Syllabus
GEOGRAPHY
(UG courses)
Admitted Batch 2008 -2009

Andhra University

May 2008
A.P. State Council of Higher Education
MODEL CURRICULUM DEVELOPMENT IN GEOGRAPHY
AT UNDERGRADUATE LEVEL

SUBJECT COMMITTEE

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   Department of Geography
   Sri Krishnadevaraya University
   ANANTAPUR – 515 055 (Coordinator)

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   Department of Geography
   Sri Krishnadevaraya University
   ANANTAPUR – 515 055

3. Prof. Vijaya Bhole
   Department of Geography
   Osmania University
   HYDERABAD – 500 007

4. Prof. A. Kamalakara Reddy
   Department of Geography
   Osmania University
   HYDERABAD – 500 007

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   S.V. University
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7. Dr. T.M. Venkatachari
   Lecturer in geography
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   RAJAHMUNDRY

8. Sri S. Veerabhadra Reddy
   Lecturer in Geography
   S.K.S.C. Degree College
   PRODDATUR

9. Prof. S. Subbaiah
   Former Professor of Geography
   University of Madras
   CHENNAI – 600 005
# MODEL CURRICULUM

## B.Sc. Courses (Structure)

### First year:

<table>
<thead>
<tr>
<th>S.no.</th>
<th>Subject</th>
<th>Hrs per week</th>
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<tbody>
<tr>
<td>1.</td>
<td>English language including communication skills</td>
<td>6</td>
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<tr>
<td>2.</td>
<td>Second language</td>
<td>4</td>
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<tr>
<td>3.</td>
<td>Core1-I</td>
<td>4</td>
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<tr>
<td>4.</td>
<td>Core2-I</td>
<td>4</td>
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<tr>
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<td>6.</td>
<td>Core1-lab I</td>
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<td>7.</td>
<td>Core2-lab I</td>
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<td>8.</td>
<td>Core3-lab I</td>
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<tr>
<td>9.</td>
<td>Foundation course</td>
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<tr>
<td>10.</td>
<td>Computer skills</td>
<td>2</td>
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<td><strong>Total</strong></td>
<td><strong>36</strong></td>
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### Second year:

<table>
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<th>S.no.</th>
<th>Subject</th>
<th>Hrs per week</th>
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<tbody>
<tr>
<td>1.</td>
<td>English language including communication skills</td>
<td>6</td>
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<tr>
<td>2.</td>
<td>Second language</td>
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<td>3.</td>
<td>Core1-II</td>
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<td>4.</td>
<td>Core2-II</td>
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<td>Core3-II</td>
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<td>6.</td>
<td>Core1-lab II</td>
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<td>7.</td>
<td>Core2-lab II</td>
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<td>8.</td>
<td>Core3-lab II</td>
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<tr>
<td>9.</td>
<td>Environmental studies</td>
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<td>Computer skills</td>
<td>2</td>
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<td><strong>Total</strong></td>
<td><strong>37</strong></td>
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### Third year:

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<th>Subject</th>
<th>Hrs per week</th>
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<tbody>
<tr>
<td>1.</td>
<td>Core1-III</td>
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<tr>
<td>2.</td>
<td>Core1-IV</td>
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<tr>
<td>3.</td>
<td>Core2-III</td>
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<td>4.</td>
<td>Core2-IV</td>
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<td>Core3-III</td>
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<td>7.</td>
<td>Core1-lab III</td>
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<td>8.</td>
<td>Core1-lab IV</td>
<td>3</td>
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<td>9.</td>
<td>Core2-lab III</td>
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<td>Core2-lab IV</td>
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<td>Core3-lab III</td>
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<td>Core3-lab IV</td>
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<td>13.</td>
<td>Foundation course</td>
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<td><strong>Total</strong></td>
<td><strong>39</strong></td>
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# Geography – Scheme of instruction

