

Choice Based Credit System (CBCS)

**MAHATMA GANDHI UNIVERSITY
DEPARTMENT OF GEOGRAPHY**

**UNDERGRADUATE PROGRAMME
(Courses effective from Academic Year 2019-20)**



SYLLABUS OF COURSES TO BE OFFERED

**Department of Geography
Mahatma Gandhi University**

**B.A. / B.Sc. CBCS Common Core Syllabi for All Universities in Telangana
(w.e.f 2019-2020)**

**SCHEME FOR CHOICE BASED CREDIT SYSTEM IN
B.A./B.Sc. PROGRAMME IN GEOGRAPHY**

FIRST YEAR / SEMESTER -I

<i>Code</i>	<i>Course Title</i>	<i>Course Type</i>	<i>HPW</i>	<i>Credits</i>
BS101	Elements of Geomorphology	DSC-1A	4T	4
BS102	Practical-I: Elements of Mapping and Interpretation		3P	1
			07	5

SEMESTER-II

<i>Code</i>	<i>Course Title</i>	<i>Course Type</i>	<i>HPW</i>	<i>Credits</i>
BS201	Elements of Climatology & Oceanography	DSC-1B	4T	4
BS202	Practical-II:Basic Statistics and weather Map		3P	1
			07	5

SECOND YEAR / SEMESTER-III

<i>Code</i>	<i>Course Title</i>	<i>Course Type</i>	<i>HPW</i>	<i>Credits</i>
BS301	Human Geography	DSC-1C	4T	4
BS302	Practical-III:Maps and Diagrams		3P	1
BS303	Travel And Tourism	SEC-1	2	2
BS304	Surveying Techniques and Cartography	SEC-2	2	2
			11	9

SEMESTER-IV

<i>Code</i>	<i>Course Title</i>	<i>Course Type</i>	<i>HPW</i>	<i>Credits</i>
BS401	Economic Geography	DSC-1D	4T	4
BS402	Practical-IV:Map Projections		3P	1
BS403	Remote Sensing and GPS	SEC-3	2	2
BS404	GIS based Project Report	SEC-4	2	2
			11	9

**SCHEME FOR CHOICE BASED CREDIT SYSTEM IN
B.A./B.Sc. PROGRAMME IN GEOGRAPHY**

THIRD YEAR / SEMESTER-V

<i>Code</i>	<i>Course Title</i>	<i>Course Type</i>	<i>HPW</i>	<i>Credits</i>
BS501	(A) Principles of Remote Sensing (B) Geography of India	DSE-1E	4T	4
BS502	Practical-V:Remote Sensing Lab and Field Survey Techniques		3P	1
BS503	Climate Change and Disaster Management	GE-1	4T	4
			11	09

SEMESTER-VI

<i>Code</i>	<i>Course Title</i>	<i>Course Type</i>	<i>HPW</i>	<i>Credits</i>
BS601	(A) Geographical Information System (GIS) (B) Geography of Telangana	DSE-1F	4T	4
BS602	Practical-VI: GIS Lab		3P	1
BS603	Project work/Optional		4P	4
			10	09
	TOTAL Credits			46

Total credits= 46

AECC: Ability Enhancement Compulsory Course; **SEC:** Skill Enhancement Course; **DSC:** Discipline Specific Course; **DSE:** Discipline Specific Elective; **GE:** Generic Elective;

B.A./B.Sc (Programme) Geography, Mahatma Gandhi University

Discipline Specific Core (DSC) Course (4 Compulsory Papers)

Semester I

1. **Elements of Geomorphology** (4 Credits)
Elements of Mapping and Interpretation (practical) (1 Credit)

Semester II

2. **Elements of Climatology & Oceanography**(4 Credits)
Basic Statistics and Weather Map(practical) (1 Credit)

Semester III

3. **Human Geography**(4 Credits)
Maps and Diagrams(practical) (1 Credit)

Semester IV

4. **Economic Geography** (4 Credits)
Map projections (practical) (1 Credit)

Discipline Specific Elective (DSE) Papers (2 Compulsory Papers)

Semester V

1. (A)**Principles of Remote Sensing**(4 Credits)
(B) **Geography of India**
2. **Remote Sensing Lab and Surveying** (practical) (1 Credit)

Semester VI

1. (A)**Geographical Information System (GIS)** (4 Credits)
(B) **Geography of Telangana**
2. **GIS – Lab** (practical) (1 Credit)

Skill Enhancement Course (SEC)

