

GOVERNMENT ARTS COLLEGE (AUTONOMOUS)

KUMBAKONAM 612 002

Re - accredited With 'A' Grade by NAAC & Affiliated to Bharathidasan University

DEPARTMENT OF GEOGRAPHY

(Effective for those admitted from 2017-2018 onwards)



SYLLABI

M.Sc., APPLIED GEOGRAPHY

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.

Re-accredited with 'A' Grade by NAAC & Affiliated to Bharathidasan University

M.Sc., APPLIED GEOGRAPHY

(Effective for those admitted from 2017 - 2018 onwards)

SEMESTER - I

CC 1 - PRINCIPLES OF GEOMORPHOLOGY

Subject Code: 17P1G1	Credits: 4	External Marks: 75	Hours: 6
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Objectives: *The paper is introduced to understand geomorphic processes, resultant landforms and various applications of geomorphology.*

Unit I: Basics of Geomorphology: Nature, Scope and Development of Geomorphology - Recent trends in Geomorphology - Fundamental Concepts of Geomorphology (Thornbury).

Unit II: Earth Movements: Isostasy: Doctrine of Isostasy - Views of Airy and Pratt. Continental Drift Theory: concept of Wegener. Plate Tectonics: concept and related views. Mountain Building: concepts of Kober, Daly and Holmes.

Unit III: Exogenic Processes: Weathering, soil processes and Mass wasting - Dynamics of fluvial, glacial, aeolian and coastal processes and resulting landforms - Karst topography.

Unit IV: Conceptual Development in Geomorphology: Cycle of Erosion: Concepts of Davis and Penck - Slope Development: Theories of Davis and Penck - Morphogenetic Region.

Unit V: Applied Geomorphology: Applications of Geomorphology in hydrology, engineering projects and oil exploration.

Text Book:

Dayal, P. A., (1996): Text book of Geomorphology, Shukla Book Depot, Patna.

References

1. Singh, S., (1998): Geomorphology, Prayag Pustakalaya, Allahabad.
2. Small, R.J., (1978). The Study of Landforms: A Textbook of Geomorphology, Cambridge University Press, New York.
3. Thornbury, W.D., (1954). Principles of Geomorphology, John Wiley and sons, Inc., New York.
4. Worcester, P.G., (1948). A Textbook of Geomorphology, Von Nostrand Reinhold, Company, New York.

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SEMESTER - I

CC 2 - GEOGRAPHY OF POPULATION

Subject Code: 17P1G2	Credits: 4	External Marks: 75	Hours: 6
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Objectives: *To introduce the students to the complex dimensions of population and to understand and evaluate the association between demographic, environment and socio economic attributes of population in an ever changing space — time continuum.*

Unit I : **Population Geography:** Scope and Objectives; development of Population Geography as a field of specialisation-Population Geography and Demography sources of population data, their level of reliability and problems of mapping of population data.

Unit II: **Population distribution:** density and growth - theoretical issues; Classical and modern theories in population distribution and growth; World patterns and their determinants; India -: population distribution, density and growth profile, Concepts of under population, optimum population and over population.

Unit III: **Population composition:** age and sex; family and households; literacy and education; religion, caste and tribes; rural and urban; urbanisation; occupational structure; gender issues; Population composition of India.

Unit IV: **Population dynamics:** Measurements of fertility and mortality. Migration: national and international patterns; India's population dynamics.

Unit V: **Population and development:** population- resource regions and levels of population and socio-economic development; population policies in developed and less developed countries; Human Development Index and its components; India's population policies; population and environment; implications for the future.

Text Books

1. Chandna, R.C. Geography of Population; concept, Determinants and Patterns. Kalyani Publishers, New York 2000.
2. Sundaram K.V. and Sudesh Nangia, (ed.) Population Geography, Heritage, Publications, Delhi 1986.
3. Garnier, B.J. Geography of Population Longman, London 1970.
4. Mamoria C.B. India's Population Problem, Kitab Mahal New Delhi 1981.

References

1. Bilasborrow, Richard E and Daniel Hogan, Population and Deforestation in the Humid Tropics, International Union for the Scientific Study of Population, Belgium 1999.
2. Kochhar, Rajesh, The Vedic People: Their History and Geography Orient Longman Ltd., New Delhi 2000.
3. Srinivasan K. and M.Vlassoff. Population Development Nexus in India: Challenges for the New Millennium. Tata McGraw -Hill, New Delhi 2001.
4. Srinivasan, K. Basic Demographic Techniques and Applications Sage Publications, New Delhi 1998.
5. United Nations, Methods for Projections of Urban and Rural Populations, No. VIII, New York 1974.
6. Woods R. Population Analysis in Geography. Longman, London 1979.
7. Zelinsky Wilbur, A Prologue to Population Geography, Prentice all, 1966.

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SEMESTER - I

CC 3 - URBAN GEOGRAPHY

Subject Code: 17P1G3	Credits: 4	External Marks: 75	Hours: 5
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Objectives *Understand the process of urbanization and origin, growth and classification of urban settlements with relevant theories and models. This paper Examine the changing economic base, structure of the cities and contemporary urban issues by emphasizing new urban planning and urban policy perspectives.*

Unit I: Nature and scope of urban geography: Different approaches and recent trends in urban geography; attributes of urban places during ancient, medieval and modern period; origin and growth of urban settlements: bases and process of urbanization and development; classification of urban settlements on the basis of size and function.