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Title</th>
<th>Marks</th>
<th>Number of Lectures (hours) required during the academic year</th>
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<tbody>
<tr>
<td>FIRST YEAR</td>
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<tr>
<td>Paper - 1</td>
<td>Fundamentals of Physical Geography</td>
<td>100</td>
<td>120 hours (4 hours a week)</td>
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<tr>
<td>Lab - 1</td>
<td>Elements of Mapping</td>
<td>75</td>
<td>90 hours (3 hours a week)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>30 sessions</td>
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<tr>
<td>SECOND YEAR</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Paper - 2</td>
<td>Human and Economic Geography</td>
<td>100</td>
<td>120 hours (4 hours a week)</td>
</tr>
<tr>
<td>Lab - 2</td>
<td>Maps and Diagrams</td>
<td>75</td>
<td>90 hours (3 hours a week)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30 sessions</td>
</tr>
<tr>
<td>THIRD YEAR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper – 3</td>
<td>Regional Geography of India</td>
<td>100</td>
<td>90 hours (3 hours a week)</td>
</tr>
<tr>
<td>Paper – 4</td>
<td>Remote Sensing and GIS</td>
<td>100</td>
<td>90 hours (3 hours a week)</td>
</tr>
<tr>
<td>Lab – 3</td>
<td>Map Projections and Field Survey</td>
<td>75</td>
<td>90 hours (3 hours a week)</td>
</tr>
<tr>
<td></td>
<td>and Study</td>
<td></td>
<td>30 sessions</td>
</tr>
<tr>
<td>Lab – 4</td>
<td>GIS and Remote Sensing</td>
<td>75</td>
<td>90 hours (3 hours a week)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>30 sessions</td>
</tr>
</tbody>
</table>

1. i) Each theory paper carries 100 marks of 3 hours duration of examination.
   ii) Each Practical (Lab) carries 75 marks of 3 hours duration of examination.

2. For conducting practicals and practical examinations each batch of students shall not exceed 10 students.

3. Geography at undergraduate level shall be taken as one of the core subjects in both B.Sc. and B.A. streams of study.
FIRST YEAR SYLLABUS OF B.A. / B.Sc. GEOGRAPHY

PAPER – I: FUNDAMENTALS OF PHYSICAL GEOGRAPHY

Unit-1: Earth Dynamics
- Land and Sea: Formation and distribution;
- Theories: Isostasy, Continental Drift, Plate Tectonics
- Interior of Earth
- Earthquakes
- Volcanoes
- Rocks
- Weathering and Mass-wasting

Unit-2: Geomorphology
- Processes and Landform Development
- River: Flow and Work – erosion, transportation, deposition – landforms
- Wind: Air flow and Work - erosion, transportation, deposition – landforms – desert formations
- Marine: Waves and Currents and Work - erosion, transportation, deposition – shoreline and landforms
- Glacial: Types, Movements and Work – erosion, transportation and deposition - landforms

Unit-3: Climatology
- Weather and Climate, Elements of Weather
- Atmosphere: Structure and Composition
- Insolation: Factors influencing the incidence and distribution
- Temperature: Horizontal and Vertical Distribution
- Pressure: Influencing factors – High and Low Pressure Areas, Global Pressure Belts
- Winds: Local, Periodic and Planetary
- Cyclones – Formation, Distribution and Impacts: Tropical and Temperate
- Humidity: Absolute and Relative
- Clouds: Types, Formation and Potentials
- Precipitation: Types, Formation, Distribution

Unit-4: Oceanography
- Submarine Relief: Continental Shelf, Continental Slope, Abyssal Plain, Ocean Deeps and Trenches, Mid-Oceanic ridges
- Temperature: Horizontal and Vertical Distribution
- Salinity: Factors and Distribution
- Waves and Tides: Types and Formation
- Ocean Currents: Types and Factors Responsible - Currents of Atlantic, Pacific and Indian Oceans
- Ocean deposits – Types and Distribution

120 hrs
(4 hrs/week)
Basic Texts:


Additional Texts:

FIRST YEAR B.A. / B.Sc. GEOGRAPHY PRACTICAL – SYLLABUS

90 hrs
(3 hrs/week)

PRACTICAL – I : ELEMENTS OF MAPPING


2. Scales: Classification – Statement – Representative Fraction (R.F.) –
   Construction of Linear – Diagonal – Conversion of Scales

3. Representation of Relief – Spot heights, Bench marks, Layer colouring, Contours –
   Hachures and Hill shading

4. Contours: Drawing and Contour Interval – Drawing of Cross profiles and
   landform Identification and description: Plateau – Ridge – Conical hill – U-
   shaped valley – V-shaped valley – Gorge – Spur - Cliff – Escarpment
   Measurement and description of Slopes: Convex, Concave, Uniform and
   Terraced

