

# Geography

## GUJARAT UNIVERSITY

M.A./M.Sc. Part I and II  
Syllabus of New Course in Geography  
( in force June. 2003 )  
M.A./M.Sc. Part I

Paper No.	Title of the Paper	Marks
Paper I	: Geomorphology	100
Paper II	: Regional Geography of India	100
Paper III	: History of Geographical Thought	100
Paper IV	: ( a ) Urban Geography	100
	OR	
	( b ) Regional Planning and Development	
	OR	
	( c ) Geography and Ecosystem	
	and	
	( d ) Practicals-I Cartography and Quantitative Techniques in Geography	50
		Total : 450

### M.A./M.Sc. Part II

Paper No.	Title of the Paper	Marks
Paper V	: Climatology and Oceanography	100
Paper VI	: Population Geography	100
Paper VII	: Social Geography	100
Paper VIII	: ( a ) Settlement Geography	100
	OR	
	( b ) Geography of Natural Hazards	
	OR	
	( c ) Geography of Tourism	
	OR	
	Dissertation	
	and	
	( d ) Practicals-II : Computer Cartography and Geographical Information Systems	50
		Total : 450

#### Note :

- Each student has to study six compulsory theory papers, two optional theory papers along with two compulsory practicals of 50 marks each - in two years for entire Geography course.
- The students with subsidiary Geography at M.A. level will study Paper I, II, V and VI in two years.
- M.A./M.Sc. Paper I and II courses in Geography may be taught either as combined courses or as separate courses.
- Student has to carryout practical assignments and complete the journal work. The practical journal duly certified by professor-in-charge and the Head of the Department, produced for assessment at the time of university practical examination. The student who does not complete the journal work shall not be allowed to appear at the practical examination. The University practical examination will be of 4½ hours duration including the oral examination. The practical I and II carry 50 marks each of which 40 marks are of practical examination, 5 marks each of journal work and viva-voce examination.
- Students have to prepare a field report related to village survey or urban survey or study tour as part of the practical journal work. Field study or study tour is compulsory and budgetary allocations must be made available for such field studies.
- Student may write a Dissertation on any geographical topic making use of statistical and cartographic techniques, field methods and library material under the supervision of one of the recognised post-graduate teachers.
- Two type written copies of the Dissertatation should be submitted one month before the commencement of the University Examination.

**M.A./M.Sc. Part I**  
**COMPULSORY PAPER I : GEOMORPHOLOGY**  
(Effective from June, 2003)

**Objectives :**

1. To help students to acquire the principles of Geomorphology including concepts, processes, knowledge and applications.
2. To provide insight into few applications of geomorphology to societal requirements and to maintain quality of environment.

**Course Units :**

**Unit I :**

Nature and scope of Geomorphology – Development of Geomorphic concepts - Doctrine of uniformitarianism, concept of threshold, climatic change and geochronological methods.

**Unit II :**

Landforms and their order – Macro-landforms of the Earth and their genesis – Forces of crystal instability, Isostasy, plate tectonics, seismicity, vulcanicity, organic structures with reference to the evolution of the Himalaya.

**Unit III :**

Exogenic processes : Concept of gradation, Agents and processes of gradation causes, types and classification of weathering, mass movement, erosional and depositional processes and resultant landforms and soil formation, slope evolution (Davis and Penck); downwearing, parallel retreat and slope replacement models.

**Unit IV :**

Geomorphic processes - dynamics of landform, cycle – fluvial, glacial, aeolian, marine and karst processes and resulting landforms complexities in geomorphology, processes. Erosion surfaces, development of drainage systems and patterns.

**Unit V :**

Applied Geomorphology environmental geomorphology, physical resources and geomorphic hazards, hydro-geomorphology, floods, drought hazards, watershed management, urban geomorphology waterlogging health hazards, and capability and suitability classification.