Unit II: Urban growth and theories: Central Place Theory of Christaller and Losch; Theories of Peroux and Boudeville; Concentric Zone Theory, Sector Theory and Multiple Nuclei Theory.

Unit III: Organization of urban space: urban morphology and land use structure: city core, commercial, industrial and residential areas; cores - country variations; city-region relations, modern urban landscape; Morphology of urban settlements and its comparison with western urban settlements; urban expansion, unland and periphery.

Unit IV: Contemporary urban issues: urban poverty, urban renewal, urban sprawl, slums; transportation, housing, urban infrastructure; urban finance; environmental pollution: air, water, noise, solid waste, urban crime, issues of environmental health.

Unit V: Urban policy and planning: development of small and medium sized towns, planning for new wards, city planning, green belts, garden cities, urban policy; contemporary issues in urban planning; globalization and urban planning in the Third World, urban land use planning.

Text Books

1. Carter.H.(1972) -The study of Urban Geography,Edward Arnold, London.
2. Misra.R.P & K.V. Sundaram (1971) - Regional Planning And Development, University of Mysore, Mysore.
3. Northam R.M. (1975) - Urban Geography, John Wiley sons, New York.
4. Robert G. Putnam, Frank J. Taylor (1970) – A Geography of Urban Places, Methuen Publications, Tornato, London
5. Singh R. Y. (1994) – Geography of Settlements, Rawat Publications,Jaipur & New Delhi.

References

1. Berry, B.J.L. and Horton F.F. Geographic Perspectives on Urban Systems, Prentice Hall, Englewood Cliffs, New Jersey, 1970
2. Chorley, R.J.O., Haggett P. (ed.) : Models in Geography, Methuen, London, 1966.
3. Dickinson, R.E.: City and Region, Routledge, London, 1964.
4. Rao V.L.S.P.: Urbanisation in India: Spaial Dimensions. Concept Publishing Co. New Delhi Concept, New Delhi.

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SEMESTER - I

CC 4 - ELEMENTS OF CARTOGRAPHY

Subject Code: 17P1G4	Credits: 4	External Marks: 75	Hours: 5
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Objectives: *To enable the students to critically evaluate the concepts and approaches in Cartography and to learn relevant techniques used in Cartography. To develop a skill among the students to prepare maps and keeping in view the principles of cartography and also user requirement. To student understand the techniques of mapping.*

Unit 1: Nature and Scope of Thematic Cartography - Cartography as science of Communication - Conceptual Development of Thematic Cartography in India and abroad.

Unit II: Basic concepts in Thematic Cartography: Shape and dimensions of earth – scale and direction – Geographic co-ordinate system – Cadastral surveying and mapping with GPS.

Unit III: Concept of Thematic Cartography – base map concept – compilation and generalization principles – designing thematic map and layout principles – lettering and placing on the thematic maps based on the design.

Unit IV: Design of Complex and Thematic mapping – Quantitative and Qualitative Thematic maps – Data presentation principles – Symbolization procedures.

Unit V: Map reproduction, Principles of Thematic maps – planning for reproduction – previous methods – latest technological development in thematic map reproduction – software technologies used for indigenous map reproduction.

Text Books

1. Misra. R.P and A.Ramesh (2002): Fundamentals of Cartography, Concept Publishing Company, New Delhi.
2. Robinson. H Arthur et al., (1985): Elements of Cartography, John Wiley and Sons, New York.

References

1. Kraak Menno-Jan, (2002): Cartography Visualization of Geo-spatial Data, Pearson Education, New Delhi.

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SEMESTER - I

CC - PRACTICAL I TERRAIN AND CLIMATIC DATA ANALYSIS

Subject Code: 17P1GP1	Credits: 4	External Marks: 60	Hours: 4+4
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Objectives: *To enable the students to evaluate the slope and morphology of landforms and to prepare various climatic maps.*

Unit I: Drawing Profiles

- 1.1 Serial Profile
- 1.2 Superimposed Profile
- 1.3 Projected Profile
- 1.4 Composite Profile
- 1.5 Longitudinal Profile of the river (Thalweg)

Unit II: Slope Analysis

- 2.1 Wentworth method
- 2.2 Smith method
- 2.3 Altimetric Frequency Curve
- 2.4 Hypsometric Curve and Integral

Unit III: Morphometric Analysis

- 3.1 Stream Ordering
- 3.2 Bifurcation Ratio
- 3.3 Stream Length Ratio
- 3.4 Drainage Density
- 3.5 Drainage Shape Geometry
 - 3.5.1 Circularity Ratio
 - 3.5.2 Boyce Clark Method
 - 3.5.3 Elongation Ratio

Unit IV: Climatic Data Analysis

- 4.1 Climograph
- 4.2 Climatograph
- 4.3 Rainfall Dispersion Diagram
- 4.4 Ombrothermic graph,
- 4.5 Water surplus-deficit graph
- 4.6 Cyclone Tracking

References

1. Monkhouse, F.J., and Wilkinson, H.R., (1963). Maps and Diagrams: Their Compilation and Construction, Methuen and Co., London.
2. Singh, R.L., and Dutt, P.K., (1978). Elements of Practical Geography, Students and Friends, Allahabad Gopal Singh, Map work and Practical Geography, Vikas Publishing House Pvt., Ltd., New Delhi.
3. Mishra, R. P. and A. Ramesh, Fundamentals of Cartography, Concept Publishers, New Delhi.
4. Pijshkanti Saha and Partha Basu, (2010): Advanced Practical Geography, Books and Allied (P), Ltd., Kolkatta.

