



**CENTRE FOR DISTANCE EDUCATION
BHARATHIDASAN UNIVERSITY, TIRUCHIRAPALLI-620024**

B.Sc. Geography

Curriculum Structure

Year	Part		Title of the Course
I	1		Tamil
	2		English
	3	Major-I	Climatology and Oceanography
	3	Major-II	Cartography
	3	Allied-I	Statistics
	4		Environmental Studies
II	1		Tamil
	2		English
	3	Major-III	Geomorphology and Biogeography
	3	Major-IV	Settlement Geography
	3	Allied-II	Geoinformatics
III	3	Major-V	Population Geography
	3	Major-VI	Economic Geography
	3	Major-VII	Geography of India
	3	Elective-I (Any One)	1. Disaster Risk Reduction 2. Regional Planning
	3	Major-VIII	Major Practical

Major-I

CLIMATOLOGY AND OCENOGRAPHY

- Unit-1** Origin, composition and structure of Atmosphere - Insolation – heat balance - Factors affecting temperature distribution - Vertical and horizontal distribution of pressure - Wind: planetary, seasonal, monsoon and local winds
- Unit-2** Humidity - Evaporation – Clouds – Precipitation: forms and types – Air masses – Fronts – Jet streams
- Unit-3** Tropical and temperate cyclones – Anti cyclone - Thunderstorms – Tornadoes - Climatic classification: Koppen’s and Thronthwaite’s - Climate change
- Unit-4** Distribution of Land and sea – Surface configuration of the ocean floor: continental shelf, continental slope, abyssal plain, mid-oceanic ridges and oceanic trenches - Waves and Tides
- Unit-5** Currents of the Pacific, Atlantic and Indian oceans - Marine sediments and minerals - Coral Reefs - Other marine resources

Reference Books

1. Strahler, A. H. and Strahler, A N., (2001) *Modern Physical Geography (4/E)*, John Wiley and Sons, Inc., New York.
2. Barry, R.G. and Chorley, R.J., (1998) *Atmosphere, Weather and Climate*, Routledge, London.
3. Das Gupta, A & Kapoor, A.N., (2001) *Principles of Physical Geography*, S.C. Chand & Company Ltd. New Delhi.
4. Grant Gross (1987) *Oceanography*, Prentice – Hall International Editions
5. Khullar, D.R., (2012) *Physical Geography*, Kalyani Publishers, New Delhi.
6. Lal. D.S., (1990) *Oceanography*, Chatianya Publishing House, Allahabad
7. Lal, D S (2005) *Climatology*, ShardaPustakBhawan, Allahabad.
8. Sharma, R. C. & Vatal, M., (1970) *Oceanography for Geographers*, Chaitanya Publishing House, Allahabad.

Major-II

CARTOGRAPHY

Unit-1: History of cartography – Types of maps - Map scale: plain linear, statement, diagonal and comparative, representative fraction

Unit-2: Basic geodesy: spherical, ellipsoidal and geoidal earth - Map projections: cylindrical, conical and zenithal projections – coordinate systems - UTM – choice of map projections

Unit-3: Enlargement and reduction of maps – map compilation - Generalization - Symbolization – Map design and layout - Lettering

Unit-4: Cartographic equipments - Mechanics of map construction - Map reproduction methods - Digital cartography

Unit-5: Conventional signs and Symbols - Mapping methods: terrain, weather and climatic data, socio-economic data - Thematic mapping

Reference Books

1. *Misra, R.P. and Ramesh, A. (1986) Fundamentals of Cartography, Concept Publishing Company, New Delhi.*
2. *Robinson, A.H. et al. (1995) Elements of Cartography, John Wiley & Sons, New York*
3. *Sons, New York*
4. *Monkhouse, F.J. and Wilkinson, H.R. (1994) Maps and Diagrams, Methuen, London.*
5. *Sarkar A. K. (1997) Practical Geography: A Systematic Approach, Oriental Longman, Calcutta.*
6. *Singh, R.L. and Dutt, P.K. (1979) Elements of Practical Geography, Kalyani Publishers, New Delhi.*