**Suggested Readings :**

1. Chorley, R. J. : Spatial Analysis in Geomorphology, Methuen, London, 1972.
2. Cooke, R. V. and Doornkamp, J. C. : Geomorphology in Environment Management An Introduction, Clarendon Press, Oxford, 1974.
3. Cotton C. A. : Geomorphology : An Introduction to the Study of Landforms, Whitecombe & Tombs Ltd. 1960.
4. Dury G. H. : The Face of the Earth, Penguin, Harmondsworth, 1989.
5. Davis W. M. : Geographical Essay, Dover, New York, 1989.
6. Easterbrook D. J. : Principles of Geomorphology, McGraw Hill, New York, 1969.
7. Fairbridge R. W. : Encyclopedia of Geomorphology, Reinholdts, New York, 1968.
8. Garner H. F. : The Origin of Landscape - A Synthesis of Geomorphology, Oxford University Press, London, 1974.
9. King C. A. M. : Techniques in Geomorphology, Arnold, London, 1960.
10. Mitchell C. W. : Terrain Evaluation, Longman, London, 1973.
11. Pitty Alister J. : Introduction to Geomorphology, Methuen & Co., London, 1971.
12. Stoddart D. R. (Ed.) : Process and Form in Geomorphology, Rautledge, New York, 1996.
13. Skinner, B. J. & Porter, S.C. : The Dynamic Earth, John Wiley New York, 1995.
14. Sparks, B. W. : Geomorphology, Longman, London, 1960.
15. Smali, R. J. : The Study of Landforms, Cambridge University Press, Cambridge, 1972.
16. Sharma H. S. (Ed.) : Perspectives in Geomorphology, Concept, New Delhi, 1980.
17. Singh, S. : Geomorphology, Prayage Publication, Allahabad, 1998.
18. Thornbury, W. D. : Principles of Geomorphology, John Wiley, New York, 1960.
19. Worcester, P. G. : A Text Book of Geomorphology, Von Nostrand Co. 1948.
20. Wooldridge & Morgan : An Outline of Geomorphology, Longman, London, 1988.

COMPULSORY PAPER II  
REGIONAL GEOGRAPHY OF INDIA

**Objectives :**

1. To understand the basis of regional divisions their salient characteristics and relation with other regions.
2. To understand the process of regional resource and development programmes for regional development.

**Course Content :**

**Unit I :**

Basis of regionalization : Geo-political, climatic, agro-climatic, physiographic historical, demographic, socio-economic dimensions of regionalization, case studies.

**Unit II :**

Macro-Regions : Genesis and changing profile; Indian Federalism : A synoptic view, Natural and human resources and resource utilization; population-development-environment interface, policies and programmes.

**Unit III :**

Meso-Regions : Bases of regionalization, physical and human resources, economic interlinkages, resource-development interface; policies and programmes.

**Unit IV :**

Micro-Regions : Bases of regionalization, physical, human and economic resources; formal and functional linkages; population-development-environment nexus; policies and programmes.

**Unit V :**

Regions and regional development, Environmental issues in regional development and planning.

**Notes :**

Case studies of Meso/Micro, level regions in detail (one from each of the divisions).

1. Natural/physical - Sundarban delta, Indo-Gangetic Plain, Coastal India.
2. Political - new states of India Jharkhand, Uttaranchal, Chattisgarh, Union Territories.
3. Urban/Metropolitan regions : Delhi Metropolitan Region, Bombay Metropolitan Regions, Madras Metropolitan Regions, Calcutta Metropolitan Regions etc.
4. Cultural Regions - Bundelkhand, Mewar, Saurashtra, Kachchh, etc.