Semester III : Travel And Tourism (2 Credits)

Semester III : Surveying Techniques and Cartography (2 Credits)

Semester IV : Remote Sensing and GPS (2 Credits)

Semester IV : GIS based Project Report (2 Credits)

Generic Elective (GE) (1)

Semester V

1. Climate Change and Disaster Management, (4 Credits)

Semester VI

Project Work/ Optional(4 Credits)

B.A. / B.Sc. GEOGRAPHY FIRST YEAR

SEMESTER -I

(BS101) Paper I: ELEMENTS OF GEOMORPHOLOGY(4 Credits)

Unit-1: Earth Dynamics

1. Land and Sea : Formation and distribution.
2. Theories: Isostasy, Continental Drift, Plate Tectonics.

Unit-2: Earth Dynamics

3. Interior of Earth Earthquakes Volcanoes Rocks.
4. Weathering and Mass-wasting.

Unit-3: Geomorphology - Processes and Landform Development.

5. River: Flow and Work- erosion, transportation, deposition – landforms.
6. Wind: Air flow and Work- erosion, transportation, deposition- landforms - desert formations.
7. Marine : Waves and Currents and Work- erosion, transportation, deposition - shoreline and landforms.

Unit-4: Geomorphology

8. Karst: Flow of Underground water and Work- solutions- erosion and deposition - landforms.
9. Glacial: Types, Movements and Work- erosion, transportation and deposition- landforms.

Basic Texts:

1. Critchfield (1997): General Climatology, Prentice Hall of India, New Delhi.
2. Strahler A. H. and Strahler A. N. (1971): Physical Geography, Willey eastern, New Delhi.
3. Trewartha (1968): An Introduction to Climate, Mc Graw Hill, New Delhi.

Additional Texts:

1. Tikka R. N. (1999): Physical Geography, Kedarnath & Ramnath & Co., Meerut.
2. Dasgupta and Kapoor (1998): Physical Geography, Chand & Co., Delhi.
3. Lal, D. S. (1996): Climatology, Chaitanya Publishing House, Allahabad.
4. Savinder Singh (2013): Geomorphology, Prayag Pustak Bhavan, Allahabad.
5. Sparks B. W. (1965): Geomorphology, Brill Academic Publishers.

(BS102) Practical-I: ELEMENTS OF MAPPING AND INTERPRETATION

(1 Credit)

1. Types of Maps: Cadastral, Topographical, Atlas, General Maps, Thematic Maps.
2. Construction of scale: simple, diagonal and comparative.
3. Relief features of geological landforms and profile drawing (serial, superimposed, projected and composite).
4. Map reading and Interpretation of topographical sheets.

Basic Texts

1. Monkhouse F. J. and Wilkinson H. R. (1968): Maps and Diagrams, Methuen, London.
2. Mishra R. P. and Ramesh A. (1999): Fundamentals of Cartography, Mac Millan, New Delhi.

Additional Texts

1. Gopal Singh (1996): Map Work and Practical Geography, Vikas Publishing House, New Delhi.
2. Singh R. L. and Dutt P.K. (1968): Elements of Practical Geography, Students Friends, Allahabad.
3. Negi B. S. (1998): Practical Geography, Kedarnath and Ramnath, Meerut.

SEMESTER -II

(BS201) Paper II: ELEMENTS OF CLIMATOLOGY & OCEANOGRAPHY

(4 Credits)

Unit-I:

1. Atmosphere – Structure and Composition.
2. Insolation – Factors influencing the incidence and distribution.
3. Temperature – Horizontal and Vertical Distribution.
4. Pressure – Influencing factors- High and Low Pressure Areas, Global Pressure Belts.

Unit-II:

5. Winds – Local, Periodic and Planetary; El Niño and La Niña.
6. Cyclones – Formation, Distribution and Impacts: Tropical and Temperate.
7. Humidity – Absolute and Relative.
8. Clouds – Types, Formation and Potentials Precipitation: Types, Formation and Distribution.

Unit-III:

9. Submarine relief: Continental Shelf, Continental Slope, Abyssal Plain, Ocean Deeps and Trenches, Mid-Oceanic ridges.
10. Temperature: Horizontal and Vertical Distribution.
11. Salinity: Factors and Distribution.

Unit-IV:

12. Waves & Tides: Types and Formation.
13. Ocean Currents: Types and Factors Responsible - Currents of Atlantic, Pacific and Indian Oceans.
14. Ocean deposits: Types and Distribution.
15. Marine Resources and their economic significance.