5. Profile drawing and Interpretation: Simple Profile – Composite profile – Super
   imposed profile – Projected profile

6. Map Interpretation
   Topographical Map – Conventional Signs and Interpretation
   Weather Map – Weather symbols and interpretation

Basic Texts


Additional Texts

   New Delhi.
2. Singh, R.L. and Dutt, P.K. (1968) Elements of Practical Geography, Students Friends,
   Allahabad.
SECOND YEAR SYLLABUS OF B.A. / B.Sc. GEOGRAPHY

PAPER – II : HUMAN AND ECONOMIC GEOGRAPHY

Unit-1: Perspectives
Nature and Objectives of Human and Economic Geography
Man and Environment: Physical and Cultural environment
Human activities – Primary – Secondary – Tertiary – Quaternary
Resources: Classification, Conservation and Management, Sustainability

Unit-2: Population and Settlement
Human Races: Origin, Classification, Characteristics and Distribution. Cultural Realms of the World
Population: World population – growth and distribution – Demographic Transition
Human Migration: Types, Causes and Consequences of Migration, Indian Diaspora

Unit-3: Resources
Agriculture: Landuse and Special Economic Zones, Crop Pattern and Production, Location Model of Von Thunen
Livestock: Development and Distribution – Dairying, Meat and Woolen
Fisheries: Major Fishing grounds of the World – Production and Trade
Forest: Types, Distribution and Forest Products – Wild Life
Minerals: Metallic (Iron Ore, Copper) – Non-metallic (Limestone and Mica) – Fuels (Coal and Petroleum) – Locations and Potentials – Mining and Trade

Unit-4: Industry, Transport and Trade
Transport: Roadways, Railways, Waterways and Airways
Trade: International Trade, Major Exports and Imports, Balance of Trade – WTO and Developing Countries

Basic Texts

Additional Texts

SECOND YEAR B.A. / B.Sc. GEOGRAPHY PRACTICAL – SYLLABUS

PRACTICAL – II: MAPS AND DIAGRAMS

1. Data: Primary and Secondary – Classification
2. Diagrams: (i) One Dimensional: Line Graph – Poly Graph – Bar Graph – Pyramid Graph – Simple and Compound Diagram, Pie Diagram
   (ii) Two Dimensional: Squares and Rectangles
   (iii) Three dimensional: Spheres and Blocks
   (iv) Climatic Diagrams: Climo Graph, Hyther Graph, Wind Rose
   (ii) Flow Chart

Basic Texts


Additional Texts

BOOKS RECOMMENDED

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

PAPER – III : REGIONAL GEOGRAPHY OF INDIA

UNIT-1: Physical Setting
Locational aspects and advantages – Major physical divisions – Drainage system - Climate – Mechanism of Indian monsoons – Drought prone and Flood prone regions – Natural vegetation – Soil types

UNIT-2: Cultural Settings
Racial and ethnic diversities - Major tribes – Language - Religion and Tradition and Cultural regions
Population – Growth, distribution, Sex-ratio, Age-structure, problems and policies, Literacy rate – Work-force – Migration
Settlement Patterns – Rural and Urban Growth - Urbanisation

UNIT-3: Economic Settings
Resources - Land, Water, Energy (Coal and Petroleum; Hydel, Thermal, Atomic and wind), Minerals (Iron ore, Manganese, Copper, Mica) – utilization and conservation; Agriculture - Types (subsistence and commercial; intensive and extensive and plantation), Irrigation, Land tenure and Land reforms, Cropping pattern and Green revolution, Livestock and White revolution, Aquaculture, Problems of Indian Agriculture
Industry – Study of Iron and Steel, Cotton textiles, and Oil refineries, and Industrial regions
Transport – Road ways, Railways, Water ways, Airways – Growth and distribution Regional Development: Regions – Sharing of Resources – Efforts of Five Year Plans

UNIT-4: Andhra Pradesh
Physical aspects – Relief, Drainage, Climate, Vegetation and Soils
Resource base – Fuel and mineral wealth
Population – Growth and distribution, Rural and Urban population, Urbanization
Agriculture: Irrigation development, Major irrigation projects, Cropping pattern, Production and Potentials

Basic Texts

Additional Texts:
THIRD YEAR B.A./B.Sc. GEOGRAPHY PRACTICAL – SYLLABUS

PRACTICAL –III : PROJECTIONS AND FIELD SURVEY AND STUDY

**Projections:** Constructions and Uses
Conical Projections: One Standard Parallel, Two Standard Parallel, Bonne’s
Cylindrical Projections: Equal area, Equal distant, Mercator
Zenithal Projections (Polar cases only): Stereographic, Gnomonic, Zenithal
Equidistant and Equal Area
Conventional: Mollweide, Sinusoidal.

