

B.A./B.SC. GEOGRAPHY HONORS WITH SINGLE MAJOR AND MINOR

Semester I

S.No		
1	Major 1	APSCHE Will provide
2	Major 2	APSCHE Will provide

Semester II

	Theory	Practical	Theory	Practical
3	Major 3 : Fundamentals of Geography	Geographical Tools	Minor 1: Fundamentals of Geography	Geographical Tools
4	Major 4 :Earth System Science	Relief Features		

Semester III

	Theory	Practical	Theory	Practical
5	Major 5 : Geomorphology	Terrain Analysis	Minor 2 : Geomorphology	Terrain Analysis
6	Major 6 : Climatology and Oceanography	Climate Analysis		
7	Major 7 : Human Geography	Thematic Mapping		
8	Major 8 : Geographical Thought	Basic Statistics		

Semester IV

	Theory	Practical	Theory	Practical
9	Major 9 : Fundamentals of Remote Sensing and GIS	Visual Image Interpretation and GIS Data Management	Minor 3 : Fundamentals of Remote Sensing and GIS	Visual Image Interpretation and GIS Data Management
10	Major 10 : Regional Geography of India	Map Projections	Minor 4 : Regional Geography of India	Map Projections
11	Major 11 : Surveying Techniques	Surveying		

Semester V

	Theory	Practical	Theory	Practical
17	Major 12A : Environmental Geography	Case Studies		
	Major 12B : Regional Geography of Andhra Pradesh	Socio Economic Survey		
18	Major 13A : Disaster Management	Field Studies on Disasters		
	Major 13B : Urban Geography	LULC Studies		
19	Major 14 : Cartography	Map Making	Minor 5 : Cartography	Map Making
20	Major 15 : Economic Geography	Map Analysis	Minor 6 : Economic Geography	Map Analysis

Semester VI

Semester Internship / Apprenticeship / OJT with 12 Credits.

Student is eligible for Exit Option-3 with the award of Degree in respective major with minor

Semester VII

	Theory	Practical	Theory	Practical
21	Major 16A : Geospatial Technology	Geospatial Techniques	Major 16B : Geography of Tourism	Geospatial Techniques
22	Major 17A : Regional Planning and Development	Remote Sensing Applications	Major 17B : Advanced Remote Sensing	Remote Sensing Applications
23	Major 18A : Hydrology		Major 18B : Resource Geography	
24	Skill	Major 19A : Digital Cartography	Major 19B : Digital Image Processing	
25		Major 20A : Terrain Mapping Techniques	Major 20B : Global Navigation Satellite System	

Semester VIII

	Theory	Practical	Theory	Practical
26	Major 21A : Advanced Geospatial Technology	Advanced Geospatial Techniques	Major 21B : Political Geography	Advanced Geospatial Techniques
27	Major 22A : Population Geography	Research Techniques	Major 22B : Settlement Geography	Research Techniques
28	Major 23A : Agricultural Geography		Major 23B : Industrial Geography	
28	Skill	Major 24A : Climate Analysis	Major 24B : Digital Surface Modeling	
29		Major 25A : Field & Research Methodology	Major 25B : Geographical Survey	

SEMESTER - II
Major –3: Fundamentals of Geography

Course Objectives:

- To Introduce the Geography as discipline
- To describe Universe, Solar system and Earth and its elements

Course Outcome:

After the completion of the course the Students will able to

- Understand the Geography as Discipline.
- Obtain the knowledge on universe Earth and Life.
- Understand Globe and need of Latitudes and Longitudes.
- Improve the knowledge on earth rotation and revolution.
- Understand the importance of Maps and scale.

UNIT-I

Geography as a Discipline- Geography as Integrating Discipline- Branches of Geography: Systematic and Regional approach.

UNIT-II

The Earth :Origination of Universe and solar System- Evolution of the earth- Evolution of Lithosphere, Atmosphere and Hydrosphere- Evolution of life.

UNIT-III

Globe: Globe, Parallels of Latitudes and Longitudes- Longitudes and Time calculation of time- International Date Line.

UNIT-IV

Movements of the Earth: Earth rotation and revolution – Occurrence of Day and nights – Leap Year - Occurrence of Seasons.

UNIT-V

Maps: Meaning, Classification- Scale: Classification - Direction

References:

1. K.Siddhatha (2014) The Earth Dynamic Surface, Kisalaya Publication, New Delhi
2. Strahler, A. H. and Strahler, A N., (2001) Modern Physical Geography (4thEdition), John Wiley and Sons, Inc., New York.
3. Bartholomeo, R. B., (1984) Earth Science, Heath and Co., Toronto.
4. Dury, G. H., (1980) The Face of the Earth, London: Penguins.
5. Ernst, W. G., (Ed.) (2000) Earth Systems: Process and Issues, Cambridge University Press, Cambridge.
6. Recent Earthquakes in India and World –A global view of Tsunami-Volcanoes

SEMESTER - II

Major –4: Earth System Science

Course objectives:

- The course deals about the origin and evolution of earth
- The course describes various processes of dynamic earth.

Course Outcome:

After the completion of the course the Students will able to

- Understand the Historical aspects of the earth.
- Obtain the knowledge on Rocks and its cycle.
- Understand planet earth dynamism.
- Develop the knowledge on earth surface relief.
- Describe the occurrences of Volcanoes and Earthquakes.

UNIT – I

THE HISTORY EARTH: Origin of the Earth - modern theories – Earth's orbital parameters - internal and external heat engines of the Earth - internal processes of earth – earth's internal structure – mantle and core - Earth's crust - isostasy – Earth's magnetism.

UNIT – II

ROCKS: Igneous - sedimentary - metamorphic (origin and Types)- rock cycle

UNIT – III

THE DYNAMIC PLANET: Continental drift – Wegener's continental drift theory – palaeomagnetism – sea floor spreading – plates and plate motion – diverging, converging and transforming plate boundaries.