Basic Texts:

1. Cole and King (1975): Oceanography for Geographers, E. Arnold, London.
2. Ken Briggs (1985): Physical Geography: Process and System, Holder and Stoughton, London.
3. Rice R. J. (1996): Fundamentals of Geography Addission - Wesley.
4. Sharma, R. C. and Vatal M. (1997): Oceanography for Geographers, Chaitanya Publishing House, Allahabad.

(BS202) Practical-II: Basic Statistics and Weather Map (1 Credit)

1. Sources of data; classification and Tabulation of data.
2. Central Tendencies – Mean, Median and Mode
3. Measures of Dispersion - Mean Deviation and Standard deviation
4. Correlation (Karl Pearson and Spearman).
5. Weather Map: Weather symbols and Interpretation of Indian daily weather maps (July, October and January).

REFERENCES:

1. Aslam Mohmood: Statistical Methods in Geographical Studies. Rajesh Publication, New Delhi.
2. Singh, L.R. (2006): Practical Geography, Sharada Pustak Bhavan.
3. Gregory, S (1963): Statistical Methods and the Geographer, Longmans, London
4. King, L.J.: Statistical Analysis in Geography, Prentice Hall, Englewood Cliffs, New Jersey.
5. Zamir, A. (2002): Statistical Geography: Methods and Applications, Rawat Publications, Jaipur.
6. Monkhouse, F. J. and Wilkinson, F.J. (1985): Maps and Diagrams. Methuen, London
7. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata.

SECOND YEAR SYLLABUS OF B.A. / B.Sc. GEOGRAPHY

SEMESTER-III

(BS301) Paper III: HUMAN GEOGRAPHY

(4 Credits)

Unit-I:

1. Nature and Objectives of Human Geography.
2. Man and Environment: Physical and Cultural environment.

Unit-II:

3. Human activities: Primary, Secondary, Tertiary and Quaternary
4. Resources: Classification, Conservation Utilization and Management, Sustainability.

Unit-III:

5. Human Races: Origin, Classification, Characteristics and Distribution. Cultural Realms of the World.
6. Population: World population, Growth and Distribution, Demographic Transition.

Unit-IV:

7. Human Migration: Types, Causes and Consequences of Migration, Indian Diaspora
8. Human Settlements: Forms, Structure, Functions and Patterns, Rural and Urban settlements, Urbanization, Impacts of Urbanization.

Basic Texts

1. Leong G.C. and Morgan C.C. (1975): Human and Economic Geography, Oxford University Press, London.
2. Alexander J.W. (1963): Economic Geography, Prentice Hall, New Delhi.
3. Hartshorn T.A. and Alexander (1988): Economic Geography, Prentice Hall, New Delhi.

Additional Texts

1. Majid Hussain (1999): Human Geography, Rawat, Jaipur.
2. Ghosh B.N. (1995): Fundamentals of Population Geography, Sterling Publishers, Bangalore.
3. Guha J. L. and Chatoraj P.R. (1978): Economic Geography, World Press, Kolkata.
4. Bhende A.A. & Kanitkar T. (2006): Principles of Population Studies, Himalaya Publishing House, Hyderabad.

(BS302)Practical-III:Maps and Diagrams (1 Credit)

1. Diagrams:
 - i. One Dimensional: Line Graph, Poly Graph, Bar Graph, Pyramid Graph, Pie Diagram.
 - ii. Two Dimensional: Squares and Rectangles.
 - iii. Three dimensional: Spheres and Blocks. Climatic Diagrams: Climo Graph, Hyther Graph, Wind Rose.
2. Maps:
 - i. Thematic Maps: Class intervals, Choropleth, Isopleth, Dot Maps, Flow Maps.

Basic Texts

1. Monkhouse F. J. and Wilkinson H.R. (1968): Maps and Diagrams, Methuen, London.
2. Robinson A.H. et al (1995): Elements of Caliography, John Wiley, New York.

Additional Texts

1. Singh R.L. and Dutt P.K. (1968): Elements of Practical Geography, Students Friends, Allahabad.
2. Misra R.P. and Ramesh A. (1989): Fundamentals of Cartography, Concept, New Delhi.

SEMESTER-IV

(BS401) Paper IV: ECONOMIC GEOGRAPHY (4 Credits)

Unit-I:

1. Definition, Approaches and Fundamental Concepts; Patterns of Development.
2. Types of Agriculture: Land use, Cropping Pattern and Production, Location Model of Von Thunen.
3. Livestock: Development and Distribution, Animal Products (Dairying, Meat and Wool).