**FIELD SURVEY**
i) Chain Survey: Triangulation Method – Closed Traverse & Open Traverse
ii) Prismatic Compass Survey: Open and Closed Travers – Intersection method
iii) Plane Table Survey: Intersection method
iv) Village / Urban Study: Socio-economic or Physiographic study – Educational
Tour: Observations, Measurements, Interviews, data collection, data Analysis, Report Writing

**Basic Texts:**

**Additional Texts:**
PAPER IV: REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEMS (GIS)

UNIT – I: Remote Sensing

Basics of Remote Sensing: Definition, History, Advantages

Components of Remote Sensing System:
Energy Source, Energy-Atmosphere Interaction, Energy-Matter Interaction,
Platforms, Sensors, Data handling system, Data Users

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: Remote Sensing: Platforms and Sensors and Products

Remote Sensing Platforms: Aircrafts and Satellites
Orbital Characteristics of Sun-synchronous Earth Resource Satellites and Geostationary
Communication – Special Purpose Satellites

Remote Sensing Sensors:
Types of Sensors: Active and Passive – Framing Systems (Cameras) – Scanning Systems
Sensor Characteristics: Spatial Resolution, Spectral Resolution, Radiometric Resolution,
Temporal Resolution.
Cameras: Single Lens, Multiple Lens, Strip and Digital – Films and Filters
Scanners: Cross-track Vs. Along-track – Mono-Spectral Vs. Multi-Spectral Scanners
Products: Visual and Digital
Remote Sensing in India: Development and Growth – Satellites

UNIT – III: Geographic Information Systems (GIS)

GIS: Definition – Contributing Disciplines – Functions – Data Capture/Input, Data Storage,
Data Retrieval, Data Analysis, Data Output

Components of Geographic Information Systems: Hardware Components, Software
Components, Brain-ware Components and Organizational set up

Data Input and Editing: Data Types: Spatial and Attribute data – Raster and Vector
Sources of GIS data
Methods of Data input (Keyboard Entry, Digitizing, Scanning) – GPS and Its Application
UNIT - IV : Geographic Information Systems

Data Base Management System: Definitions and Functions

Data Analysis and Modeling:
Data Conversion (Format, Structure, and Medium Conversion)
Spatial Measurements (Counting, Measuring lengths and Areas)
Reclassification, Buffering (Point, Line, Area, Doughnut),
Overlay Analysis
Modeling Surfaces (DTMs)
Modeling Networks

Remote Sensing and GIS: Integration – GIS Application (Urban / Agricultural / Landform Studies)

Basic Texts:

Additional Texts:
THIRD YEAR B.A./B.Sc. GEOGRAPHY PRACTICAL – SYLLABUS

PRACTICAL IV : GIS AND REMOTE SENSING

Unit I : GIS
1. Scale of Measurement: Nominal, Ordinal, Interval, Ratio
2. Data Mode: Spacial Data (Location: Point, line, polygon; attributes; time),
   Creating a Vector Data, Creating a Raster Data, Raster Data Values, Spacial
   Relations (point-point, point-line, point-area, line-line, line-area, area-area)
3. Data Input: Manual, Digitising, Scanning
4. Raster and Vector GIS Capabilities: Display, Query, Overlay, Buffering.

Unit II: Remote Sensing
5. Air Photographs and Satellite Imageries: Describing the Marginal Information
6. Air Photo Interpretation: Using Stereoscope, Stereoscopic Vision Test, Flightline
   Marking, Landuse Mapping, Relief and Drainage Mapping
7. Imagery Interpretation: Visual Methods – Mapping of Landuse / Land Cover /
   Drainage

Basic Texts:

   York.
   Prentice Hall, New Jersey,
   Delhi
   Geographic Information and Analysis, University of California, Santa Barbara.