UNIT – IV

EARTH'S SURFACE RELIEF: Earth's topography - orders of relief - Earth's hypsometry – stress and strain – fold – fault – orogenesis - features of the sea floor.

UNIT – V

EARTHQUAKES AND VOLCANISM: Earthquakes: causes – seismic waves – measurement of earthquakes – effects – tsunamis – world distribution – volcanism: types – ejecting materials - distribution of volcanoes – intrusive bodies – types.

References:

1. K.Siddhatha (2014) The Earth Dynamic Surface, Kishalayya Publication, New Delhi
2. Strahler, A. H. and Strahler, A N., (2001) Modern Physical Geography (4th Edition), John Wiley and Sons, Inc., New York.
3. Bartholomeo, R. B., (1984) Earth Science, Heath and Co., Toronto.
4. Dury, G. H., (1980) The Face of the Earth, London: Penguins.
5. Ernst, W. G., (Ed.) (2000) Earth Systems: Process and Issues, Cambridge University Press, Cambridge.

SEMESTER – II

Major 3-Practical - Geographical Tools

Course objectives:

Understanding the Different Geographical Tools.

Course Outcome:

On the completion of syllabus students must be able to:

- Draw and compute map scales of different kinds.
- Measure the distance, areas and find the directions on maps.
- Reduce and enlarge maps of different scales manually to the required size.
- Depict landforms by contours.
- Represent the data related to climate by means of graphs and diagrams.

Ex. 01: Preparation Maps classification flow chart

Ex. 02: Drawing Globe and marking important parallels of latitudes and Longitudes.

Ex. 03: Drawing different Weather measuring Instruments

Ex. 04: Map Symbols

Ex. 05: Digital versions of aerial photographs, satellite images and GPS.

References:

1. Singh, R.L, (1991) Elements of Practical Geography – Kalyani Publishers, New Delhi.
2. Monk house and Willkinson (1976) Maps and Diagrams, Metuhuen& Co, London.
3. Gobal Singh Map Work and Practical Geography, Vikas Publishing House Pvt Ltd, New Delhi.
4. Worthington, B.D.R. and Robert Gent (1975): Techniques in Map Analysis, Ebenzer Baylis and Sons, USA.
5. Anson, R.W. (Ed.) (1984) Basic Cartography for Students and Technicians, Volume 2,
6. International Cartograhic Association, Elsevier Applied Science Publishers, London.
7. Dorling, D. and David Fairbairn (1997), Mapping: Map of representing the world, Addisson Wesley Longman Ltd., U.K.

SEMESTER – II

Major 4-Practical -Relief Features

Course objective:

Acquiring knowledge on map enlargement and reduction and depiction of landforms by contours.

Course Outcome:

On the completion of syllabus students must be able to:

- Draw and compute map scales of different kinds.
- Measure the distance, areas and find the directions on maps.
- Reduce and enlarge maps of different scales manually to the required size.
- Depict landforms by contours.
- Represent the data related to climate by means of graphs and diagrams.

Ex. 01: Methods of Relief Representation

Ex. 02: Representation of Elevation Profiles

Ex. 03: Methods of Average Slope Determination

Ex. 04: Gradient and Slope Calculation

Ex. 05: Representing Hypsometric Curves

Ex. 06: Representation of Relief on a Block Diagram

References:

1. Singh, R.L, (1991) Elements of Practical Geography – Kalyani Publishers, New Delhi.
2. Monk house and Willkinson (1976) Maps and Diagrams, Metuhuen& Co, London.
3. Gobal Singh Map Work and Practical Geography, Vikas Publishing House Pvt Ltd, New Delhi.
4. Worthington, B.D.R. and Robert Gent (1975): Techniques in Map Analysis, Ebenzer Baylis and Sons, USA.
5. Anson, R.W. (Ed.) (1984) Basic Cartography for Students and Technicians, Volume 2,
6. International Cartograhic Association, Elsevier Applied Science Publishers, London.
7. Dorling, D. and David Fairbairn (1997), Mapping: Map of representing the world, Addisson Wesley Longman Ltd., U.K.

SEMESTER - III

Major –5: Geomorphology

Course Objectives:

- To introduce the basic concepts geomorphology to the students of geography
- To understand the origin of landforms, Weathering, Erosion and Depositional
- To know the applications of geomorphology is helpful in different fields like Civil, mineral and coastal departments.

Course Outcome:

On the completion of syllabus students must be able to:

- Describe the morphology of the landscape and related processes in areas influenced by fluvial, glacial, periglacial, aeolian, coastal, and arid systems.
- Describe major scientific ideas and theories about the development of the landscape.
- Critically analyse geomorphological issues in a scientific context at local, regional and global scales.
- Identify the major landforms on the Earth's surface and interpret the processes responsible for their genesis.

UNIT – I

BASICS: Meaning, nature, Scope, and development – Basic Concepts, Branches in geomorphology – geological time scale – Endogenic process: Diastrophism and volcanism

UNIT – II

EXOGENIC PROCESS: Weathering – Physical – Chemical – biological (landforms) - Mass Wasting, Drainage: Drainage Patterns - Consequent Drainage, Obsequent Drainage, Antecedent Drainage, Superimposed Drainage – Lakes: Origin – Types

UNIT – III

CONCEPTS: Morphogenetic regions – Concept of cycle of erosion: Davis, Penck - Peneplain and Pediplain – Slope: definition - elements.

UNIT – IV

LANDFORMS: Fluvial, Karst, Glacial (Erosional and Depositional).

UNIT – V

LANDFORMS: Aeolian and Coastal landforms (Erosional and Depositional).