Unit-II:

4. Fisheries: Major Fishing areas of the World, Production and Trade
5. Forest : Types and Distribution, Forest Products, Wild Life.
6. Minerals: Metallic (Iron Ore, Copper), Non-metallic (Limestone and Mica), Fuel (Coal and Petroleum), Locations and Potentials, Mining and Trade.

Unit-III:

7. Industry: Locational Factors, Weber's Industrial location theory,
8. Major industries (Iron and Steel, Cotton Textile and Information and Communication Technology Industry.
9. Industrial Regions of the World – changing pattern.

Unit-IV:

10. Transport: Roadways, Railways, Waterways and Airways.
11. Trade: International Trade, Major Imports and Exports, Balance of Trade.
12. WTO and Developing Countries.

Basic Texts

1. Leong G.C. and Morgan C.C. (1975): Human and Economic Geography, Oxford University Press, London.
2. Alexander J.W. (1963): Economic Geography, Prentice Hall, New Delhi.
3. Hartshorn T.A. and Alexander (1988): Economic Geography, Prentice Hall, New Delhi.

Additional Texts

1. Guha J. L. and Chatoraj P.R. (1978): Economic Geography, World Press, Kolkata.

(BS402) Practical-IV: Map Projections (1 Credit)

1. Constructions and Uses.
2. Conical Projections: One Standard Parallel, Two Standard Parallel.
3. Bonne's Cylindrical Projections: Equal area, Equal distant.
4. Zenithal Projections (Polar cases only): Stereographic, Gnomonic, Zenithal Equidistant and Equal Area.

Basic Texts:

1. Monkhouse F. J. and Wilkinson M. R. (1963): Maps and Diagrams, Methuen. London.
2. Misra R. P. and Ramesh A. (1989): Fundamentals of Cartography, Concept, New Delhi.
3. Robinson A. H. (1995): Elements of Cartography, John Willey. New York.

Additional Texts:

1. Gopal Singh (1996): Map work and Practical Geography, Vikas Publishing, New Delhi.
2. Negi B.S. (1998): Practical Geography, Kedarnath and Ramnath, Meerut.

THIRD YEAR SYLLABUS OF B.A. / B.Sc. GEOGRAPHY

SEMESTER-V

(BS501A) Paper - V: PRINCIPLES OF REMOTE SENSING(4 Credits)

UNIT-I:

1. Basics of Remote Sensing: Definition, History, Advantages, Aerial Photography and Satellite Remote Sensing.
2. Components of Remote Sensing System: Energy Source, Energy-Atmosphere Interaction, Energy-Matter Interaction, Platforms, Sensors, Data handling system, Data Users.
3. Energy Interaction with Atmosphere and Surface Materials: Nature of Electromagnetic Radiation- Electromagnetic Radiation Spectrum Interaction of Electromagnetic Radiation with Atmosphere and with Earth Surface Materials- Spectral Signatures.

UNIT- II:

4. Remote Sensing Platforms: Aircrafts and Satellites.
5. Orbital Characteristics of Sun-synchronous Earth Resource Satellites and Geostationary Communication - Special Purpose Satellites.
6. Remote Sensing Sensors: Types of Sensors, Active and Passive- Framing Systems (Cameras) - Scanning System.

UNIT- III

7. Sensor Characteristics: Spatial Resolution, Spectral Resolution, Radiometric Resolution, Temporal Resolution.
8. Cameras: Single Lens, Multiple Lens, Strip and Digital- Films and Filters.

UNIT- IV

9. Scanners: Cross-track Vs. Along track- Mono-Spectral Vs. Multi-Spectral Scanners.
10. Products: Visual and Digital.
11. Remote Sensing in India: Development and Growth – Satellites.

Basic Texts:

1. Campbell, James B. (1987): Introduction to Remote Sensing, The Guilford Press, New York.
2. Curran P. (1985): Principles of Remote Sensing, Longman, London.
3. Kang-Tsung-Chang (2003): Geographic Information Systems, Tata Mc Graw Hill, New Delhi.
4. Lillisand T. M. and R. W. Kiefer (1997): Remote Sensing and Image Interpretation, John Wiley and Sons, New York.

Additional Texts:

1. Anji Reddy M. (2006): A Text Book of Remote Sensing and Geographical Information Systems, B. S. Publications, Hyderabad.