Allied-I

STATISTICS

Unit-1: Collection of data – Sampling and sample design - Representation of geographic data: Line and bar graphs, Pie diagrams, Histograms, Frequency polygon, Ogives

Unit-2: Measures of Central Tendency: Mean, Median, Mode - Measures of Dispersion: range, mean deviation, quartile deviation, standard deviation, Lorenz curve

Unit-3: Correlation: Scatter diagram and graphic method, Karl Pearson's Correlation Coefficient, Spearman's Rank Correlation – Regression

Unit-4: Measurement of Trend: graphic method, semi average and moving average - Measurement of variations: seasonal, cyclical and irregular variations

Unit-5: Concept of Probability - Probability distribution: Binomial distribution and Normal distribution - Statistical hypothesis - Tests of hypothesis – Tests of significance

Reference Books

1. Gupta, S.P. (1995) *Statistical Methods*, Sultan Chand and Sons, New Delhi.
2. Pal S. K., (1998) *Statistics for Geoscientists: Techniques and Applications*, Concept Publishing Company, New Delhi.
3. King, L.J. (1991) *Statistical Analysis in Geography*. Prentice Hall, Englewood Cliff.
4. Cole, J.P. & King, C.A.M. (1968) *Quantitative Techniques in Geography*. John Wiley & sons Inc. New York.
5. Elhance, D.N. (1972) *Fundamentals of Statistics*, Kitab Mahal, Allahabad.
6. Burt, J.E., Barber, G.M., & Rigby, D.L. (2009) *Elementary Statistics for Geographers (3/E)*, The Guilford Press, New York.
7. Hammond, R., & McCullagh, P.S. (1978) *Quantitative Techniques in Geography: An Introduction (2/E)*, Oxford University Press, New York.

Major-III

GEOMORPHOLOGY AND BIOGEOGRAPHY

- Unit-1** Origin of the Earth - Earth's internal structure - Origin and composition of rocks: igneous, sedimentary and metamorphic processes - Rock cycle - Geological time scale - Orders of relief
- Unit-2** Geomorphic processes: endogenic and exogenic - Wegener's continental drift theory - Plate tectonics - Folds and Faults - Earthquakes - volcanoes
- Unit-3** Weathering - Mass-movement - Formation of soils - Drainage pattern - Work of river - Fluvial landforms
- Unit-4** Karst topography - Work of glaciers - Glacial landforms - Aeolian landforms - Coastal landforms
- Unit-5** Origin of fauna and flora - Biomes - Biodiversity - Problem of extinction of plant and animal life - Conservation and management measures

Reference Books

1. *Strahler, A. H. and Strahler, A N., (2001) Modern Physical Geography (4/E), John Wiley and Sons, Inc., New York.*
2. *Christopherson, R. W. and Birkeland, G. H., (2012) Geosystems: An Introduction to Physical Geography (8/E), Pearson Education, New Jersey.*
3. *Das Gupta, A & Kapoor, A.N., (2001) Principles of Physical Geography, S.C. Chand & Company Ltd. New Delhi.*
4. *Khullar, D.R., (2012) Physical Geography, Kalyani Publishers, New Delhi.*
5. *Brown, J.H. (2005) Biogeography, Sinauer Associates Inc, Sunderland.*
6. *Seddon, B.A. (1971) Introduction to Biogeography, Duckworth, London.*

Major-IV

SETTLEMENT GEOGRAPHY

- Unit-1:** Origin and growth of settlements - rural and urban settlements: hamlet, village, town, city, metropolis, megalopolis and conurbation - Rural-Urban Fringe
- Unit-2:** Site and situation - Functions of settlements - Central place theory - Rank-size rule - Primate city - Hierarchy of settlements in India
- Unit-3:** Classification of rural settlement - Factors affecting rural settlements - Rural settlement pattern - Village patterns in India - Changing morphology of rural settlements
- Unit-4:** Urban morphology - Urbanization - Functional classification of cities - Urban land use models: Burgess, Hoyt, Harris and Ullman
- Unit-5:** Rural problems: accessibility, sanitation, drinking water - Urban Issues: slums, civic amenities (water and transport), solid waste disposal - Digital divide