Additional Texts:

   Information Systems, B.S. Publications, Hyderabad.
   Wiley and Sons, New York.
   John Wiley and Sons, New York.
FIRST YEAR SYLLABUS OF B.A. / B.Sc. GEOGRAPHY

WORKLOAD PARTICULARS

PAPER - I: FUNDAMENTALS OF PHYSICAL GEOGRAPHY (120 hours per annum)

Unit-1: Earth Dynamics (30 hours)
- Land and Sea: Formation and distribution (4 hours)
- Theories: Isostasy, Continental Drift, Plate Tectonics (6 hours)
- Interior of Earth (4 hours)
- Earthquakes (4 hours)
- Volcanoes (4 hours)
- Rocks (4 hours)
- Weathering and Mass-wasting (4 hours)

Unit-2: Geomorphology (20 hours)
- Processes and Landform Development
  - River: Flow and Work – erosion, transportation, deposition – landforms (4 hours)
  - Wind: Air flow and Work - erosion, transportation, deposition – landforms – desert formations (4 hours)
  - Marine: Waves and Currents and Work - erosion, transportation, deposition – shoreline and landforms (4 hours)
  - Glacial: Types, Movements and Work – erosion, transportation and deposition – landforms (4 hours)

Unit-3: Climatology (40 hours)
- Weather and Climate, Elements of Weather (2 hours)
- Atmosphere: Structure and Composition (6 hours)
- Insolation: Factors influencing the incidence and distribution (2 hours)
- Temperature: Horizontal and Vertical Distribution (4 hours)
- Pressure: Influencing factors – High and Low Pressure Areas, Global Pressure Belts (5 hours)
- Winds: Local, Periodic and Planetary (6 hours)
- Cyclones – Formation, Distribution and Impacts: Tropical and Temperate (4 hours)
- Humidity: Absolute and Relative (2 hours)
- Clouds: Types, Formation and Potentials (4 hours)
- Precipitation: Types, Formation, Distribution (5 hours)

Unit-4: Oceanography (30 hours)
- Submarine Relief: Continental Shelf, Continental Slope, Abyssal Plain, Ocean Deeps and Trenches, Mid-Oceanic ridges (6 hours)
- Temperature: Horizontal and Vertical Distribution (4 hours)
- Salinity: Factors and Distribution (4 hours)
- Waves and Tides: Types and Formation (4 hours)
- Ocean Currents: Types and Factors Responsible - Currents of Atlantic, Pacific and Indian Oceans (8 hours)
- Ocean deposits – Types and Distribution (4 hours)
FIRST YEAR B.A. / B.Sc. GEOGRAPHY PRACTICAL – SYLLABUS

WORKLOAD PARTICULARS

PRACTICAL – I: ELEMENTS OF MAPPING (90 hours per annum)


9. Representation of Relief – Spot heights, Bench marks, Layer colouring, Contours – Hachures and Hill shading (14 hours)


11. Profile drawing and Interpretation: Simple Profile – Composite profile – Super imposed profile – Projected profile (15 hours)

12. Map Interpretation
   Topographical Map – Conventional Signs and Interpretation
   Weather Map – Weather symbols and interpretation (15 hours)
SECOND YEAR SYLLABUS OF B.A. / B.Sc. GEOGRAPHY

WORKLOAD PARTICULARS

PAPER – II : HUMAN AND ECONOMIC GEOGRAPHY (120 hours per annum)

Unit-1: Perspectives (20 hours)
- Nature and Objectives of Human and Economic Geography (4 hours)
- Man and Environment: Physical and Cultural environment (5 hours)
- Human activities – Primary – Secondary – Tertiary – Quaternary (5 hours)
- Resources: Classification, Conservation and Management, Sustainability (6 hours)

Unit-2: Population and Settlement (35 hours)
- Human Races: Origin, Classification, Characteristics and Distribution. Cultural Realms of the World (7 hours)
- Population: World population – growth and distribution – Demographic Transition (12 hours)
- Human Migration: Types, Causes and Consequences of Migration, Indian Diaspora (6 hours)
- Human Settlements: Forms, Structure, Functions and Patterns – Rural and Urban settlements – Urbanisation – Impacts of Urbanisation (10 hours)