References:

1. Dayal, P., (1990). A Text book Geomorphology, Shukla Book Depot, Patna, India.
2. Majid Hussain. ed., (1994). Geomorphology, Perspective in Physical Geography series, Anmol Publications Pvt. Ltd., New Delhi.
3. Mukerjee, P.K., (1986). A Text of Geology, The World Press (P) limited, Calcutta.
4. 4. Pitty, A.F., (1982). The Nature of Geomorphology, Methuen and Co. Ltd., London.
5. 5. Rice, R.J., (1986). Fundamentals of Geomorphology, Longman, London.
6. Small, R.J., (1978). The Study of Landforms: A Text book of Geomorphology, Cambridge University Press, New York.
7. Thornbury, W.D., (1954). Principles of Geomorphology, John Wiley and sons, Inc., New York.
8. Worcester, P.G., (1948). A Textbook of Geomorphology, Von Nostrand Reinhold, Company, New York.

SEMESTER - III
Major –6:CLIMATOLOGY AND OCEANOGRAPHY

Course objective:

Acquiring knowledge on Climate and Oceans.

Course Outcome:

On the completion of syllabus students must be able to:
Appreciate the climate phenomena and oceanic resources

UNIT I

Nature and scope of climatology. Composition and structure of the Atmosphere – Insolation – heat balance, green house effect – vertical and horizontal distribution of Temperature.

UNIT II

Atmospheric Pressure – Pressure belts – Vertical and Horizontal distribution of pressure- Atmospheric Motion – Forces controlling Atmospheric Motion – Primary, Secondary and Tertiary Circulations.

UNIT III

Atmospheric Humidity – Evaporation – Condensation and Precipitation Types and Forms. Clouds– Types and Properties. Climatic Classification – Koppen's and Thornthwaites.

UNIT IV

Nature and scope of Oceanography–Distribution of Land and water.Bathymetric relief features. Distribution of Temperature and Salinity – Vertical and Horizontal

UNIT V

Ocean Movements –Waves, Tides and Currents. Distribution of Ocean Currents - Atlantic, Pacific and Indian Ocean.Coral reefs, Ocean Deposits and Marine Resources

References:

1. Crittch Field, J.H.: General Climatology, Prentice Hall, India, New Delhi, 1993.
2. Lal, D.S.: Climatology, Chaitanya Publishing House, Allahabad, 1986.
3. Garrison, T.: Oceanography – An introduction to Marine Science.Books / Cole, Pacific Group, USA, 2001.
4. Sharma & Vatal : Oceanography for Geographers Chaitanya Publishing House, Allahabad.
5. Lal.D.S. Oceanography, chaitanya Publishing House, Allahabad,1994

SEMESTER - III

Major –7: Human Geography

Course Objectives:

To learn about 1) Spatial distribution of race, 2) Human adaptation of environment, 3) Classification of Natural resources, 4) World population density, population growth 5) Rural settlements.

Course Outcome

After completion of the paper student will learn about the Human race spatial distribution, adaptation of environment, world population density, population growth and Rural settlements.

UNIT-I

Nature scope and Historical development of Human Geography. Division of Mankind: Spatial distribution of race and tribes of India.

UNIT-II

Human adaptation to the environment (i) Cold region — Eskimo (ii) Hot region-Bushman (iii) Plateau — Gonds (iv) Mountains — Gujjars.

UNIT-III

Meaning, nature and components of resources; Classification of resources — renewal and non- renewable; biotic and abiotic, recyclable and non-recyclable.

UNIT-IV

Distribution and density of world population, population growth, fertility and mortality Patterns. Concept of over, under and optimum population; Population theories: Malthus.

UNIT-V

Rural settlements: Meaning, classification and types. Urban settlements: Origin, Classification. Population pressure, resource use and environment degradation;

References

1. Alexander, John. W.: Economic Geography, Prentice Hall of India Ltd., New Delhi, 1988
2. Carr, M. Patterns: Process and Change in Human Geography, McMillan Education, London, 1987.
3. Chandna, R.C.: A Geography of Population: Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi, 1986.
4. DeBlij, H. J.: Human Geography, Culture, Society and Space, John Wiley, New York, 1996.
5. Fellman, J.L.: Human Geography-Landscapes of Human Activities, Brown and Benchman Pub., USA, 1997.
6. McBride, P.J. Human Geography; Systems Patterns and Change, Nelson. UK and Canada, 1996.
7. Michael, Can: New Patterns: Process and Change in Human Geography, Nelson, 19

SEMESTER - III

Major –8: Geographical Thought

Course Objective

- To acquaint the students with the Geographical philosophy, Methodology and historical development of geography as a professional field.
- The idea is to address the spirit and purpose of the changing geographies and to what we as geographers contribute towards knowledge production.
- To developing critical thinking and analytical approaches and Students will acquire an understanding of and appreciation for the contributions of the eminent geographers to the subject.
- To provide the knowledge on the quantitative revolution in the geographical studies.

Course Outcomes

After the completion of the course, Students will be able to

- Understand the evolution of geography over the decades.
- Students will demonstrate an advanced understanding of the historical development of geographical studies.
- They can understand the major current philosophical and theoretical debates in geography.
- Students will demonstrate an understanding of current research within the breadth of geography, as well as more in depth knowledge of research in their specialty areas.
- Students will develop a solid understanding of the concepts of “space,” “place” and “region” and their importance in explaining world affairs.
- Improve knowledge on the quantitative revolution in the geographical studies.

UNIT – I

Contributions of Greeks and Romans to Ancient Geography – Contributions of Arab Geographers.

UNIT-II

The Founders of Modern Geography – Humboldt and Ritter. German and French contributions to Modern Geography. Contributions of Indian Geographers.

UNIT-III

Areal Differentiation, Landscape, Schools of Thought

UNIT-IV

Dualism and Dichotomy in Geography- Physical and Human Geography – Environmental Determinism and Possibilism – Systematic and Regional Geography.