(BS501B) Paper - VI: (A) GEOGRAPHY OF INDIA(4 Credits)

Unit-I

1. Physical Setting – Location, Structure and Relief, Drainage.
2. Climate – Seasons, Mechanism of Monsoons, Droughts and floods.

Unit-II

3. Population – Size and Growth since 1901, Population Distribution, Literacy, Sex Ratio.
4. Settlement System - Rural Settlement Types and Patterns, Urban Pattern.

Unit-III

5. Natural Vegetation – Major forest type of India and their distribution.
6. Transportation – Types (Roadways, Railways, waterways, Airways) Major Ports.

Unit-IV

7. Resource Base – Livestock (cattle and fisheries), Power (coal, and hydroelectricity), Minerals (iron ore and bauxite).
8. Economy – Agriculture (Rice, Wheat, Sugarcane, Groundnut, Cotton); Industries (Cotton Textile, Iron-Steel, Automobile), Transportation Modes (Road and Rail).

Reading List

1. Hussain M., 1992: *Geography of India*, Tata McGraw Hill Education.
2. Mamoria C. B., 1980: *Economic and Commercial Geography of India*, Shiva Lal Agarwala.
3. Miller F. P., Vandome A. F. and McBrewster J., 2009: *Geography of India: Indo-Gangetic Plain, Thar Desert, Major Rivers of India, Climate of India, Geology of India*, Alphascript Publishing.
4. Nag P. and Sengupta S., 1992: *Geography of India*, Concept Publishing.
5. Pichamuthu C. S., 1967: *Physical Geography of India*, National Book Trust.
6. Sharma T. C. and Coutinho O., 1997: *Economic and Commercial Geography of India*, Vikas Publishing.
7. Singh Gopal, 1976: *A Geography of India*, Atma Ram.
8. Spate O. H. K. and Learmonth A. T. A., 1967: *India and Pakistan: A General and Regional Geography*, Methuen.
9. Rana, Tejbir Singh, 2015, *Diversity of India*, R.K. Books, Delhi.

(BS502) PRACTICAL -V:
REMOTE SENSING LAB AND FIELD SURVEY TECHNIQUES(1 Credit)

1. Air Photographs and Satellite Imageries: Describing the Marginal Information
2. Air Photo Interpretation: Drawing Flight line, Landuse Mapping, Relief and Drainage Mapping using Stereoscope
3. Image Interpretation: Visual methods, Mapping of Landuse, Land Cover, Drainage Network.
4. Chain Survey: Triangulation Method, Open & Closed Traverse.
5. Prismatic Compass Survey: Open & Closed Travers, Intersection method.
6. Plane Table Survey: Intersection method.

Basic Texts:

1. Clarke, Keith C. (1999): Getting Started with Geographic Information Systems, Prentice Hall, New Jersey.
2. Kang-Tsung-Chang (2003): Geographic Information Systems, Tata Mc Graw Hill, New Delhi.
3. Michael F. Goodchild and Karen K. Kemp (1990): Introduction to GIS, National Centre for Geographic Information and Analysis, University of California, Santa Barbara.
4. Monkhouse F. J. and Wilkinson M. R. (1963): Maps and Diagrams, Methuen, London.
5. Misra R. P. and Ramesh A. (1989): Fundamentals of Cartography, Concept, New Delhi.
6. Robinson A. H. (1995): Elements of Cartography, John Willey, New York.

Additional Texts:

1. Anji Reddy M. (2006): A Text Book of Remote Sensing and Geographical Information Systems. B.S. Publications, Hyderabad.
2. DeMers Michel N. (1997): Fundamentals of Geographic Information Systems, John Wiley and Sons, New York.
3. Lillisand T. M. and R.W. Kiefer (1997): Remote Sensing and Image Interpretation, John Wiley and Sons, New York.
4. Gopal Singh (1996): Map work and Practical Geography, Vikas Publishing, New Delhi.
5. Negi B.S. (1998): Practical Geography, Kedarnath and Ramnath, Meerut.

SEMESTER-VI

(BS 601A) Paper - VII: GEOGRAPHIC INFORMATION SYSTEM (GIS)

(4 Credits)

UNIT -I:

1. GIS: Definition, Contributing Disciplines, Functions, Data Capture / Input, Data Storage, Data Retrieval, Data Analysis, Data Output.
2. Components of Geographic Information Systems: Hardware Components, Software Components, Brain-ware Components and Organizational set up.
3. Data Input and Editing: Data Types, Spatial and Attribute data, Raster and Vector Sources of GIS data.