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SEMESTER - II

CC 5 - APPLIED CLIMATOLOGY

Subject Code: 17P2G5	Credits: 5	External Marks: 75	Hours: 6
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Objectives: *To acquire knowledge and understand the origin and composition of atmosphere, air pressure, wind, moisture, atmospheric disturbances, climatic types and weather forecasting for applied activities*

Unit I: Introduction: Applied climatology – definition, nature and scope – Climate and Human affairs – Atmosphere: composition and structure – Insolation – Heat budget – Distribution of temperature: horizontal and vertical distribution –inversion of temperature.

Unit II: Atmospheric pressure and winds: Pressure gradient – Vertical, Horizontal and Seasonal variation in pressure pattern – General circulation of Atmosphere: surface wind system – Geostrophic wind – Gradient wind – jet streams – Origin of monsoon – Indian monsoon – local winds.

Unit III: Atmospheric Moisture: Potential evapotranspiration and actual evapotranspiration – Humidity and Precipitation: forms and types – controlling factors – Atmospheric equilibrium: stability and instability – Latent heat and adiabatic process.

Unit IV: Air masses: definition and characteristics – source region and classification – fronts: frontogenesis – types – characteristics – frontolysis –: Origin, morphology and occurrences of: temperate and tropical cyclones - anticyclones.

Unit V: Applied climatology: Climatic classification of Koppen and Thornthwaite – Weather forecasting: Types - i. Short range ii. Medium range iii. Long range – Methods: i. Synoptic ii. Numerical iii. Statistical – Role of IMD - Satellites in weather forecasting.

Text Books

1. Lal D.S (1986) Climatology, Chaitanya Publishing house, Allahabad

References

1. Critch field H.J. (1975) General Climatology, Prentice Hall, New Delhi.
2. Richmond W. Longley (1970) – Elements of Meteorology, John Wiley & sons inc. New York.
3. Siddhartha . K. (2005) – Atmosphere, Weather and Climate, Kisalaya Publications Pvt. Ltd. - New Delhi
4. Tewartha .G.T (1968) Introduction to Climate, McGraw Hill, New York.

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SEMESTER - II

CC 6 - BIOGEOGRAPHY

Subject Code: 17P2G6	Credits: 5	External Marks: 75	Hours: 6
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Objectives: *The purpose of this paper is to appraise the students of the interrelationships among the living organisms within the environment and the importance of conservation of biosphere and biodiversity.*

Unit I: Meaning, scope and History of biogeography - Seres and Climax vegetation - Ecosystem : Energy flows and Material cycling.

Unit II: Factors affecting distribution of flora and fauna : Atmospheric, Edaphic and Biotic factors. Soils: Formation, Properties, Profile. Soil Classification: Zonal, Azonal and intra-zonal soils. Soil erosion and conservation.

Unit III: Biomes: Tropical rainforests – Monsoon forests - Tropical grasslands – Hot deserts – Mediterranean – Temperate grasslands – Temperate deciduous forests - Coniferous forests – Tundra.

Unit IV: Biogeographical Regions: Phytogeographical and Zoogeographical regions of the world. Biodiversity: concept, recent trends and future possibilities.

Unit V: Wildlife Management and Conservation: Problems of deforestation and conservation measures: Social forestry; agroforestry; Wildlife: Major gene pool centres, Conservation, Wildlife in India and Management.

Text Book:

1. Mathur, H. S. (2003): Essentials of Biogeography, Pointer Publishers, Jaipur.

References

1. Barry. C. (1977): Biogeography-An Ecological and Evolutionary Approach, Cox Blackwell, Oxford.
2. Hagget, R.J. (1988): Fundamentals of Biogeography, Routledge, London.
3. Robinson, H. (1982): Biogeography, McDonald and Evans, London

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SEMESTER - II

EC 1 - PRINCIPLES OF REMOTE SENSING

Subject Code: 172G7EC	Credits: 5	External Marks: 75	Hours: 5
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Objectives: *This paper is mainly emphasis on remote sensing technology and its applications. To impart knowledge about fundamentals of aerial and satellite remote sensing, digital image processing, image interpretation processes and applications to the students.*

Unit I: Fundamentals: Electromagnetic Radiation (EMR), Energy Interaction with the Atmosphere and the Earth Surface Features - Spectral Reflectance Curves - Ideal Remote Sensing Systems - Development of Remote Sensing, Remote Sensing Centers and its activities in India.

Unit II: Aerial Remote Sensing: Importance of Aerial Remote Sensing, Aerial Survey, Flight Planning, Camera, Types of Aerial Photographs, Marginal Information of Aerial Photographs, Interpretation Elements of Aerial Photographs, Photogrammetry: Scale, Relief Displacements, Parallax, Stereovision and Photomosaic.

