



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

## **B.Sc. Geography**

### **Curriculum Structure**

<b>Year</b>	<b>Part</b>		<b>Title of the Course</b>
<b>I</b>	1		Tamil
	2		English
	3	Major-I	Climatology and Oceanography
	3	Major-II	Cartography
	3	Allied-I	Statistics
	4		Environmental Studies
<b>II</b>	1		Tamil
	2		English
	3	Major-III	Geomorphology and Biogeography
	3	Major-IV	Settlement Geography
	3	Allied-II	Geoinformatics
<b>III</b>	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*, Chatanya 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. Monkhouse, F.J. and Wilkinson, H.R. (1994) *Maps and Diagrams*, Methuen, London.
4. Sarkar A. K. (1997) *Practical Geography: A Systematic Approach*, Oriental Longman, Calcutta.
5. 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*, 2<sup>nd</sup> 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*, 6th Edition, 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*, 2<sup>nd</sup> 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*, 2<sup>nd</sup> 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*, 6<sup>th</sup> 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 (4<sup>th</sup> 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.*