UNIT –V

Quantitative and Behavioral approaches in Geography. Models in Geography. Changing concept of Space in Geography, Future of Geography.

References:

1. Dikshit, R.D. (ed.): The Art & Science of Geography – Integrated Readings, Prentice Hall of India, New Delhi, 1994.
2. Hartshorn, R.: Perspective on nature of Geography, Rand McNally & Co., 1959.
3. Husain, M.: Evolution of Geographic thought, Rawat Pub., Jaipur, 1984.
4. Minshull, R.: The Changing nature of Geography, Hutchinson University Library, London, 1970.

SEMESTER – III
Major 5-Practical -Terrain Analysis

Course Objective

- To apprise the students about the Terrain mapping techniques.
- To project the representation of the landforms by using contour lines.
- To explain the methods of slope analysis.

Course Outcomes

After the completion of the course, Students will be able to

- Students can able to represent the landforms with contour lines.
- Student can perform profiles which are drawn from landforms through contours.
- Student can represent the slope analysis models.

- Ex: 1 Interpolation of contours.
- Ex: 2 Landforms represented by contours.
- Ex: 3 Profiles: Serial, Superimposed, Projected, Composite.
- Ex: 4 Slope Analysis: Smith's Method.
- Ex: 5 Slope Analysis: Wentworth's Method.

References:

1. Misra, R.P. and Ramesh, A.: Fundamentals of Cartography, concept, New Delhi, 1989.
2. Monkhouse, F.J .H.R. and Wilkinson: Maps and diagrams; Methuen and Co., London, 1984.
3. Peter Toyne& Peter Newby, T.: Techniques in human geography; MacMillan, London, 1972.
4. John Byogott: An introduction to map work and practical geography, university Tutorial press Ltd., London.

SEMESTER – III
Major 6-Practical - Climate Analysis

Course Objective

- To apprise the students about the Climate Analysis.
- To project the representation of the factors of climate.

Course Outcome

After the completion of the course, Students will be able to

- Students can able to represent the climatic factors.
 - Student can measure weather phenomena.
1. Graphs – Climograph, Hyther graph and Ergo graph.
 2. Water Balance Techniques – Moisture Adequacy Index– Aridity Index – Humidity Index – Moisture Index and Water Balance Graph.
 3. Rainfall Analysis – Mean Rainfall – Rainfall Intensity – Rainfall variability and Rainfall Ratio.

References:

1. Bygott, John (1967): An Introduction to Map Work and Practical Geography, University Tutorials.
2. Monkhouse, F.J. and Wilkinson, H.R. (1968): Maps and Diagrams Methuen, London.
3. Singh, R.L. (1979): Elements of Practical Geography, Kalyani Publishers, New Delhi.
4. Bygott, J. and Money, D.C. (1969): An Introduction to Map Work and Practical Geography, University Tutorial Press.
5. Subramanyam, V.P. (1982): Water Balance and its applications, Andhra University Press, Vishakhapatnam.
6. Gopal Singh (1996): Map Work and Practical Geography, Vikas Publishing House, New Delhi.
7. Asish Sarkar, Practical Geography- A Systematic Approach, Orient Longman 1997

SEMESTER – III
Major 7-Practical - Thematic Mapping

Course Objective

- To develop the knowledge on the thematic maps.
- To understand the data representation through the diagrammatic form and log graphs.

Course Outcomes

After the completion of the course, Students will be able to

- understand how to represent the data through different Themes

Ex: 1	Dot method
Ex: 2	Isopleth and Isochromatic methods
Ex: 3	ChoroplethMethod
Ex: 4	Choro-Chromaticmethod
Ex: 5	Flowmethod.

References:

1. Misra, R.P. and Ramesh, A.: Fundamentals of Cartography, concept, New Delhi,1989.
2. Monkhouse, F.J.H.R. and Wilkinson: Maps and diagrams; Methuen and Co., London, 1984.
3. Peter Toyne & Peter Newby, T.: Techniques in human geography; MacMillan, London, 1972.
4. John Bygott: An introduction to map work and practical geography, university Tutorial press Ltd., London.

SEMESTER – III
Major 8-Practical - Basic Statistics

Course objectives

- To provide an understanding for the student on statistical concepts to include measurements of location and dispersion, and correlation analysis.
- To calculate and apply measures of location and measures of dispersion -- grouped and ungrouped data cases.

Course outcomes:

After the completion of the course, Students will be able to

- Keeping in view the nature of data and purpose of study and to make a rational choice amongst listed various statistical methods.
- Students shall know how to organize, manage, and present data.

Ex:1 Frequency Distribution,

Ex:2 Measures of Central Tendency; Arithmetic Mean, Median, Mode.

Ex:3 Measures of dispersion: Mean deviation, Quartile deviation, Standard deviation,

Ex:4 Correlation-Rank Correlation.

Ex:5 Graphical Representation: Histogram, Ogive curve

REFERENCES:

1. Aslam Mahmood–Statistical Methods in Geographical Studies, Publication, New Delhi, 1977.
2. Cole, J.P. & King, D.A. Quantitative Methods in Geography, John Wiley and Sons, New York, 1968.
3. Gregory, K.J. and Walling, D.E. Drainage basin form and process: A Geomorphologic approach; Arnold; London 1973.
4. Peter Davis: Science in geography, Science Series–3, Data description and presentation, Oxford University Press, London, 1975.
5. Peter Toyne and Peter Newby, T.: Techniques in Human geography, MacMillan, London, 1972.
6. Singh Jasbir and Dhillon, S.S.: Agricultural geography, TATA McGraw Hill, New Delhi, 1984.
7. Singh, R.L. Mapwork and practical geography, central book depot, Allahabad, 1972.
8. Singh, R.L. Elements of Practical Geography, Kalyani Publishers, 1992.
9. Toyni, P. and Newby, Techniques of Map, Longman, London, 1965.