Unit III: Satellite Remote Sensing: Types of Satellites: Based on Orbit and Purpose, Resolution Aspects: Spatial, Spectral, Radiometric and Temporal Resolutions of Indian and satellites of other countries

Unit IV: Digital Image Processing: Characteristics of Digital Image, Image Rectification and Restoration, Geometric and Radiometric Corrections, Image Enhancement Techniques, Image Classification: Supervised, Unsupervised and Accuracy Assessment.

Unit V: Image Interpretation and Applications: Elements of Image Interpretation, Applications: Land Use / Land Cover, Agriculture, Forestry, Hydrology, Urban Planning and Environmental Hazardous Assessment.

References

1. Anji Reddy M., (2001): Remote Sensing and Geographical Information Systems, B.S. Publications, Hyderabad.
2. Lillesand T.M. and Keifer R.W., (1994): Remote Sensing and Image Interpretation, John Willy and Sons, New York.
3. Rampall K.K., (1999): Handbook of Aerial Photography and Interpretation, Concept Publishing Co., New Delhi.
4. Sabins F.F. J., (1987): Remote Sensing: Principles and Interpretation, W.H. Freeman and Co., New York.
5. Strandberg C.H., (1967): Aerial Discover Manual, John Willey and Sons, New York.

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SEMESTER - II

EC 2 - DISASTER STUDIES

Subject Code: 17P2G8EC	Credits: 5	External Marks: 75	Hours: 5
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Objectives: *The philosophy and methodology of the subject is discussed in such a way that students can develop a keen interest in the study of natural disasters and man-made disasters.*

UNIT I: Principles of Natural Disasters- Basic concepts of disaster-types of disasters-Natural forces and Life-Increasing importance of disasters.

UNIT II: Natural Disasters-Earthquakes- Volcanism- Landslides-Tsunami-Cyclone-Flood-Drought, Casual factors, Impact Assessment

UNIT III: Man-Made Disasters-Hazardous Wastes-Radioactivity-Toxicity-Nuclear War, Biological Weapons-Landmines. Pollution: water-Land-Air-Noise pollution.

UNIT IV: Disaster Preparedness -Disaster Preparedness and Mitigation- Managing natural and anthropogenic disasters-Risk assessment and analysis.

UNIT V: Disaster Management-management and Planning- Response requirement study- GIS and GPS in disaster management: Alternate Route for sending relief and shortest evacuation routes-map creation for action plan identification of risk and planning.

Text Books

1. Gupta HK.2003.Disaster Management. Indian National Science Academy. Orient Blackswan
2. Savindra Singh (1991) - Environmental Geography, Kalyan Publications, New Delhi.
3. Sharma VK. 2001. Disaster Management. National Centre for Disaster Management, India

References

1. Bryant Edwards (2005): Natural Hazards, Cambridge University Press, U.K.
2. Carter, W. Nick, 1991: Disaster Management, Asian Development Bank, Manila.
3. Government of India, 1997, Vulnerability Atlas of India, New Delhi.
4. National Disaster Management Division, Ministry of Home Affairs, Government of India <http://www.ndmindia.nic.in/>
5. Sahni, Pardeep et.al. (eds.) 2002, Disaster Mitigation Experiences and Reflections, Prentice Hall of India, New Delhi.

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SEMESTER - II

CC - PRACTICAL II SOCIO ECONOMIC DATA ANALYSIS

Subject Code: 17P2GP2	Credits: 4	External Marks: 60	Hours: 4+4
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Objectives: *To develop a skill among the students to prepare population maps to evaluate the spatial distribution of various attributes of population.
To develop a skill among the students to prepare Agricultural maps from the available data to analyze the crop combinations in different regions.*

Unit I: Graphs

- 1.1. Simple Graph
- 1.2. Semi Logarithmic Graph
- 1.3. Log-Log-Graph
- 1.4. Triangular Graph
- 1.5. Lorenz Curve.

Unit II: Distribution Maps

- 2.1. Choropleth Map
- 2.2. Dasymetric map
- 2.3. Chrochrometic Map
- 2.4. Population Potential map
- 2.5. Cartogram.

Unit III: Mapping of Agricultural Data

- 3.1. Crop Ranking
- 3.2. Crop Concentration
- 3.3. Crop Diversification
- 3.4. Crop Combination:
 1. Weaver
 2. Doi
 3. Raffiullah.

Unit IV: Location and Settlement Analysis

- 4.1. Nearest Neighbour Analysis
- 4.2. Mean Centre
- 4.3. Weighted Mean Centre
- 4.4. Median Centre
- 4.5. Standard Distance

References

1. Gopal Singh, Map work and Practical Geography, Vikas Publishing House Pvt., Ltd., New Delhi.
2. Mishra, R. P. and A. Ramesh, Fundamentals of Cartography, Concept Publishers, New Delhi.
3. Monkhouse, F. J., Maps and Diagrams, Methuen and Co. Ltd., London.
4. Rampal, K.K. Mapping and Compilation - Methods and Techniques, Concepts Publishing Co., New Delhi
5. Robinson, A. R., Elements of Cartography, Chapman and Hall.
6. Singh, R. L., Elements of Practical Geography, Kalyani Publishers.
Singh, R. N. and Kanaujia L. R. S., Map Work and Practical Geography, Central Book Depot, Allahabad.