**Suggested Readings :**

1. Deshpande, C.D. : India : A Regional Interpretation, ICSSR & Northern Book Centre, New Delhi, 1992.
2. Dreze, Tean & Amartya Sen (Ed.) : India-Economic Development and Social Opportunity, Oxford, University Press, New Delhi, 1996.
3. Dutt Ashok, K. (Ed.) : India - Resources, Potentialities and Planning, Kendall/Hunt Publishing Company, Dubuque, 1972.
4. Kundu, A. & Raza Moonis : Indian Economy : The Regional Dimension, Spectrum Publishers, New Delhi, 1982.
5. Ramesh, A. (Ed.) : Resource Geography, Heritage Publishers, New Delhi, 1981.
6. Robinson, Francis : The Cambridge Encyclopedia of India, Pakistan Bangladesh, Sri Lanka, Nepal, Bhutan & Maldives, Cambridge University Press, London, 1989.
7. Sengupta P. and Galina Sdayuk (Ed.) : Economic Regionalisation of India - Problems and Approaches, Census of India 1961, Vol. I, No. 8, New Delhi, 1968.
8. Singh R. L. (Ed.) : India - A Regional Geography, National Geographical Society, India, Varanasi, 1971.
9. Spate O. H. K. & A. T. A. Learmonth : India & Pakistan, Methuen, London, 1967
10. Tirth, R. & Gopalkrishna : Emerging India, Reprinted by Ramesh Publications, Jaipur, 1996.

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COMPULSORY PAPER III  
HISTORY OF GEOGRAPHICAL THOUGHT

**Objectives :**

1. To familiarise students with the major landmarks in development of geographic thought at different periods of time.
2. To help students to understand the major philosophical and methodological foundation of the subject and its place in the world of knowledge.

**Course Contents :**

**Unit I :**

Geography as a discipline - Natural science and social science, its relation with other subjects, selected concepts in the philosophy of Geography, distributions, relationships, interactions, a real differentiation and spatial organization.

**Unit II :**

Thoughts during ancient and medieval periods, contributions during pre-classical period (1750-1800) - Greek, Roman and Arab Geographers; classical period (1800-1850) and background to current geography (1900-1950) - Recent changes in Geography, Quantitative, behavioural revolutions.

**Unit III :**

Dualism in geography - Regional and systematic geography; physical and human geography, determinism and possibilism, positivism and humanism, humanism and structuralism, Quantitative and Qualitative behaviouralism and radicalism the myth and reality about dualisms.

**Unit IV :**

Synthesis in geography - science of distributions, areal differentiation, interrelations integration of homogeneous and heterogenous regions, natural and cultural regions, scientific explanations, cause and effect, functional and sociological systems.

**Unit V :**

Recent trends and developments in physical and human geography - evolution of thoughts, concepts, approaches and methods in various branches of geography, Laws, theories and models, the quantitative and behavioural revolutions in geography, applied geography in the field of regional planning, cartography including GIS and Remote sensing. Natural hazards and sustainable development

**Suggested Readings :**

1. Abler, R. Adams, Johns, Gould, P. : Spatial Organisation : The Geographers View of the World, Prentice Hall, N. J. 1971.
2. Ali, S. M. : Arab Geography, Aligarh Muslim University Press, Aligarah.
3. Board, C. and Others : Progress in Geography, Vol. 1-8, Edward Arnold, London.
4. Cohn, Saul B., : Problems and Trends in American Geography, Basic Books Inc. Publishers, New York, 1967.
5. Cooke, R. V. & Johnson, J. H. : Trends in Geography, Pergamon Press, London, 1969.
6. Chorley, R. J. (Ed.) : Directions in Geography, Methuen & Co., London, 1973.
7. Chorley, R. J. & Haggett, P. : Socio-Economic Models in Geography, University Paperbacks, Methuen, London, 1967.
8. Chorley, R. J. & Haggett, P. : Frontiers in Geographical Teaching, Methuen, London, 1965.
9. Chorley, R. J. & Haggett, P. (Eds.) : Models in Geography, Methuen & Co. Ltd., London, 1967.
10. Dickinson, R. F. : The Makers of Modern Geography, Routledge and Keganpaul, London, 1969.
11. Dikshit R. D. : The Art & Science of Geography, Prentice Hall of India, New Delhi, 1994.
12. Dikshit R. D. : Geographical Thought : A Contextual History of India, Prentice Hall, New Delhi, 1997.
13. Freeman, T. W. : A Hundred Years of Geography, Duckworth, London, 1961.
14. Hearshstone, R. : Perspective on the Nature of Geography, John Murray , London, 1968.
15. Harvey, David, : Explanation in Geography, Edward Arnold Ltd., London, 1969.
16. Holf Jensen, Arnold. : Geography - Its History and Concepts, Harper and Row Publishers, London. 1980.
17. Hussain, M. : Evolution of Geographic Thought, Rawat Publications, Jaipur, 1994.
18. James. P. E. : All Possible Worlds - A History of Geographical Ideas, The Odyssey Press, New York, 1972.
19. Johnston, R. J. : Geography and Geographers, Arnold Longmans, London, 1983.
20. Larkin, R. P. : Dictionary of Concepts of Human Geography, Greenwood Press, London, 1983.
21. Minshall, R. : The Changing Nature of Geography, Hutchinson University Library, London, 1970.
22. Peet, Richard : Modern Geographical Thought, Blackwell Publishers, Oxford, 1998.
23. Taylor G. Geography in the Twentieth Century, Methuen and Co., London, 1951.