SEMESTER - IV
Major –9: Fundamentals of Remote Sensing and GIS

Course Objective

- To provide knowledge on history and evolution of Remote sensing.
- To provide knowledge on the platforms and sensors and instruments used for remote sensing.
- To understand the evolution of GIS.
- To explain the types of data collection with respect to time and terrain and Data base management and retrieving the data from different sources.

Course Outcomes

After the completion of the course, Students will be able to

- Develop knowledge on history and evolution of remote sensing.
- Understand knowledge on the platforms and sensors and instruments used for remote sensing UnderstandtheevolutionofGIS.
- Focusoncollection,analysing,interpretationandresentingthedata related to Earth.
- Differentiate the types of data collection with respect to time and terrain and Database management and retrieving the data from different sources

UNIT I

Introduction to Remote Sensing: History, Development and Principles Stages in Remote sensing Process. Stages in Remote Sensing Process.

Unit II

Energy Sources and Radiation Principles-Energy Interaction in the Atmosphere. Atmospheric Windows. Energy Interaction with Earth Surface features. Electromagnetic Spectrum. Spectral reflectance patterns of Earth surface features in different wavelength.

UNIT III

Characteristics of Indian Remote Sensing Satellites (I.R.S), LANDSAT, etc. Principles of Image Interpretation: Elements of Image Interpretation, Digital Image Processing. Applications in Land use Land Cover Mapping and Urbanisation.

UNITIV

GIS:DefinitionsandDevelopment–ComputerComponentsofGIS(HardwareandSoftware)–GeneralDataBaseconceptsofSpatialandNon-spatial data - Elements of Spatial data- Sources of Spatial data– DataqualityforGIS–ErrorsandErrorvariationsinGIS.

UNITV

GIS Data Management: Data Base Management Systems (DBMS) Data BaseModels.Datainputmethods–SpatialDatastructures:Rasterdataand Vectordata– Structures –GISDataAnalysis:SpatialmeasurementmethodsReclassification–Buffering– OverlayAnalysis.

References:

1. Lillisand T.M and Keifer R.W, (1994), Remote Sensing and Image Interpretation, Jhon Willey & sons, New York.
2. Rampall, K.K. (1999), hand book of Aerial Photography and Interpretation, Concept Publishing Co., New Delhi.

3. Sabins, F.F. Jr, (1987), Remote Sensing; Principles and Interpretation, W.h. Freeman & Co., New York.
4. Jenson R. Jhon, (2003), Remote Sensing of the Environment-An Earth Resource Perspective, Pearson Education Pvt. Ltd., Indian Branch, Patparganj, Delhi, India.
5. LRA Narayanan, Remote sensing and its Applications, (1999), Universities Press (India) Ltd., Hyderabad.
6. <http://rst.gsfc.nasa.gov/Front/tofc.html>.
7. <http://earthobservatory.nasa.gov/Library/RemoteSensing>
8. Aronoff S. Geographic Information System: A Management Perspective, DDL Publication, Ottawa. 1989.
9. Burrough P.A. Principles of Geographic Information Systems for Land Resource Assessment. Oxford University Press, New York, 1986.
10. Fraser Taylor D.R. Geographic Information System. Pergamon Press, Oxford, 1991.
11. Maquire D.J.M.F. Goodchild and D.W. Rhind (eds.) Geographic Information Systems: Principles and Application. Taylor & Francis, Washington, 1991.
12. Mark S. Monmonier. Computer-assisted Cartography. Prentice-Hall, Englewood Cliff, New Jersey, 1982.
13. Peuquet D.J. and D.F. Marble, Introductory Reading in Geographic Information Systems. Taylor & Francis, Washington, 1990.
14. Star J. And J Estes. Geographic Information Systems : An Introduction. Prentice Hall, Englewood, Cliff, New Jersey, 1994.

SEMESTER - IV
Major –10: Regional Geography of India

Course objectives:

- To conceptualize the regional approaches and to examine regional differentiation in the study of Indian Geography.
- To expose to historical, economic, cultural, social and physical characteristics of India.
- To provide an introduction to the regions of the India in terms of both their uniqueness and similarities. .

Course Outcomes

After the completion of the course, Students will be able to

- Developed the art of regionalization technique while focusing about diversity of Indian region.
- Visualized and recognized about regional identities and socio-cultural dimension of regionalization to address the issues and concern needed for regional planning.

UNIT – I:

Major Physiographic divisions. Himalayas, Great Plains, Plateaus, Coastal Plains and islands

UNIT - II

Major and Minor River Systems and their drainage pattern. Climate: Temperature and Rainfall. Trewartha's Climatic Regions of India.

UNIT-III:

Soils: Types, Characteristics and Distribution. Forest types and distribution and economic significance. Agriculture: Irrigation and Power projects. Major Food grain crops: Rice and Wheat. Major commercial Crops: Sugarcane and Cotton. Plantation Crops: Coffee and Tea. Animal Husbandry

UNIT-IV:

Mineral Resources: Coal, Iron ore, Petroleum and Natural gas. Locational pattern of Industrial Activity. Weber's theory of industrial location. Major Industries: Iron and Steel, Cotton textiles and Ship Building. Industrial Regions of India and their characteristics.

UNIT-V:

Population: Distribution, Density, Growth and problems. Urban and Rural Population – Distribution and Trends. Development and patterns of Transport Networks (railways, waterways, airways and pipelines).