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SEMESTER - III

CC 7 - REGIONAL PLANNING

Subject Code: 17P3G9	Credits: 5	External Marks: 75	Hours: 6
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Objectives: *This paper is devoted to study about the region, planning, significance, various planning methods and evolution of planning activities in India and Tamil Nadu .*

UNIT I: Region and Planning: Meaning, Elements and Types of Regions: homogeneous, nodal regions and administrative Regions –Planning Region: Objectives and characteristics of planning region, regional processes –. Regionalism vs. Sectionalism.

UNIT II: Regional imbalances and problems in India: Problem in the distribution of natural resources (soil, forest, water and mineral), agricultural development, industrial concentration and population distribution. Social and Infrastructure Indicators of regional disparities.

UNIT III: Regional analysis: Theories of spatial interaction and regional disparities: Spread and Backwash Theory' of Myrdal , 'Trickle Down and Polarization Effect Theory' of Hirschman, Urban Hierarchy theory of Berry, Growth Pole Theory of Perraux, Baudville and Richardson, Spatial Diffusion of Haggerstrand and Growth Foci of Misra.

UNIT IV: Planning in India: History of regional planning activity in India –Indian planning commission and its role -Planning regions in India.– Five-year plans, annual plans and multi level planning - Objectives and achievements of special development programs: Drought prone area,tribal and hill area, Backward area and watershed development.

UNIT V: Planning in Tamil Nadu: Sate Planning Commission – Planning regions of Tamil Nadu – District planning and metropolitan area planning . Panchayat Raj system – Power and functions of Town panchayat, Municipality and Corporation.

Text Books

1. Misra R.P., (1992): Regional planning: Concepts, techniques, policies and case studies, Concept Publishing Company, New Delhi
2. Misra, R.P, Sundaram, K.V and Prakasarao, V.L.S., (1947): Regional development planning in India, Vikash publishing house, New Delhi.

References

1. Mahesh Chand and Vinay Kumar Puri (1985): Regional planning in India, Allied publishers Pvt. Ltd., Delhi.
2. Prakasa Rao, V.L.S (1963): Regional planning, Asia Publishing House, Calcutta.
3. Rengasamy. S. Regional Planning and Development, Madurai Institute of Social Sciences.

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SEMESTER - III

CC 8 - GEOGRAPHIC THOUGHT

Subject Code: 17P3G10	Credits: 5	External Marks: 75	Hours: 6
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Objectives: *The course is aimed at presenting a comprehensive, integrated and empirically based profile of the origin and development of geographical thought from ancient to modern period.*

Unit I: Pre history of Geographical Ideas: Greeks, Romans, Arabs and Ancient Indians – Impact of Explorations and Discoveries.

Unit II: Founders of Modern Geography: i) Alexander Von Humboldt, ii) Carl Ritter, iii) Friedrich Ratzel, iv) Vidal de la Blache, v) Halford J. Mackinder, vi) W.M. Davis, vii) Ellen Churchill Sample and viii) Richard Hartshorne.

Unit III: Dualism and Dichotomies in Geography: i. Determinism vs Possibilism ii. Physical vs Human iii. General vs Regional iv. Quantitative vs Qualitative.

Unit IV: Recent Trends in Geography: Four Traditions in Geography; i. Man-Land ii. Area Studies iii. Spatial and iv. Earth science – Quantitative revolution – Paradigms in Geography – Systems approach – Regional concept.

Unit V: Political Geography: Development of Political Geography – Geopolitics – Global strategic views: Heartland and Rimland Theories – Concept of Nation, State and Intra-State – Boundaries and Frontiers – Politics of World Resources – Geography of Federalism.

Text Books

1. Dikshit, R.D. - Political Geography: A Contemporary Perspective. Tata McGraw Hill, New Delhi. 1996
2. Majid Hussain, (2001): Evolution of Geographical Thought, Rawat Publication, Jaipur
3. Negi. B.S., (1994): Geographical Thought, Kedar Nath and Ram Nath Publications, Meerut, Uttra Pradesh.

References

1. Dikshit, R.D., (1997): Geographical Thought, Prentice Hall of India, New Delhi
2. Eayne K.Davies, (1972): Conceptual Revolution in Geography, Edward Arnold Publications, London.
3. Sudeepta Adhikari, (2004): Fundamentals of Geographical Thought, Chaitanya publishing House, Allahabad.

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SEMESTER - III

EC 3 - RESEARCH METHODOLOGY

Subject Code: 17P3G11EC	Credits: 5	External Marks: 75	Hours: 5
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Objectives: *To acquire the knowledge about scientific way of executing research, methods, evaluation and producing research articles.*

Unit I: Research: meaning – need for scientific research – types of research – approaches to geographical research – identification of fields, sub fields and themes – Research ethics.

Unit II: Logic in research: concepts and facts, principles, hypothesis, theory, model, law and their implications in Geographical research – the science of Geography – research trends in Geography.

Unit III: Research design: Meaning and need – Features of good design – Types of research design: exploratory, descriptive and experimental.