**GEOGRAPHY PAPER IV (OPTIONAL)**  
**URBAN GEOGRAPHY**

**Objectives :**

1. To help the students to understand the processes of urbanization, origin, growth and classification, of urban settlements with relevant theories and models.
2. To understand the demographic structure, economic base, functions of the cities.
3. To examine the contemporary urban issue and suggest new urban planning and urban policy perspectives.

**Course Contents :**

**Unit I :**

Nature and scope of urban geography, different approaches and the recent trends. Origin and growth of towns, characteristics of pre-industrial and post-industrial cities, factors and processes of urbanisation in western and Indian situation - bases of classification of urban settlements in urban growth and theories - central place theory of Christaller and Losch Rank-size rule, hierarchy of settlements.

**Unit II :**

Urban morphology - structural and functional morphology of Indian and western cities - urban landuse and ecological theories, city commercial base - central business district - urban sprawl, rural urban fringe, Basic and non-basic functions.

**Unit III :**

City and its region - concept of city region, techniques of delimitations and structure of the city region - Commuting patterns, traffic flows - Place of work and shopping behaviour - zone of influence and interaction models - suburbanization process.

**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 towns, planned townships, garden cities, green belts, urban renewal, restoration of monumental buildings, technological change and land use and urban planning.

**Suggested Readings :**

1. Alam, S. M. : Hyderabad-Secunderabad-Twin Cities, Asia Publishing House, Bombay, 1964.
2. Berry, B. J. L. and Horton, F. E. : Geographic Perspectives on Urban Systems, Prentice Hall, Englewood Cliffs, New Jersey, 1970.
3. Bourne, Larry : Internal Structure of the City, Oxford University Press, London, 1971.
4. Briggs K. : Field Work in Urban Geography, Oliver and Bord, Edinburgh.
5. Carter, H. : The Study of Urban Geography, Edward Arnold, London, 1972.
6. Dickinson, R. E. : City and Region, Routledge, London, 1964.
7. Dwyer, D. J. (Ed.) : The City as a Centre of Change in Asia, University of Hongkong Press, Hong Kong, 1971.
8. Francis Cherunilam : Urbanizations in Developing Countries, Himalayan Publications, Mumbai, 1981.
9. Garnier, B. J. & Chabot, G. : Urban Geography, Longmans, London, 1969.
10. Gibbs, J. P. : Urban Research Method, D. Von Nostramul Co. Inc, Princeton, New Jersey, 1961.
11. Hall, P. : Urban and Regional Planning, Routledge, London, 1992.
12. Hamser, Philip M. & Schnore L. F. (Eds.) : The Study of Urbanization, John Wiley, New York, 1965.
13. Herbert David & C. J. Thomas : Urban Geography - A First Approach, John Wiley & Sons, Binghamton, N.Y. 1982.
14. Johnson, J. H. : Urban Geography - An Introductory Analysis, Pergamon Press, London, 1967.
15. Jones Emrys : Towns and Cities, Oxford University Press, Oxford, 1966.
16. Méyor H. M. and C. F. Kohn (Eds.) : Readings in Urban Geography (Central Book Depot., Allahabad), University of Chicago Press, Chicago, 1955.
17. Mahadev P. D. (Ed.) : Contributions in Geography, Vol. VII, Urban Geography, Heritage, New Delhi, 1986.
18. Nangia S. : Delhi Metropolitan Region - A Study in Settlement Geography, Rajesh Publications, New Delhi, 1976.