UNIT- II:

4. Methods of Data input (Keyboard Entry, Digitizing, Scanning), GPS and its Application.
5. Database Management System: Definition and Functions, Data Analysis and Modeling, Data Conversion (Format, Structure, and Medium Conversion).

UNIT- III

6. Spatial Measurements (Counting, Measuring length and Calculating Area), Reclassification, Buffering (Point, Line, Polygon, Doughnut).
7. Overlay Analysis.

UNIT- IV

8. Surface Modeling (DEM, DTM & DSM).
9. Network Modeling.
10. RS and GIS Integration, GIS Applications (Urban / Agricultural / Landform Studies).

Basic Texts:

1. Clarke, Keith C. (1999): Getting Started with Geographic Information Systems, Prentice Hall, New Jersey.
2. Kang-Tsung-Chang (2003): Geographic Information Systems, Tata Mc Graw Hill, New Delhi.
3. Michael F. Goodchild and Karen K. Kemp (1990): Introduction to GIS, National Centre for Geographic Information and Analysis, University of California, Santa Barbara.

Additional Texts:

6. Anji Reddy M. (2006): A Text Book of Remote Sensing and Geographical Information Systems. B.S. Publications, Hyderabad.
7. DeMers Michel N. (1997): Fundamentals of Geographic Information Systems, John Wiley and Sons, New York.
8. Lillisand T. M. and R.W. Kiefer (1997): Remote Sensing and Image Interpretation, John Wiley and Sons, New York.

(BS601B) Paper VIII: (A) Geography of Telangana (4 Credits)

Unit-I

1. Physical Setting – Location, Structure and Relief, Drainage and Climate.
2. Types of Irrigation - Tanks, Canals and Wells; Major Projects – Nagarjunasagar, Srisailem and Sriram Sagar- Drought Vulnerability, Mission Kakatiya.

Unit-II

3. Population – Size and Growth since 1901, Population Distribution, Density, Literacy, Sex Ratio.
4. Settlement System – Rural and Urban, Urban growth and pattern -Major Urban centres – Hyderabad and Warangal.

Unit-III

5. Natural Vegetation – Major forest types in Telangana and their distribution.
6. Irrigation – Types (Canal, Tank, Well) and Major irrigation projects

UNIT IV

7. Resource Base – Livestock (cattle and fisheries), Power (coal and hydroelectricity), Minerals (iron ore and limestone).
8. Economy – Agriculture (Rice, Cotton, Maize, Groundnut); Industries (Cement, Pharma, Knowledge based-IT&ITES), Transportation Modes (Road and Rail).

REFERENCES:

1. Mahendra Dev S, C.Ravi, M.Venkatnarayana (2009): Human Development in Andhra Pradesh – Experiences, Issues and Challenges, CESS, Hyderabad-16.
2. Rao, Ch and Mahendra Dev S (eds.) (2003): Andhra Pradesh Development: Economic Reforms and Challenges, CESS, Hyderabad-16
3. Planning Atlas of Andhra Pradesh, Department of Geography, Osmania University
4. Economic Survey of Andhra Pradesh, Planning Department.
5. Government of Andhra Pradesh Planning Department: Perspective Plans for Telangana, Coastal Andhra and Rayalaseema in (1997).
6. Fifty years of Andhra Pradesh (1956-2005): Centre for Documentation, Research and Communications (2008).
7. Venkat Ram Reddy and Kosal Ram: Multilevel Planning of Andhra Pradesh, Published by CESS, Hyderabad. Department of Geography
8. Socio-Economic Outlook 2015 (Planning Department of the Government of Telangana).
9. Statistical Year book-2015, Telangana, Directorate of Economics & statistics.

(BS602) PRACTICAL -VII: GIS LAB(1 Credit)

1. Scale of Measurement: Nominal, Ordinal, Interval, Ratio.
2. Data Mode: Spatial Data (Location: Point, Line, Polygon, Attributes and Temporal), Vector Data Generation, Raster Data Creation, Raster Data Values, Spatial Relations (P to P, P to L, P to A, L to L, L to A, A to A).
3. Data Inputting: Manual, Digitizing and Scanning.
4. Raster and Vector GIS Capabilities: Display, Query, Overlay, Buffering.