Unit IV: Data acquisition and analysis: Collection of data – sources of data: primary and secondary – structuring the data – data transformation – sampling techniques – simple quantitative techniques: correlation, regression and hypothesis testing.

Unit V: Thesis writing: organization of the thesis: the preliminaries – the text and the reference materials – drafting the thesis – different stages – language and presentation (form and style) – writing of abstract, reports and research papers.

Text Books

1. Kothari C.R. 1990 – Research Methodology – Methods and Techniques – Wishwa Prakasan Pvt. Ltd. – New Delhi
2. Mishra, R.P., (1998): Research Methodology in Geography, Concept Publishing Company, New Delhi – 110 059.
3. Najma Khan, (1998): Quantitative Methods in Geographical Research, Concept Publishing Company, New Delhi – 110 059.

Reference Books

1. John A. Mathews (1981) – Quantitative and statistical approaches to Geography, Pregamon Press, Oxford.
2. Drwajma khan (1998) - Quantitative methods in Geographical research, Concept Publications, New Delhi
3. Amodeo, Dand C. College (1975): An Introduction to Scientific Reasoning in Geography, John Willy & Sons, New York.
4. Davi, K.D., (1971): Conceptual Revolution in Geography, University of London, London.
5. Hang, I. L. and J. P. Leonenburg (1973): An Introduction to Scientific Geographic Research, Brown Co, Iowa.
6. Lal Das, D.K., (2000): Practice of Social Research, Rawat Publications, Jaipur.

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SEMESTER - III

EC 4 - FUNDAMENTALS OF GIS

Subject Code: 17P3G12EC	Credits: 5	External Marks: 75	Hours: 5
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Objectives: *Introducing the technique of GIS, availability, data handling, analysis and modeling for various spatial problems. Also emphasize the significance of GPS/GNNS augmentation, survey and applications.*

Unit I: Introduction: GIS Definition and scope of GIS; Functional requirements of GIS: GIS components; Cartography –GIS interface; Recent trends and applications of GIS; Open source GIS

Unit II: GIS Data base: Spatial and non spatial; Data models: Raster and vector; Database Management System (DBMS); Data Structures: Relational, hierarchical and network; Data input: Digitization of maps and imageries; Coordinate transformation; Attribute data generation.

Unit III: Spatial analysis: Spatial overlay operations, network analysis and proximity analysis; 3D models; TIN, DEM, DTM Query in GIS;

Unit IV: GIS Modeling: Models of spatial processes: natural and scale analogue models - conceptual models - mathematical model - models of physical and environmental processes - modeling human process - gravity model - problems related to using GIS to model spatial processes – GIS modeling and Maps as spatial decision support tool.

Unit IV: Global Positioning System: Introduction – GNNS augmentation systems of India and other countries: satellites constellations and segments: Types of Positioning - post processing and data; accuracy of positioning - principle application of GPS.

Text Books

1. Burrough, P.A. (1986): Principles of GIS for Land Resources Assessment, Clarendon Press, Oxford.
2. Chang, Kang-tsung. 2002. Introduction to Geographic Information Systems. New Delhi: Tata McGraw-Hill Publishing Company Limited

References

1. Lo, C.P. and Yeung, Albert K.W. 2002. Concepts and Techniques of Geographic Information Systems (Eastern Economy Edition). New Delhi: Prentice-Hall of India, Private Limited.
2. Haywood. L., Comelius. S and S. Carver (1988): An Introduction Geographical Information Systems Addison Wiley Longmont, New York.
3. Longly, Paul A., Goodchild, Michael F., Maguire, David J., and David W. Rhind. (2005) Geographic Information System and Science, @nd ed., John Wiley and sons, Toronto.

Web Sources

<http://www.gespatialworld.net>
www.earthmapping.com/
<http://www.esri.com/>
<http://www.innovativegis.com/basis/>

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SEMESTER - III

CC - PRACTICAL III GEOSPATIAL ANALYSIS I

Subject Code: 17P3GP3	Credits: 4	External Marks: 60	Hours: 4+4
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Objectives: *Introduce the students to the recent advances in the application of remote sensing techniques in Geography and to impart training using simple photogrammetric instruments, visual and digital interpretation of satellite imageries. Both aerial and satellites remote sensing techniques are studied in depth by the students.*

Unit I: Aerial Remote Sensing

- 1.1 Marginal Information of Aerial Photograph
- 1.2 Scale, Parallax and Height Measurement
- 1.3 Interpretation of Physical Features
- 1.4 Interpretation of Cultural Features

Unit II: Satellite Remote Sensing

- 2.1 Marginal Information of IRS Standard products
- 2.2 Path and Row Identification
- 2.3 Digital data sources and downloading
- 2.4 Band identification and combinations

Unit III: Digital Image Processing

- 3.1 Lookup table, Image Histogram and Pixel table
- 3.2 Image to Image Registration
- 3.3 Image to Map registration
- 3.4 Image Sub setting

Unit IV: Visual Interpretation

- 4.1 Visual Interpretation Keys
- 4.2 Interpretation using toposheets
- 4.3 Interpretation of Physical Features
- 4.4 Interpretation of Cultural Features

Unit V: Digital Interpretation

- 5.1 Vegetation Indices
- 5.2 Un supervised classification
- 5.3 Supervised classification
- 5.4 Accuracy Assessment

References

1. Chouhan T.S. and Joshi K.N., (1996): Applied Remote Sensing and Photo Interpretation, John Wiley and Sons, New York.
2. Floyd F and Sabins J.R., (1986): Remote Sensing Principles and Interpretation (Second Edition), W.H. Freeman and Company New York.
3. Lawrence H. L and Ray G. R., (1965): Aerial Photographs in Field Geography, Holt. Rinehart and Winston, New York.
4. Lillesand T. M. and Kiefer W., (1987): Remote Sensing and Image Interpretation, John Wiley and Sons, New York.