References:

1. Spate, O.H.K. and Learmonth, A.T.A. (1972): India and Pakistan, B.I. Publication, Madras.
2. Sharma and Coutino (1980): Economic and Commercial Geography of India, Vikas Publications, New Delhi.
3. Singh, R.L. (1976): Regional Geography of India, National Geographical Society of India, Banaras.
4. Memoria, C.B. (1970): India's Population Problems, KitabMahal, Allahabad.
5. Wadia, D.N. (1961): Geography of India, Mc.Millan, London.
6. Tirtha, Geography of India, 2nd Edition
7. Chaudhuri, Development Regional Planning

SEMESTER - IV
Major –11: Surveying Techniques

Course Objectives

- Apply the knowledge, techniques, skills and modern tools of Surveying,
- To study the temporary adjustment of survey instruments by standard methods.
- To carry out topographic survey.

Course Outcomes

- Carry out temporary adjustment of survey instruments by standard methods ,levelling and cross sectioning survey and setting out works
- Carry out topographic survey

UNIT I:

Introduction to Surveying- Classification and Principles of Surveying, Geodetic and Plane (Topographic) Surveying, Surveying Instruments.

UNIT II:

Geometry of Ellipsoid: Everest and WGS 84, Latitude and Longitude, Co-ordinate System

UNIT III:

Leveling: Concept and principles of levelling, Mean Sea Level, different types of levelling, their application, Source of error in Levelling (instrumental, natural, and personal) and elimination of errors.

UNIT IV:

Traversing: Traverse angle, Observation of Traverse Length, Selection of Traverse Station, Traverse Field Notes, Traverse adjustment, rectangular co-ordinates.

UNIT V:

Cadastral map preparation methodology, unique identification number of parcel, position of existing control points and its types, adjacent boundaries and features, Topology Creation and verification. Scale of Cadastral map,

References:

1. Surveying Vol I & II, III B C Purnima, Laxmi Publication.
2. Surveying, volume 1&2 BY S.K.Duggal, TMH publisher.
3. Surveying & Levelling by T.P Kanitkar& V S Kulkarni

SEMESTER – IV
Major 9-Practical - Visual Image Interpretation and GIS Data Management

Course objectives:

- To explain practical knowledge on Remote sensing applications.
- To help to understand Visual and digital interpretation of satellite Images.
- To illustrate interpretation of Aerial photos.
- To acquaint knowledge on allocation of RS in different fields and sectors.

Course Outcomes:

After the completion of the course, Students will be able to

- Explain practical knowledge on Remote sensing applications.
- Understand Visual and digital interpretation of satellite Images.
- Illustrate interpretation of Aerial photos.
- Acquaint knowledge on allocation of RS in different fields and sectors.

Ex: 1 Techniques of Visual Interpretation.

Ex: 2 Marginal Information of Satellite Imageries.

Ex: 3 Visual Interpretation of Water Resources and Lineaments,

Ex: 4 Visual Interpretation of Landforms–Waste Land

Ex: 5 Visual Interpretation of Land use / Land cover and change detection

References:

1. Curran, Paul, J.: Principles of Remote Sensing; Longman, London, 1985.
2. Gautam N. C. et al. Space Technology and Geography; National Remote Sensing Agency, Hyderabad, 1994.
3. Thomas M. Lillesand and Ralph, W. Keffer; Remote Sensing and image interpretation, John Wiley & Sons, New York, 1994.

SEMESTER – IV
Major 10-Practical – Map Projections

Course Objective

- To apprise the students about the art and science of map making and representation.
- To explain the usage of different types of projections.
- To focus on the importance of scale and projection in the process of representing the earth surface.

Course Outcomes:

After the completion of the course, Students will be able to

- Explain the concept of map, scale and projection.
- Student can explain the purpose of projection.
- The main outcome of this course is students can able to select different projection for different geographical areas.

Ex: 1 Maps and scales-types, Conversion of Scales, Introduction to Map projections; Choice of Map Projection and UTM.

Ex: 2 Conical Projections: One Standard Parallel, Two Standard Parallel; Bonne's and Polyconic

Ex: 3 Zenithal Polar Projections: Stereographic and Gnomonic

Ex: 4 Cylindrical Projections: Equi-Distant, Equal Area and Mercator,

Ex: 5 International map projection: Sinusoidal and Mollweide projection.

References:

1. Khan, Z.A.: Text book of practical geography: concept; New Delhi, 1998.
2. Misra, R.P. and Ramesh, A.: Fundamentals of Cartography, Concept, New Delhi, 1989.
3. Singh, R.L.: Map work and practical geography; central book depot; Allahabad, 1972.
4. Steers, J.A.: Map projections, University of London Press, London.

SEMESTER – IV
Major 11-Practical – Surveying

Course objectives:

- To impart knowledge and practical skill in handling various tools of classical Surveying
- To understand various measuring and ranging methods for mapping linear, Angular and elevation Units

Course Outcomes:

On completion of the course the students are able to

- Describe various surveying concepts, methods, tools and its applications.
- Handle tools, perform survey and map them on the 2-dimensional sheets.
- Acquire spatial data and portray them on the maps with appropriate sketches
- Measure linear, angular and elevation details using modern instruments
- Import the acquired data into the GIS systems and perform digital analysis

Ex. 1: Chain Surveying and Triangulation

Ex. 2: Measurement of Bearings and Angles using Prismatic Compass

Ex. 3: Plane Table Surveying

Ex. 4: Dumpy Level Survey

Ex. 5: Preparation of Field Map

References:

1. Punmia, B.C., Ashok, J.K. and Arun, K.J. (2005) Surveying-1, Vol. 1, Laxmi Publications, New Delhi.
2. Rampal, K.K (2011) Surveying, PragatiPrakashan, Meerut.
3. Ghilani, C.D. and Wolf, P.R. (2012) Elementary Surveying: An Introduction to
4. Geomatics, 13th ed., Pearson Education, Inc., New Jersey.
5. Wells, D.E., et al. (1986) Guide to GPS Positioning, Canadian GPS Associates, Canada
6. L. R. Singh (2010) Fundamentals Of Practical Geography, sharda pustak bhawan.

