conservation of natural resources in the context of environment, population and development.

4. Degradation of resources – land, water, air and forests, causes and consequences.

5. Resource development and management, National policies, plans, programmes, processes and patterns of resource development, eco-friendly technology, and sustainable development.

References:


2. Distribution of Human resource – size, density and growth, race, age-sex composition, Literacy and level of education, workers by occupation, birth and death rates and morbidity, geographical impact of an spatial variation in human resource in India.

3. Demand and Supply of Human resource in different activities; labour scarcity and unemployment and dichotomy.


5. Human resource development: Gender, children, aged, religion, caste, tribe; policies and programmes, measurement of human development index.

References:


1. Natural hazards and disasters – definition and areas, natural hazards, meteorological – cyclones, typhoons, hurricanes and droughts, forest fires, causes, assessment, effects and control measures.

2. Natural hazards – Geological – earthquakes, volcanoes, causes, effects and control measures.


5. Concept of vulnerability, mitigation, prevention, preparedness, response and recovery. Risk and vulnerability assessment hazard zonation, Use of remote sensing and GIS in hazard studies.

References:


Topic

1. Man induced physical hazards – landslides, soil erosion, earthquakes, forest fires, desertification, etc.

2. Biological hazards induced by man: Population explosion, entrophication, adverse impact on biodiversity.

3. Chemical and nuclear hazards, release of toxic elements in air through human activity nuclear explosion, leakage of crude oil from tankers in oceanic waters.

4. Pollution – Air pollution: Sources and types of pollutants, effects on nature and society, water pollution: sources, types and effects and controls, soil, solid waste, noise and cultural pollution – causes, consequences and measures.

5. Global issues – Global warming, ozone depletion, arid rain, carbon budgeting; Global terrorism.

References:


Topic

1. Geography and Human welfare and well being – definition, concept, environment, space and ecology, concept of space – patterns, and processes; scope of spatial welfare analysis well-being as the disciplinary focus.


3. Fair Society – Concepts and measurement – social justice and a fair society, integrated approaches to social well being, choice of components and indicators, methods of measurement, patterns and levels of well being, social monitoring.


5. Location and allocation problems – distribution in space: Theories, class and power, public policy and social planning.

References:


8. Smith, David M. (1979): Where the Grass is Greener, Geographical Perspectives on Inequality, Croom Helm, London.
Code No.509EB  Title: Geography of Health    No. of Lectures: 45
No. of Credits: 4

Topic

1. Geography of Health: Definition, development, achievement and challenges, approaches to geography of health care.

2. Geographical factors affecting human health and diseases arising from them.


4. Ecology, Etiology, transmission of major diseases, diffusion of diseases and causes of the same, deficiency disorders and problems of malnutrition.

5. Health care systems in India, Health care policies and rehabilitation programmes.

References:


1. Meaning, concept and scope of urban planning; urban planning: methods and techniques, urban issues: Land-use, physical and infrastructure, Housing transport, social security, natural and man-made hazards and urban environment and quality of living.

2. Urban built environment: Land-use, models and planning, concept of neighbourhood, community living, concept of green belt, structure, design density, quality and cost of housing – their ecological economic and cultural suitability, urban land-use and housing plans.


4. Urban renewal and redevelopment of towns, archaeological and heritage sites, monuments and protection. Development and use of modern technology in housing, transport, communication, trade and services in urban development and their socio-cultural implications.

5. Optimum city size, new and satellite towns – Concept of Growth Foci, Growth centre and planned township; city planning and development in India: principles and approaches – Indian case studies.

References:

Title: Geography of Development

No. of Lectures: 45  
No. of Credits: 4

Topic


2. Resources, economic systems in developed and developing countries.

3. Culture and development – Rural agricultural development urban industrial development.

4. Processes and patterns in the levels of development, deprivation and disparities; policies of development – nationalization, privatization, liberalization and globalization.

5. Theories, strategies and practices of development.

References:


Title: Literature Survey and Book Review

No. of Credits: 4

Topic

Individual students are assigned the topic for carrying out the survey of literature on the concerned topic or given a particular book for review purpose.
Topic

1. Selection of research theme / problem / topic, to present precise, clear, inclusive terms the statement of research theme related to the branches of physical geography or human geography; survey of literature.

2. Formulation of hypothesis, research objectives, nature of data, sources of data, conceptual and methodological framework, questionnaire and sampling design.

3. Classification of data, statistical and cartographic representation and analysis.

4. Use of writing manuals, reports, thesis – organizing themes, cross comparisons, conclusions, findings, referencing, notings, appendices.

References:


Code No.512PRA  
Title: Mini Research Project  
No. of Credits: 4  

Topic

Students are encouraged to choose the topic and formulate a small research project, execute the work and submit a project report for evaluation.

Code No.512PRB  
Title: Village or Urban Field Survey  
No. of Credits: 4  

Topic

1. Selection of relevant theme  
2. Objectives, data base and methodology  
3. Questionnaire and sample design  
4. Village or urban land-use survey or household survey  
5. Tabulation, mapping, analysis and report writing.