Basic Texts:

1. Clarke, Keith C. (1999): Getting Started with Geographic Information Systems, Prentice Hall, New Jersey.
2. Kang-Tsung-Chang (2003): Geographic Information Systems, Tata Mc Graw Hill, New Delhi.
3. Michael F. Goodchild and Karen K. Kemp (1990): Introduction to GIS, National Centre for Geographic Information and Analysis, University of California, Santa Barbara.

Additional Texts:

4. Anji Reddy M. (2006): A Text Book of Remote Sensing and Geographical Information Systems. B.S. Publications, Hyderabad.
5. DeMers Michel N. (1997): Fundamentals of Geographic Information Systems, John Wiley and Sons, New York.
6. Lillisand T. M. and R.W. Kiefer (1997): Remote Sensing and Image Interpretation, John Wiley and Sons, New York.

(BS603) :Project work /Optional (4 Credit)

1. Fieldwork methods and techniques.
2. Village/Urban Study: Socio-economic and Physiographic study.
3. Educational Tour: Observations, Measurements, Interviews, data collection, data Analysis, Report Writing.
4. Based on Physiographic study or socio-economic survey, prepare a critical field-survey report. Photographs and sketches, in addition to maps and diagrams, may supplement the report.

Books Recommended:

1. Gregory,S, 1980. Statistical methods and the Geographer, Longman, London.
2. Mahmood, A. 1986. Statistical Methods in Geographical Studies, Rajesh Pub., New Delhi.
3. Ibrahim, R., 1992. Socio-Economic Profile of Mewat, Radha Publishers, New Delhi.
4. Robinson, A.H. 1978. Elements of Cartography, John Wiley , New York.
5. Raisz, E. 1962. Principles of Cartography, Mc Graw Hill, New York.
6. Burt J.E. Barber. G.E. Rigby D.L. (2009). Elementary Statistics for Geographers, Guilford Press, New York.

The students have to visit a landscape/village/town to conduct Physiographic study/socio-Economic survey. Each student will be required to submit a survey report to be evaluated by external and internal examiner.

Skill Enhancement Course (SEC 1)
Semester III

BS-303: Travel and Tourism (2 Credits)

Unit - I

1. Type of Tourism: Nature Tourism, Cultural Tourism, Medical Tourism, Pilgrimage.
2. Recent Trends of Tourism: International and Regional; Domestic (India); Eco-Tourism, Sustainable Tourism, Meetings, Incentives, Conventions and Exhibitions (MICE).

Unit - II

3. Travel Formalities, Travel Agency and Tour Operation Business – Functions.
4. Tourism in India: Tourism Infrastructure; Case Studies of Himalaya, Desert and Coastal and Heritage; National Tourism Policy.

Reading List

1. Dhar, P.N. (2006) International Tourism: Emerging Challenges and Future Prospects. Kanishka, New Delhi.
2. Hall, M. and Stephen, P. (2006) Geography of Tourism and Recreation – Environment, Place and Space, Routledge, London.
3. Kamra, K. K. and Chand, M. (2007) Basics of Tourism: Theory, Operation and Practise, Kanishka Publishers, Pune.
4. Page, S. J. (2011) Tourism Management: An Introduction, Butterworth-Heinemann- USA. Chapter 2.
5. Raj, R. and Nigel, D. (2007) Morpeth Religious Tourism and Pilgrimage Festivals Management: An International perspective by, CABI, Cambridge, USA, www.cabi.org.
6. Tourism Recreation and Research Journal, Center for Tourism Research and Development, Lucknow
7. Singh Jagbir (2014) “Eco-Tourism” Published by - I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India

Skill Enhancement Course (SEC 2)
Semester IV

BS-304: Surveying Techniques and Cartography (2 Credits)

Unit - I

1. Surveying: Chain Survey - Triangulation Method, Open & Closed Traverse.
2. Prismatic Compass Survey: Open & Closed Travers, Intersection method.
3. Plane Table Survey: Intersection method.

Unit - II

4. Maps: Map Scale – Types and Application, Reading Distances on a Map.
5. Representation of Data – Symbols, Dots, Choropleth, Isopleth and Flow Diagrams, Interpretation of Thematic Maps.

Basic Texts:

1. Monkhouse F. J. and Wilkinson M. R. (1963): Maps and Diagrams, Methuen. London.
2. Misra R. P. and Ramesh A. (2015): Fundamentals of Cartography, Concept, New Delhi.
3. Robinson A. H. (1995): Elements of Cartography, John Willey. New York.