19. Pacione M. (Ed.) : Problem and Planning in Third World Cities, Crown - Helm, London, 1981.
20. Pacione M. : Progress in Urban Geography, Crown Helm, London, 1983.
21. Rao, V. L. S. P. : Urbanization in India - Spatial Dimensions, Concept Publishing Company, New Delhi, 1983.
22. Smailes, A. E. : The Geography of Towns, Hutchinson University Library, London, 1967.
23. Spreiregen Paul D. (Ed.) : The Modern Metropolis - Its Origin, Growth, Characteristics and Planning, Selected Essays by Hans Blumenfeld, the MIT Press, Massachusetts.

GEOGRAPHY PAPER IV(B) : (OPTIONAL)  
REGIONAL PLANNING AND DEVELOPMENT

**Objectives :**

1. To understand and evaluate the concepts of regions in geography and its role and relevance in regional planning.
2. To identify the issues relating to the development of the region through the processes of spatial organizations and inter-relationships.
3. To identify the causes of regional disparities in development, perspectives and policy imperatives.

**Course Content :**

**Unit I :**

Regional concept in geography, conceptual and theoretical framework, merits and limitations for application to regional planning and development, changing concept of the region from an inter-disciplinary view point, concept of space, area and locational attributes, types of regions, formal and functional, uniform and nodal, single purpose and composite, in the context of planning, regional hierarchy, special purpose regions.

**Unit II :**

Physical regions, resource regions, regional divisions according to variations in levels of socio-economic development, special purpose regions - river valley regions, metropolitan regions, problem regions - hilly regions, tribal regions, regions of drought and floods.

**Unit III :**

Approaches to delineation of different types of regions and their utility in planning. Planning process - sectoral, temporal and spatial dimensions : short-term and long-term perspectives of planning planning for a regions development and multi-regional planning in a national context. -Indicators of development and their data sources, measuring levels of regional development and disparities - case study of India.

**Unit IV :**

Regional development strategies - Concentration vs. dispersal, case studies for plans of developed and developing countries, regional plans of India.

**Unit V :**

Concept of multi-level planning; decentralised planning; peoples participation in the planning; Panchayati Raj System; role and relationship of Panchayati Raj institutions (Village Panchayat, Panchayat Samiti and Zila Parishad) and administrative structure (Village, Block and District) - Regional Development in India - Problems and Prospects.

**Suggested Readings :**

1. Abler, G. et.al. : Spatial Organisation : The Geographers' View of the World, Prentice Hall, Englewood, Cliffs N. J. 1971.
2. Bhat, L. S. : Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.
3. Bhat L. S. et.al : Micro-Level Planning : A Case Study of Karnal Area, Haryana, K. B. Publications, New Delhi 1976.
4. Chand M. and Puri, V. K. : Regional Planning in India, Allied Publications, Bombay, 1983.
5. Chorley, R. J. and Haggett, P : Models in Geogeaphy, Methuen, London, 1967.
6. Christaller, W. : Central Places in Southern Germany, Translated by C.W. Baskin, Prentice Hall Englewood Cliffs, New Jersey, 1966.
7. Friedmann, J. and Alonso, W. : Regional Development and Planning-A Reader, M.I.T.Press Cambridge, Mass. 1967.
8. Glikson, Arthur : Regional Planning and Development, Netherlands Universities foundation for international Co-operation, London, 1955.
9. Gosal, G. S. and Krishan, G. : Regional Disparities in Levels of Socio-Economic Development in Punjab, Vishal Publications, Kurukshetra, 1984.