Reference Books

1. Ghosh, S. (2015) *Introduction to Settlement Geography*, Orient Blackswan Pvt. Ltd., Kolkata.
2. Hudson, F. S. (1976) *Geography of Rural Settlements*, Mac Donald and Evans, New York.
3. Leong, G.C. and Morgan, G.C. (1982) *Human and Economic Geography*, 2nd Edition, Oxford University Press, New Delhi.
4. Mandal, R.B. (2001) *Introduction to Rural Settlement*, Concept Publishing Company, New Delhi.
5. Daniel, P. (2002) *Geography of Settlement*, Rawat Publication, New Delhi.
6. Singh, R. Y. (2010) *Geography of Settlement*, Rawat Publication, Jaipur.
7. Daniel, P. and Hopkins, M. (1989) *Geography of Settlement*, Oliver and Boyd, Essex.
8. Hornby, W.F. and Jones, M. (1991) *An Introduction to Settlement Geography*, Cambridge University Press, Cambridge.

Allied-II

GEOINFORMATICS

Unit-1: Components of geoinformatics: cartography, photogrammetry, remote sensing, GIS, GNSS, surveying, Information science, geostatistics

Unit-2: Elements of EMR - Aerial photography - Types of photographs - Photogrammetry - Elements of image interpretation - Platforms - Resolution: spatial, spectral, radiometric and temporal

Unit-3: Sensors - Satellites: Earth observation, weather satellites, land and marine observation satellites - Digital Image processing - Remote sensing applications

Unit-4: Components of GIS – Raster and vector data structures - Spatial data input and editing - Errors in GIS - GIS analysis - GIS applications

Unit-5: Segments of GNSS - GNSS Constellations: GPS, GLONASS, Galileo, BeiDou, IRNSS – Errors – Modern survey instruments - GNSS applications

Reference Books

1. Gomarasca, M. A. (2009) *Basics of Geomatics*, Springer Science, New York
2. Lillisand T.M and R.W. Kiefer (1994) *Remote Sensing and Image Interpretation*. John Wiley & Sons, New York.
3. Lo. C.P. Yeung, and Albert, K.W., (2002). *Concepts and Techniques of Geographic Information Systems*, Prentice-Hall of India Pvt Ltd, New Delhi.
4. Burrough, P. A., & McDonnell, R., (2000). *Principles of Geographical Information Systems*, Oxford Press, London.
5. Jensen, J.R. (2007) *Remote Sensing of the Environment: An Earth Resource Perspective*, Prentice-Hall Inc., New Jersey.
6. Agarwal, N. K., (2006). *Essentials of GPS, Geodesy and GPS publications*, Hyderabad.
7. Heywood, I., Comelius, S., and Carver, S., (1988). *An Introduction to Geographical Information Systems*, Addison Wiley Longmont, New York.

Major V

POPULATION GEOGRAPHY

Unit-1: Sources of population data - Human races: Caucasoid, Mongoloid, Negroid - World's major religions - Culture and Identity

Unit-2: Factors affecting population distribution, density and growth - World population distribution - Population Theories: Malthus and Demographic Transition

Unit-3: Age and sex composition - Occupational structure - Literacy - Major world languages

Unit-4: Measurements of fertility and mortality - Migration: Types, causes, consequences

Unit-5: Problems of over and under population - optimum population - population policies - India's population policies