SEMESTER - V
Major –12A: Environmental Geography

Course objectives:

- To create the environmental aptitude among students.
- To familiarize the students with concepts, issues, approaches about physical and social environment.
- To acquainted with contemporary environmental problems and challenges.
- To provide knowledge on Ecosystem, Biomes, food chain and hydrological cycle.

Course Outcomes

After the completion of the course, Students will be able to

- Gain the knowledge on environmental aptitude.
- Familiarize with concepts, issues, approaches about physical and social environment.
- Acquainted with contemporary environmental problems and challenges.
- Familiarized the knowledge on Ecosystem, Biomes, food chain and hydrological cycle.

UNIT I

Nature, Scope and Significance of Environmental Studies;

UNIT II

Concepts of Ecology, Ecological balance and the need for Ecological Approach.

UNIT III

Concepts of Ecosystem : Structure, Classification and functioning of the ecosystem, Biomes, food web, food pyramid, Nutrient cycle, hydrological cycle.

UNIT IV

Pollution and types-Air, Noise, Water and soil, Impact of population growth on ecosystem. Agriculture, green revolution, HYV and pesticides. Man's impact on land, mining, coastal areas and transport.

UNIT V

Environmental impact assessment, Environmental reconstruction, management and planning, the need for interdisciplinary approach.

References:

1. Turk. : Introduction to Environment Studies, Sanndora,1980.
2. Detwyler: Man's Impact on Environment,1971.
3. Strahler&Strahler, Geography of Man's Environment Wiley,1977.
4. Bennet: Man and Earth's Ecosystem, Wiley,1975.
5. Leopold and Lune (Ed): A procedure for evaluating environmental impact.
6. Savindra Singh:Environmentalgeography– PrayagpustakBhavan, Allahabad, 2000.
7. Dikshit, R.D.: Geography and Teaching of the environment, geography department, Poona University,1984.
8. Agarwal, D.P. Man and Environment in India through ages, Book & Books,1992.
9. Gaur, R.: Environment and Ecology of Early Man in Northern India, R.B. Publication Corporation,1987. Hoyt, J.B. Man and the Earth, Prentice Hall, U.S.A.;1992.
10. Singh, S.: Environmental Geography, Prayag Publications, Allahabad,1991.
11. Smith, R.L.: Man and his Environment: An Ecosystem approach, Harper & Row, London,1992.

SEMESTER - V
Major –12B: Regional Geography of Andhra Pradesh

Course objectives:

- To acquaint the students with re- organization of Andhra Pradesh and its new Physical, climate and drainage aspects. .
- To obtain the knowledge of demographic, irrigation and major crops.
- To understand Andhra Pradesh mineral and industrial aspects with transportation.
- To improve knowledge on the transportation and communication aspects of Andhra Pradesh.

Course Outcomes

After the completion of the course, Students will be able to

- Understand re- organization of Andhra Pradesh and its new physical, climate and drainage aspects. .
- Obtain the knowledge of demographic, irrigation and major crops.
- Understand Andhra Pradesh mineral and industrial aspects with transportation.
- Improved knowledge on the transportation and communication aspects of Andhra Pradesh.

UNIT I:

Location and physical setting Major Physiographic Divisions– Soils, Vegetation, and Drainage – Climate Regions and their Characteristics.

UNIT II

Population Distribution; Density, growth and problems. Agriculture Types. Irrigation and power; Multipurpose Projects, Major food grain crops. (Paddy, Jowar and Ragi), major Commercial Crops (Cotton, Groundnut and Mango).

UNIT III

Mineral Resources: Iron ore, Limestone and Petroleum, Industries: Iron and Steel, Cotton and IT. Industrial Regions and Special Economic Zones (SEZ) Andhra Pradesh.

UNIT IV

Transportation and Communication – Road, Rail, Water (special reference to coastal Transport) and Air Transport. Communication net work in Andhra Pradesh.

UNIT V

Evolution of Andhra Pradesh, Re-organization of Andhra Pradesh Act -2014

References:

1. Take from 401, 4, 5 from old syllabus.
2. Structure, growth and prospects of Industries in Andhra Pradesh. Lotus publications, Varanasi-1989.
3. Regional Geography of Andhra Pradesh– Telugu Academy.
4. Andhra Pradesh yearbook -2010-2015.

SEMESTER - V
Major –13A: Disaster Management

Course objectives:

- To develop the skill of understanding about natural calamities and disaster and also realize the consequences as well as preparedness.
- To create awareness on human and natural disasters.
- To understand disasters classifications and there impacts

Course Outcomes:

After the completion of the course, Students will be able to

- Develop the skill of understanding about natural calamities and disaster and also realize the consequences as well as preparedness.
- Improve awareness on human and natural disasters
- Understand classification of disasters and its impacts and management of disasters.

UNIT I:

Disaster: Meaning and Concept, types of Disasters. Natural disasters: Earthquakes Hazardous effects, volcanic eruptions – Hazardous effects.Certaincasestudies.

UNITII:

Cyclones and floods : cyclone related parameters and effects on land and sea-damage assessment. Causes of flood andflood prone area analysis –damage assessment. Certain case studies.

UNIT III

Droughts and desertification: Types of droughts – factors influencingdroughts – land use and groundwater level changes – delimiting droughtproneareas.

UNIT IV

Man induced disasters: Deforestation and environmental degradation, urbanization, industrial development and environmental pollution. Types of pollution: Air pollution, Water pollution, Soil pollution and Noise pollution.

UNIT V

Disaster management: Pre and post disaster operations of Earthquakes, cyclones, floods, droughts, forestfires. The role of Remote Sensing and GIS in disaster management studies.