10. Hall, Peter : Urban and Regional Planning; Penguin Books Inc, New York, 1974.
11. Johnson, E. A. J. : The Organisation of Space in Developing Countries, Harvard University, Press, Cambridge, 1974.
12. Kuklinski A. R. (Ed.) : Growth Poles and Growth Centres in Regional Planning. Mouton, The Hague, 1972.
13. Kundu, A. and Raza, Moonis : Indian Economy - The Regional Dimension. Spectrum Publishers, New Delhi, 1982.
14. Misra R. P. : Regional Planning : Concepts, Techniques and Policies. University of Mysore, Mysore, 1969.
15. Misra, R. P. and Others (Ed.) : Regional Development Planning in India - A Strategy. Institute of Development, Studies, Mysore, 1974.
16. Mitra A. : Levels of Regional Development, Census of India, Vol. I, Part-I A (i) and (ii), New Delhi, 1965.
17. Rao, V. L. S. P. : Regional Planning. Indian Statistical Institute and Asia Publishing House, Calcutta, 1964.
18. Reddy, Y. U. : Multi-Level Planning in India, Vikas Publications, New Delhi, 1979.
19. Sundaram K. V. : Urban and Regional Planning in India, Vikas Publications, New Delhi, 1979.
20. Sundaram K. V. : Geography of Under Development, Concept Publications, New Delhi, 1983.
21. Sundaram K. V. (Ed.) : Geography and Planning, Essays in Honour of V. L. S. Prakasa Rao. Concept Publications, New Delhi, 1985.

GEOGRAPHY PAPER IV(C) : (OPTIONAL)  
GEOGRAPHY AND ECOSYSTEM

**Objectives :**

1. To appraise the students with the inter-relationship between man, the environment within which he lives and his linkages with organisms.
2. To make them understand linkages that form ecosystems.
3. To make them aware of the importance of conserving bio-diversity to maintain ecological balance.

**Course Content :**

**Unit I :**

General systems, ecological concepts, geography as human ecology, Ecosystem concept and components. Ecosystem - form and function : tropic level, ecological pyramids, ecological niche, energy and nutrients in the ecosystem, hydrological cycle, heat balance, carbon cycle, nitrogen cycle, food chains and food webs.

**Unit II :**

Major terrestrial ecosystems of the world : agriculture, forests, grassland and desert. Population growth and environment, carrying capacity of the earth. Land resources and world food security.

**Unit III :**

Man-environment relationship : Resource use and ecological imbalance with reference to soils, factors and energy resources. Bio-diversity and its conservation. Preservation and conservation of the ecosystem through resource management.

**Unit IV :**

Case studies of man induced environmental and ecological changes; ecology of tropical farming systems; mountain ecosystem with specific references to Aravalli hills, big dams with reference to Sardar Sarovar, National Parks.

**Unit V :**

Environmental legislation - The Stockholm Conference, the earth summit, environmental laws in India (the Wild Life Act, Water Act, Forest Act, Environment Protection Act and National Environment Tribunal Act).

**Suggested Readings :**

1. Ackerman, E. A. : Geography as a Fundamental Research Discipline, University of Chicago Research Papers, 1958.
2. Agarwal, A. and Sen, S. : The Citizens Fifth Report, Centre for Science and Environment, New Delhi, 1999.
3. Bertalanffy, L. : General Systems Theory, George Bragiller, New York, 1958.
4. Bodkin, E. : Environmental Studies, Charles E. Merrill Pub. Co. Columbus, Ohio, 1982.
5. Chandna, R. C. : Environmental Awareness, Kalyani Publishers, New Delhi, 1998.