Reference Books

1. Chandha, R.C (1986) *A Geography of Population- Concepts and patterns*, Kalyani Publishers, New Delhi.
2. Knox, P. &Marston, S. (2013) *Human Geography: Places and Regions in Global Context, 6thEdition*, Pearson Education, New Delhi
3. Majid Hussain, (2005), *Human Geography*, Rawat Publications, New Delhi.
4. Cheng Leong, G.& Morgan, G.C. (1995)*Human and Economic Geography*, Oxford University Press, Oxford
5. Ghosh, B.N. (1985) *Fundamentals of Population Geography*, Sterling publishing, New Delhi.
6. Clark I.(Ed.1984) *Geography and Population, Approaches*, Pergamon press, Oxford.
7. Trewartha G.T. (1969) *A Geography of Population, World patterns*, John Wiley & sons. New York.
8. Rubenstein, J.H. (2013) *Contemporary Human Geography, 2nd Edition*, Prentice-Hall, New Jersey

Major VI

ECONOMIC GEOGRAPHY

- Unit-1** Classification of economies: primary, secondary tertiary, quaternary and quinary
- Unit-2** Classification of resources - renewable and non-renewable - Classification of minerals and Energy resources - Conservation of resources
- Unit-3** Weber's Industrial location theory - Major industries: iron and steel, textile, chemicals, cement, paper, ship building - Industrial regions
- Unit-4** Roads, Railways, Waterways, Airways and Pipelines - Major Ports and Harbours - communication systems
- Unit-5** Factors affecting internal and international trade - World trade patterns - World trade Blocks: WTO, OPEC, SAARC and ASEAN - Globalization and economic development

Reference Books

1. Goh Cheng Leong & Morgan, G.C. (1982) *Human and Economic Geography, 2nd Edition, Oxford University Press, New Delhi.*
2. Knowles, R. & Wareing, J. (2004) *Economic and Social Geography - Made Simple, Rupa & Co., Kolkata.*
3. Knox, P. & Marston, S. (2013) *Human Geography: Places and Regions in Global Context, 6th Edition, Pearson Education, New Delhi*
4. Negi, B.S. (1995) *Economic and Commercial Geography of the World, KedarNath Ram Nath, New Delhi.*
5. Prithwish Roy (2014) *Economic Geography - A study of Resources, New Central Book Agency, Kolkata.*
6. Saxena, H.M. (2013) *Economic Geography, Rawat Publications, Jaipur.*
7. Siddhartha, K. (2013) *Economic Geography, Kisalaya Publications Pvt. Ltd., New Delhi.*

. Major VII

GEOGRAPHY OF INDIA

Unit-1 Location and Administration units - Physiographic Divisions - Climate - Soils - Natural Vegetation

Unit-2 Drainage - Irrigation - Multipurpose Projects - Major Agriculture Crops: Rice, wheat, cotton, sugarcane, tea and coffee, pulses and oil seeds - Problems of Indian Agriculture

Unit-3 Distribution of metallic and non-metallic minerals - Power resources - Major Industries: iron and steel, cement, paper, cotton, chemical, engineering & electronics, automobile and software industries – Major Industrial Regions

Unit-4 Population growth and distribution - Transport: surface (Road & Rail), air, water and pipelines – Major ports and harbours - Principal imports and export items

Unit-5 Geography of Tamil Nadu: Physiography, drainage, soil, climate, agriculture, minerals, industries and population

Reference Books

1. Khullar, D. R (2014) *India: A Comprehensive Geography*, Kalyani Publication, New Delhi.
2. Singh R.L. (1971) *India a regional Geography*, NGSI. Varanasi.
3. Mamoria C.B., *Economic & commercial Geography of India*, Kitab Mahal, Allahabad.
4. Sharma T.C. (1980) *Economic & Commercial Geography of India*, Vikas Publication.
5. Nag, P., and Sengupta, S., (1992), *Geography of India*, Concept of Publishing Company, New Delhi.
6. <http://www.censusindia.gov.in>