Unit-3: Resources (35 hours)
- Agriculture: Landuse and Special Economic Zones, Crop Pattern and Production, Location Model of Von Thunen (10 hours)
- Livestock: Development and Distribution – Dairying, Meat and Woolen (6 hours)
- Fisheries: Major Fishing grounds of the World – Production and Trade (5 hours)
- Forest: Types, Distribution and Forest Products – Wild Life (6 hours)
- Minerals: Metallic (Iron Ore, Copper) – Non-metallic (Limestone and Mica) – Fuels (Coal and Petroleum) – Locations and Potentials – Mining and Trade (8 hours)

Unit-4: Industry, Transport and Trade (30 hours)
- Transport: Roadways, Railways, Waterways and Airways (8 hours)
- Trade: International Trade, Major Exports and Imports, Balance of Trade – WTO and Developing Countries (7 hours)
SECOND YEAR B.A. / B.Sc. GEOGRAPHY PRACTICAL – SYLLABUS

WORKLOAD PARTICULARS

PRACTICAL - II: MAPS AND DIAGRAMS (90 hours per annum)

4. Data: Primary and Secondary – Classification (6 hours)
5. Diagrams: (i) One Dimensional: Line Graph – Poly Graph – Bar Graph – Pyramid Graph – Simple and Compound Diagram, Pie Diagram (32 hours)
   (ii) Two Dimensional: Squares and Rectangles (10 hours)
   (iii) Three dimensional: Spheres and Blocks (10 hours)
   (iv) Climatic Diagrams: Climo Graph, Hyther Graph, Wind Rose (6 hours)

   (ii) Flow Chart (6 hours)
THIRD YEAR SYLLABUS OF B.A / B.Sc. GEOGRAPHY

WORKLOAD PARTICULARS

PAPER – III : REGIONAL GEOGRAPHY OF INDIA (90 hours per annum)

UNIT-1:Physical Setting (25 hours)
Locational aspects and advantages (3 hours) – Major physical divisions (5 hours) – Drainage system (3 hours) - Climate – Mechanism of Indian monsoons – Drought prone and Flood prone regions (8 hours) – Natural vegetation (3 hours) – Soil types (3 hours)

UNIT-2:Cultural Settings (20 hours)
Racial and ethnic diversities - Major tribes – Language - Religion and Tradition and Cultural regions (6 hours)
Population – Growth, distribution, Sex-ratio, Age-structure, problems and policies, Literacy rate – Work-force – Migration (10 hours)
Settlement Patterns – Rural and Urban Growth – Urbanisation (4 hours)

UNIT-3:Economic Settings (30 hours)
Resources - Land, Water, Energy (Coal and Petroleum; Hydel, Thermal, Atomic and wind), Minerals (Iron ore, Manganese, Copper, Mica) – utilization and conservation (6 hours);
Agriculture - Types (subsistence and commercial; intensive and extensive and plantation), Irrigation, Land tenure and Land reforms, Cropping pattern and Green revolution, Livestock and White revolution, Aquaculture, Problems of Indian Agriculture (10 hours)
Industry – Study of Iron and Steel, Cotton textiles, and Oil refineries, and Industrial regions (8 hours)
Transport – Road ways, Railways, Water ways, Airways – Growth and distribution (4 hours)
Regional Development: Regions – Sharing of Resources – Efforts of Five Year Plans (2 hours)

UNIT-4:Andhra Pradesh (15 hours)
Physical aspects – Relief, Drainage, Climate, Vegetation and Soils (5 hours)
Resource base – Fuel and mineral wealth (3 hours)
Population – Growth and distribution, Rural and Urban population, Urbanization (4 hours)
Agriculture: Irrigation development, Major irrigation projects, Cropping pattern, Production and Potentials (3 hours)
THIRD YEAR B.A./B.Sc. GEOGRAPHY PRACTICAL – SYLLABUS

WORKLOAD PARTICULARS

PRACTICAL –III: PROJECTIONS AND FIELD SURVEY AND STUDY (90 hours per annum)

**Projections:** Constructions and Uses (2 hours)
- Conical Projections: One Standard Parallel, Two Standard Parallel, Bonne’s (12 hours)
- Cylindrical Projections: Equal area, Equal distant, Mercator (14 hours)
- Zenithal Projections (Polar cases only): Stereographic, Gnomonic, Zenithal Equidistant and Equal Area (20 hours)
- Conventional: Mollweide, Sinusoidal (10 hours)