Additional Texts:

4. Gopal Singh (1996): Map work and Practical Geography, Vikas Publishing, New Delhi.
5. Negi B.S. (1998): Practical Geography, Kedarnath and Ramnath, Meerut.

Skill Enhancement Course (SEC 3)
Semester IV

BS-403: Remote Sensing and GPS (2 Credits)

Unit - I

1. Remote Sensing: Definition, Development, Platforms and Types.
2. Satellite Remote Sensing: Principles, EMR Interaction with Atmosphere and Earth Surface; Satellites (Landsat and IRS) and Sensors.

Unit - II

3. Interpretation and Application of Remote Sensing: Land use/ Land Cover.
4. Global Positioning System (GPS) – Principles and Uses

Reading List

1. Campbell J. B., 2007: *Introduction to Remote Sensing*, Guildford Press.
2. Jensen J. R., 2004: *Introductory Digital Image Processing: A Remote Sensing Perspective*, Prentice Hall.
3. Joseph, G. 2005: *Fundamentals of Remote Sensing*, United Press India.
4. Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: *Remote Sensing and Image Interpretation*, Wiley. (Wiley Student Edition).
5. Nag P. and Kudra, M., 1998: *Digital Remote Sensing*, Concept, New Delhi.
6. Rees W. G., 2001: *Physical Principles of Remote Sensing*, Cambridge University Press.
7. Singh R. B. and Murai S., 1998: *Space-informatics for Sustainable Development*, Oxford and IBH Pub.
8. Wolf P. R. and Dewitt B. A., 2000: *Elements of Photogrammetry: With Applications in GIS*, McGraw-Hill.

Skill Enhancement Course (SEC 4)

Semester IV

BS-404: GIS based Project Report (2 Credits)

Unit - I

1. Geographical Information System (GIS): Definition and Components.
2. GIS Data Structures: Types (spatial and Non-spatial), Raster and Vector Data Structure.

Unit - II

3. GIS Data Analysis: Input; Geo-Referencing; Editing and Output; Overlays
4. Application of GIS in Land Use/Land Cover, Urban Sprawl and Forests Monitoring

Reading List

1. Bhatta, B. (2010) Analysis of Urban Growth and Sprawl from Remote Sensing, Springer, Berlin Heidelberg.41
2. Burrough, P.A., and McDonnell, R.A. (2000) Principles of Geographical Information System-Spatial Information System and Geo-statistics. Oxford University Press
3. Chauniyal, D.D. (2010) Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad
4. Heywoods, I., Cornelius, S and Carver, S. (2006) An Introduction to Geographical Information system. Prentice Hall.
5. Jha, M.M. and Singh, R.B. (2008) Land Use: Reflection on Spatial Informatics Agriculture and Development, New Delhi: Concept.
6. Nag, P. (2008) Introduction to GIS, Concept India, New Delhi.
7. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
8. Singh, R.B. and Murai, S. (1998) Space Informatics for Sustainable Development, Oxford and IBH, New Delhi.

Generic Elective (GE 1)

BS-503: Climate Change and Disaster Management (4 Credits)

Unit - I

1. Science of Climate Change: Understanding Climate Change; Green House Gases and Global Warming; Global Climatic Assessment- IPCC
2. Climate Change and Vulnerability: Physical Vulnerability; Economic Vulnerability; Social Vulnerability

Unit - II

3. Impact of Climate Change: Agriculture and Water; Flora and Fauna; Human Health
4. Adaptation and Mitigation: Global Initiatives with Particular Reference to South Asia; National Action Plan on Climate Change; Local Institutions (Urban Local Bodies, Panchayats)

Unit – III

1. Disasters: Definition and Concepts: Hazards, Disasters; Risk and Vulnerability;
2. Disasters in India: Earthquakes , Tsunami, Cyclones, Floods and Drought: Causes, Impact, Distribution and Mapping.

Unit – IV

3. Landslides and Manmade disasters: Causes, Impact, Distribution and Mapping.
4. Response and Mitigation to Disasters: Mitigation and Preparedness, NDMA and NIDM. Indigenous Knowledge and Community-Based Disaster Management; Do's and Don'ts During Disasters.

Reading List

1. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
2. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
3. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3
4. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
5. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
6. Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Volume 1. Advances in Geographical and Environmental Studies, Springer
7. Sen Roy, S. and Singh, R.B. (2002) Climate Variability, Extreme Events and Agricultural Productivity in Mountain Regions, Oxford.