6. Chorley, R. J. : Geomorphology and General Systems Theory, U.S.G.S., Professional Paper, 500B, 1962.
7. Eyre, S. R. and Jones, G. R. J. (Eds.) : Geography as Human Ecology, Edward Arnold, London, 1966.
8. Kormondy, E. J. : Concepts of Ecology, Prentice Hall, 1989.
9. Manners, I. R. and Mikesell, M. W. (Eds.) : Perspectives on Environment, Commission on College Geography, Pub. No. 13, Washington, D. C. 1974.
10. Nobel and Wright : Environmental Science, Prentice Hall, New York, 1996.
11. Odum, E. P. : Fundamentals of Ecology, W. B. Saunders Philadelphia, 1971.
12. Russwurm, L. H. and Sommerville, E. (Eds.) : Man's Natural Environment - A Systems Approach, Duxbury, Massachusetts, 1985.
13. Sharms, H. S. : Ranthambore Sanctuary - Dilemma of Eco-development, Concept, New Delhi, 2000.
14. Simmons, J. G. : Ecology of Natural Resources, Edward Arnold, London, 1981.
15. Singh, S. : Environmental Geography, Prayag Publications, Allahabad, 1991.
16. Smith, R. L. : Man and his Environment : An Ecosystem Approach, Harper & Row, London, 1992.
17. U.N.E.P. : Global Environmental Outlook, U. N. Pub. New York, 1998.
18. World Resources Institute : World Resources (Latest Report), Washington, D.C.
19. World Watch Institute : State of the World (Latest Report), Washington, D.C.

#### GEOGRAPHY PAPER IV(D) : PRACTICAL-I

#### CARTOGRAPHY AND QUANTITATIVE TECHNIQUES IN GEOGRAPHY-I

##### **Objectives :**

1. To introduce certain advanced methods of cartography for better comprehension and for research purposes.
2. To introduce certain basic statistical methods which are widely used in Geographic analysis.

##### **Course Content :**

##### **Unit I :**

Relief and climatic diagrams - cross profile, long profile, superimposed, projected and composite profile, Altimetric Curve, 3-D models, Hythergraph, Climograph, Polargraph, Compound wind roses, cyclone tracks, preparation of Isohyet and Isotherm map. Toposheet (Indian and Foreign) weather charts (all seasons) interpretation.

##### **Unit II :**

Socio-economic data by Cartograms : Lorenz Curve and Gini's concentration index, Indices of Transport network analysis, Triangular graph as a classification method, choropleth maps, Block diagram and flow maps, core-periphery contrasts, density gradient and distance decay analysis.

##### **Unit III :**

Basic statistical methods in Geography Measures of Central tendency. Measures of dispersion, Skewness, Kurtosis and normal distribution, correlation coefficient, scatter diagram, simple regression, rank correlation trend line analysis, time series analysis.

##### **Unit IV :**

Testing of Hypothesis - Formulation of Hypothesis, Parametric Tests - F-Test and students 't'-test, non-parametric test - chi-square test, sampling methods.

##### **Unit V :**

Field work : Village/urban survey/Geographical tour report.

##### **Suggested Readings :**

1. Dickinson, G. C. : Maps and Air Photographs, Arnolds, London, 1970.
2. Gibbs, J. P. : Urban Research Methods, D.Van Nostrand Co. Inc. New York, 1961.
3. Gregory, S. : Statistical Methods and the Geographer, Longman, London, 1978.
4. Hammond R. and McCullagh, P. S. : Quantitative Techniques in Geography, Calrenton Press, Oxford, 1974.
5. Haring Lloyd L. and J. F. Lounsbury : Introduction to Scientific Geographic Research, World Brown Co., Published, 1983.
6. King, L. J. : Statistical Analysis in Geography, Prentice Hall, N. Y. 1969.
7. Monkhouse, F. J. and H. R. Wilkinson : Maps and Diagrams, Methuen and Co; London, 1967.
8. Mohammed Aslam : Statistical Methods in Geographical Studies, Rajesh Publication, New Delhi, 1977.
9. Raisz Erwin : Principles of Cartography, McGraw Hill, New York, 1962.
10. Robinson, A. H. and others : Elements of Cartography, John-Wiley & Sons, New York.
11. Standard, R. H. : Field Techniques and Research Methods in geography, Kendall Hunt Publishing Co., Dubuque, I.a., 1982.
12. Yeates H. M. : An Introduction to Quantitative Analysis in Economic Geography, McGraw Hill, New York, 1968.