**FIELD SURVEY**

v) Chain Survey: Triangulation Method – Closed Traverse & Open Traverse (4 hours)

vi) Prismatic Compass Survey: Open and Closed Travers – Intersection method (4 hours)

vii) Plane Table Survey: Intersection method (4 hours)

viii) Village / Urban Study: Socio-economic or Physiographic study – Educational Tour: Observations, Measurements, Interviews, data collection, data Analysis, Report Writing (20 hours)
THIRD YEAR B.A./B.Sc. GEOGRAPHY PRACTICAL – SYLLABUS

WORKLOAD PARTICULARS

PAPER IV: REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEMS (GIS)
(90 hours per annum)

UNIT – I: Remote Sensing (20 hours)

Basics of Remote Sensing: Definition, History, Advantages
Aerial Photography and Satellite Remote Sensing (6 hours)

Components of Remote Sensing System:
Energy Source, Energy-Atmosphere Interaction, Energy-Matter Interaction,
Platforms, Sensors, Data handling system, Data Users (4 hours)

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 (10 hours)

UNIT – II: Remote Sensing: Platforms and Sensors and Products (25 hours)

Remote Sensing Platforms: Aircrafts and Satellites
Orbital Characteristics of Sun-synchronous Earth Resource Satellites and Geostationary
Communication – Special Purpose Satellites (5 hours)

Remote Sensing Sensors:
Types of Sensors: Active and Passive – Framing Systems (Cameras) – Scanning Systems (3 hours)
Sensor Characteristics: Spatial Resolution, Spectral Resolution, Radiometric Resolution,
Temporal Resolution (4 hours)
Cameras: Single Lens, Multiple Lens, Strip and Digital – Films and Filters (4 hours)
Scanners: Cross-track Vs. Along-track – Mono-Spectral Vs. Multi-Spectral Scanners (4 hours)
Products: Visual and Digital (2 hours)
Remote Sensing in India: Development and Growth – Satellites (3 hours)

UNIT – III: Geographic Information Systems (GIS) (25 hours)

GIS: Definition – Contributing Disciplines – Functions – Data Capture/Input, Data Storage,
Data Retrieval, Data Analysis, Data Output (8 hours)

Components of Geographic Information Systems: Hardware Components, Software
Components, Brain-ware Components and Organizational set up (6 hours)

Data Input and Editing: Data Types: Spatial and Attribute data – Raster and Vector
Sources of GIS data (6 hours)
Methods of Data input (Keyboard Entry, Digitizing, Scanning) – GPS and Its Application (5 hours)

UNIT - IV : Geographic Information Systems (20 hours)

Data Base Management System: Definitions and Functions (2 hours)

Data Analysis and Modeling:
Data Conversion (Format, Structure, and Medium Conversion)
Spatial Measurements (Counting, Measuring lengths and Areas)
Reclassification, Buffering (Point, Line, Area, Doughnut),
Overlay Analysis (10 hours)
Modeling Surfaces (DTMs) (2 hours)
Modeling Networks (2 hours)

Remote Sensing and GIS: Integration – GIS Application (Urban / Agricultural / Landform Studies) (4 hours)
THIRD YEAR B.A./B.Sc. GEOGRAPHY PRACTICAL – SYLLABUS

WORKLOAD PARTICULARS

PRACTICAL IV : GIS AND REMOTE SENSING (90 hours per annum)

Unit I : GIS (45 hours)
8. Scale of Measurement: Nominal, Ordinal, Interval, Ratio (6 hours)
9. Data Mode: Spacial Data (Location: Point, line, polygon; attributes; time), Creating a Vector Data, Creating a Raster Data, Raster Data Values, Spacial Relations (point-point, point-line, point-area, line-line, line-area, area-area) (18 hours)
10. Data Input: Manual, Digitising, Scanning (9 hours)
11. Raster and Vector GIS Capabilities: Display, Query, Overlay, Buffering (12 hours).

Unit II: Remote Sensing (45 hours)
12. Air Photographs and Satellite Imageries: Describing the Marginal Information (10 hours)
13. Air Photo Interpretation: Using Stereoscope, Stereoscopic Vision Test, Flightline Marking, Landuse Mapping, Relief and Drainage Mapping (20 hours)