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SEMESTER - IV

CC 9 - AGRICULTURAL GEOGRAPHY

Subject Code: 17P4G13	Credits: 5	External Marks: 75	Hours: 5
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Objectives: To give the students an overall knowledge of the development, characteristics, regionalization and significance of agricultural geography with emphasizing Indian context.

Unit I: Nature of Agricultural Geography: Objectives and historical perspective, Approaches to Agricultural Geography: Empirical (Inductive) and Normative (Deductive), Major genecentres, domestication of Animals, diffusion of crops, pastoralism and development.

Unit II: Physical Factors: Topography and Altitude. Climatic Elements: Temperature, sunshine, frost, moisture, snow and winds. Soil: characteristics and types – **Socio-economic factors:** Land tenancy, size of land holdings and fragmentation, co-operative farming methods and operational efficiency. Labour, capital, mechanization and government policy.

Unit III: Agricultural systems of the world: Nomadic herding, livestock ranching, commercial grazing, shifting cultivation, sedentary agriculture, subsistence, intensive, extensive agriculture, mixed forming, dairy farming, horticulture, collective farms and state farms.

Unit IV: Agricultural Regionalization: Methodology, crop combination, crop diversification and land suitability, capability and Landuse classification - Agro-climatic regions of India. Models in agricultural geography: Vonthunen and Jonoson.

Unit V: Agriculture in India: Characteristics of Indian agriculture, rural development in India -policy and program. Green revolution I and II - socioeconomic constraints. - social tension and ecological implications of the Green revolution.

References

1. Majid Hussain, (1999): Systematic Agricultural Geography, Rawat Publications, Jawahar Nagar, Jaipur.
2. Hussain, M., (1979): Agricultural Geography, Inter India Publications, New Delhi.
3. Morgan, W.B. and Munton, R.J., (1972): Agricultural Geography, Methuen & Co., London.
4. Sing, Jasbir and S.S. Dhillon, (1994): Agricultural Geography, Tata McGraw-Hill Publications, New Delhi.

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SEMESTER - IV

CC 10 - GEOGRAPHY OF HEALTH

Subject Code: 17P4G14	Credits: 5	External Marks: 75	Hours: 5
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Objectives: *To acquaint the students by relating geographical factors with nutrition, health, spatial distribution of diseases and disease pattern and significance of health care facilities and policies of the government*

Unit I: Nature, scope and significance of geography of health. Development of this area of specialization; its distinction from medical science

Unit II: Geographical factors affecting human health and diseases arising from them, viz.

- i. Physical factors- relief, climate, soils and vegetation.
- ii. Social factors- population density, literacy, social customs and poverty.
- iii. Economic factors- food and nutrition occupation and standard of living
- iv. Environmental factors- urbanization and congestion, water, air and noise pollution and solid waste.

Unit III: Classification of diseases: genetic, communicable and non-communicable; occupational and deficiency diseases. WHO classification of diseases, Pattern of World distribution of major diseases.

Unit IV: Ecology, etiology and transmission of major diseases: cholera, malaria, tuberculosis, hepatitis, leprosy, cardiovascular, cancer, AIDS and STDS. Diffusion of diseases and causes for the same; Deficiency disorders and problems of mal-nutrition in India

Unit V: Health-care planning:

- i) international level-WHO, UNICEF, Red Cross
- ii) National level-Government and NGOs, Health Care Planning and Policies; availability, accessibility and utilization of health care services; Primary health care; Inequalities in health care services in India; family welfare, immunization, national disease eradication, and Health for All programs.

Text Books

1. Hazra, J. (ed.): Health Care Planning in Developing Countries. University of Calcutta, Calcutta, 1997.
2. Learmonth A.T.A.: Patterns of Disease and Hunger. A Study in Medical Geography. David & Charles, Victoria, 1978.
3. Phillips, D.R.: Health and Health Care in the Third world. Longman, London, 1990.
4. Pyle, G.: Applied Medical Geography. Winston Halsted Press, Silver Springs, Md, U.S.A., 1979.

References

1. May, J.M.: The World Atlas of Diseases, Nat. Book Trust, New Delhi, 1970
2. Narayan, K.V.: Health and Development- Inter-Sectoral Linkages in India. Rawat Pub., Jaipur, 1997.
3. Phillips, D.R.: Health and Health Care in the Third world. Longman, London, 1990.

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SEMESTER - IV

EC 5 - TERRAIN AND WATER RESOURCES EVALUATION

Subject Code: 17P4G15EC	Credits: 4	External Marks: 75	Hours: 5
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Objectives: This paper mainly focuses on understanding the aspects of terrain and water resources and its research approaches.