Elective-I

DISASTER RISK REDUCTION

- Unit-1** Basic Concepts: Hazard, risks, vulnerability, catastrophe, emergency and disaster - Types of disasters - Impacts: physical, social, economic, political, environmental and psychological - Resilience
- Unit-2** Causes and Effects of Natural Disasters: Earthquakes - Tsunamis - Landslides - Volcanoes - Floods - Cyclones - Drought - Epidemics
- Unit-3** Chemical and industrial disasters - Nuclear and Fire accidents - Oil spill - Stampede - Terrorist attacks - Transport accidents
- Unit-4** Disaster Risk Management: Response and recovery, risk assessment, mitigation and prevention, preparedness planning, prediction and warning - Community based disaster management
- Unit-5** Hazard and vulnerability profile of India - Disaster Management Act - Sendai framework - Geoinformatics in disaster risk reduction

Reference Books

1. Savindra S. & Jeetendra S. (2013) *Disaster Management*, Pravalika Publications, Allahabad.
2. Govt. of India (2008) *Vulnerability Atlas of India*, BMTPC, New Delhi.
3. Govt. of India (2011) *Disaster Management in India*. Ministry of Home Affairs, New Delhi.
4. Kapur, A. (2010) *Vulnerable India: A Geographical Study of Disasters*, Sage Publication, New Delhi.
5. <http://www.ndma.gov.in/en/>
6. <http://nidm.gov.in/>
7. <https://www.unisdr.org/>

Elective-I

REGIONAL PLANNING

- Unit-1** Evolution and Types of Regional planning - Need for Regional Planning - Approaches in regional planning
- Unit-2** Classification of regions: Formal, Functional and Planning Regions - Regional hierarchy – Problem regions: hilly, tribal and drought prone regions
- Unit-3** Planning processes: sectoral, temporal and spatial dimensions - Characteristics of an Ideal Planning Region - Delineation of Planning Region - Regionalization of India for Planning
- Unit-4** Short-term and long-term perspectives of planning – Multi-level planning - Indicators of development
- Unit-5** Appraisal of five-year planning in India - Development programmes in India: Backward area, command area, drought prone, metropolitan, river valley, tribal and hill area

Reference Books

1. *Bhat, L.S (1973) Regional Planning in India, Statistical Publishing Society, Calcutta.*
2. *Hall, P. (1992) Urban and Regional Planning, Routledge, London.*
3. *Misra, R.P. (1971) Regional Planning: Concept, Techniques, Policies and Case Studies, University of Mysore, Mysore.*
4. *Mishra, R.P. (1980) Multi-Level Planning Heritage Publishers, Delhi.*
5. *Misra .R.P., Sundram, K.V. and V.L.S PrakasaRao (1974); Regional development in India, Vikas publishing House, New Delhi.*
6. *Glasson John, (1974) : An Introduction to Regional Planning, Hutchinson, London*

Major VIII

MAJOR PRACTICAL

- Ex. 01: Determination and Construction of Map Scale
- Ex. 02: Enlargement and Reduction of Maps
- Ex. 03: Construction of Map Projections
- Ex. 04: Representation of Relief Features
- Ex. 05: Drawing of Profiles and Hypsometric Curves
- Ex. 06: Representation of Climatic and Weather Data
- Ex. 07: Chain Surveying and Triangulation
- Ex. 08: Determination of Angles and Height
- Ex. 09: Interpretation of SOI Sheets
- Ex. 10: Interpretation of Weather Charts
- Ex. 11: Interpretation of Aerial Photos
- Ex. 12: Interpretation of Satellite images

Reference Books

1. *Gopal Singh (1998) Map Work and Practical Geography (4th Edition), Vikas Publishing House, Ahmedabad.*
2. *Sarkar A. K. (1997) Practical Geography: A Systematic Approach, Oriental Longman, Calcutta.*
3. *Singh, R.L. and Singh, R. P. B. (2009) Elements of Practical Geography, Kalyani Publishers, New Delhi.*
4. *Steers, J.A. (1970) An Introduction to the Study of Map Projections, University of London Press, London.*
5. *Zulfequar Ahmad Khan, M.D., (1998) Text book of Practical Geography, Concept Publishing Company, New Delhi.*