Unit I: Landuse Inventory: Definition and concept - significance – Landuse Data: G-return, topographic sheets, satellite imageries - Landuse Classification: USGS, NRSC, Nine fold classification – Landuse survey at village level.

Unit II: Land Evaluation: Objectives, Procedures and Approaches: genetic, parametric land quality and landuse – land suitability classification.

Unit III: Water resources Inventory: Surface and Groundwater occurrence and analysis of precipitation: spatial and temporal – concept of potential and actual evapotranspiration – measurements and computation – water balance approach.

Unit IV: Groundwater: Origin and occurrence – aquifers - groundwater movement – Analysis ground water of level and assessment of groundwater quality for various uses - Data sources.

Unit V: Mapping techniques of landuse and water resources: Geospatial techniques and field checks - mapping procedures of landuse change and surface water – Graphs for groundwater fluctuation and water quality.

Text Books

1. Burrough, P.A. (1986): Principles of GIS for Land Resources Assessment, Clarendon Press, Oxford.
2. Chang, Kang-tsung. 2002. Introduction to Geographic Information Systems. New Delhi: Tata McGraw-Hill Publishing Company Limited
3. Todd, D.K., (1959) Groundwater Hydrology, New York:McGraw Hill Book Company
4. Ward, R.C., (1970) Principles of Hydrology.London: McGraw Hill Book Company.

References

1. Campbell,J.B.,(1983) Mapping of Land: Aerial Imagery for Land Use Information, Scientific Publisher, Jodhpur
2. F.A.O (1976): A Frame Work for Land Evaluation, FAO Soil Bulletin 32, Food and Agricultural Organisation of the United Nations, Rome.
3. Fabos, J.Gy.,(1985) Land Use Planing Global to Local Challenge, Chapman and Hall, New York

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SEMESTER - IV

CC - PRACTICAL IV GEOSPATIAL ANALYSIS II

Subject Code: 17P4GP4	Credits: 4	External Marks: 60	Hours: 4+4
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Objectives: *This paper emphasis techniques of geospatial analysis right from data processing , statistical analysis, testing, spatial data base generation, editing and spatial analysis using GIS tools.*

Unit I: Data Editing and Analysis using Statistical Software

- 1.1 Data entry and recoding .
- 1.2 Measures of Central tendency-mean, median and mode
- 1.3 Measures of Dispersion-range, quartile and standard deviation
- 1.4 Measures of Relationship-correlation and regression

Unit II: Analysis of Variance and Hypothesis

- 2.1 Measures of Variance (ANOVA)
- 2.2 Chi-square test
- 2.3 't'-test
- 2.4 'f'-test

Unit III: GIS data Generation and Editing

- 3.1 Base Map registration
- 3.2 Point Data Generation and Editing
- 3.3 Line Data Generation and Editing
- 3.4 Polygon Data Generation and Editing

Unit IV: GIS Analysis

- 4.1 Interpolation – IDW and Spline
- 4.2 Buffering
- 4.3 Overlay
- 4.4 Digital Terrain Model (DTM)

Unit V: GIS GPS Mapping

GPS Data collection (Point, Line and Polygon), Mapping and Layout.

References

1. Ajai S. G., (2006): Statistical Methods for Practice and Research a Guide to Data Analysis Using SPSS. (First edition) Sage Publications, New Delhi.
2. Burrough, P.A. (1986): Principles of GIS for Land Resources Assessment, Clarendon Press, Oxford.
3. Chang, Kang-tsung. 2002. Introduction to Geographic Information Systems. New Delhi: Tata McGraw-Hill Publishing Company Limited
4. Cole J.P., et al., (1968): Quantitative Techniques, Association of American Geographers.
5. Field, A. (2009): Discovering statistics using SPSS (Third edition), Sage Publications, Los Angeles.

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SEMESTER - IV

PW - PROJECT WORK

Subject Code: 17P4GPW	Credits: 4	External Marks: 80	Hours: 7
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1. In the IVth semester 7 hours per week have been allotted as per the course structure.
2. The students have to submit an individual project report by selecting a specific topic in Geography and allied fields by means **field work and field techniques**.
3. Research should be based on either primary data or secondary data or both as required.
4. The Project Report should be between 20 and 25 pages.
5. Sufficient maps, diagrams and graphs with precise interpretation are the mandatory components of the project report.
6. The Report should be divided as:
 - I. Problem and Procedure
 - II. Aims and Objectives
 - III. Review of Literature
 - IV. Data and Techniques used
 - V. Result and discursion
 - VI. Summary and Conclusion
 - VII. References

7. Evaluation and Viva Voce:

Candidates have been evaluated individually by means of viva voce using the following marking pattern both by Internal and External Examiners. The average mark has been taken into account for the award of mark for the project.

<u>Area of Work</u>	<u>Maximum Marks</u>
1. Plan of the Project	10
2. Execution of the Plan/Collection of Data/Organization of materials /application of tools / experiment /study/hypothesis testing etc., and Presentation of Report	50
3. Individual Initiative	20
4. Viva – Voce Performance	20
Total Marks	100