References:

1. Savindra Singh,Environmental Geography, PrayagPintakBhavan, Allahabad,2006.
2. Singh,L.R.,Singh,Savindra,Tiwari,R.C.andSrivastava,R.P.:EnvironmentalManagement(ed ited),AllahabadUniversity,1983.
3. Singh,Savindra:Floodhazardsandenvironmentaldegradation;AcasestudyoftheGomatiRiver, inenvironmentalmanagement,AllahabadUniversity,1983.
4. John,A.Mattlews:Naturalhazardsandenvironmentalchange.BillMcGuire,Ian Mason,2002.
5. Nimpuno,K:DisastersandSocialResponse,ITC,1989.
6. Hooja,R.andJoshi,R.:Desert,DroughtandDevelopmentStudiesinResourceManagementand Sustainability:RawatPublications,Jaipur,1994.
7. Aronaff,S:GeographicInformationSystems;AManagementPerspective,DDLPublications,O ttawa,1989.
8. Barrett,E.C.andCurtis,L.F.:FundamentalsofRemoteSensingandAirphotointerpretation,Mc Millan,NewYork,1992.
9. Bring,N.,DhalandMs.SUnitaDhal:CanGISandDisaster ManagementSystemhelp,GIS India?Vol.9,No.1,January-February,2000.

SEMESTER - V
Major –13B: Urban Geography

Course objectives:

- To deal with the concept of urban settlements and evolution of urban population and to provide concept of urban geography.
- To explain the cause and effects of growth in urban population.
- To explain the theories involved in classifications of towns and relationship between towns and cities and their population.
- To understand patterns of World urbanization with reference to India.

Course out comes:

After the completion of the course, Students will be able to

- Learn the concept of urban settlements and evolution of urban population and to provide concept of urban geography.
- Understand the cause and effects of growth in urban population.
- Explains the theories involved in classifications of towns and relationship between Towns and Cities and their population.
- Distinguish patterns of World urbanization with reference to India.

UNIT I

Urban Geography: Definition, Nature and scope. Urban growth, structure and slums. Urban settlements - Impact of the Industrial revolution on location, spacing and size of urban settlements.

UNIT II

Origin and evolution of cities: Ancient, Medieval and Modern cities. Primate city, Metropolis; Megalopolis and Conurbation, The concept of Smart Cities and Satellite towns, Patterns of towns and cities.

UNIT III

Urban Hierarchy, Rank– size relationship, Nearest Neighbor analysis– classification of towns with special reference to functional classification.

UNIT IV

Urban Morphology - Theories: Concentric Zone, Multiple-nuclei, Central Place and Sector Theory.

UNIT V

Rural – urban relationships, rural - urban fringe, urban decay, urban sprawl urban renewal. The concept of city – region: Urban Um-land and hinter land; Pattern of world urbanization with special reference to India and Andhra Pradesh.

References:

1. Johnson, J.H., Urban Geography. An Introductory Analysis, Pergaman Press, Oxford, 1967.
2. Murphy, R.: The American City: an Urban Geography McGraw Hill, 1966.
3. Dickinson, R.E.: City and Region, Routledge and Kegan, Paul Ltd., London, 1964.
4. Mayer and Cohen: Readings in Urban Geography, Central Book Depot., Allahabad.

SEMESTER - V
Major –14: Cartography

Course Objective

- To apprise the students to various aspects of cartography.
- To introduce the basic concepts and key theoretical approaches in Advanced Cartography.
- To describes the art and science of map making and map analysis.
- To teach the representation and conversions of scales.
- To provide the knowledge on map design, layout, lettering, toponymy, drawing surface and equipment.
- To give the clear picture on the changing process of map making from analogue to digital.

Course Outcomes

After the completion of the course, Students will be able to

- Explain the importance of advanced cartography in map making and presenting.
- Acquire good knowledge about different procedure of map making and various projection system of map making by developing broad knowledge about latitude, longitude, meridians, parallels etc.
- Developing their quantitative application in geographical study which gives more accuracy in any geographical enquiry which can further helps students in conducting research activities.
- Perform map layout and map interpretation for any geographical area.

UNIT I

Cartography –Definition. Cartography is a science of human communication; Scales – Methods of representation & conversions;

UNIT II

Map projections –classification and choice of projections. Merits and demerits of cylindrical, conical, zenithal and conventional projections.

UNIT III

Semiology – Kindsof symbols– Mapping qualitative and quantitative point, Line and Area symbols. Types of maps and their uses. Topographical maps: Elements of topographical maps, scales and numbering of Toposheets.

UNIT IV

Map design and layout – Theory of visual perception constraints and Restrictions in map design. Lettering and Toponymy. Mechanics of map construction: Drawing surfaces – Drawing Equipment.

UNIT V

Mapping the qualitative and quantitative data. Thematic mapping; concept of map base, map compilations & generalizations. Concepts of Geographical Information System (GIS).

References:

1. Khan, Z.A.: Textbook of practical geography, concept, New Delhi, 1998.
2. Monkhouse, F.J. & Wilkinson, H.R. : Maps and Diagrams, Methuen, London, 1994
3. Steers, J.A.: Map Projections, University of London Press, London Burrough, P.A.: Principles of geographic information systems for land resource assessment, Oxford University Press, New York, 1986.
4. Fraser Taylor D.R.: Geographic Information Systems, Pergamon Press, Oxford, 1991.
5. Star J and J. Estes: Geographic information systems. An introduction, Prentice Hall, Englewood Cliff, New Jersey, 1994.
6. Misra, R.P. and Rames, A.: Fundamentals of Cartography, Mcmillan Co., New Delhi, 1986.

SEMESTER - V

Major –15: Economic Geography

Course Objectives

- To acquire knowledge about the concepts of resources, classification, models of natural resource processes, their use and misuse, conservation and management of resources for sustainable development.
- To provide a comprehensive introduction to basic concepts and key theoretical approaches in economic geography.
- To introduce economic geography as a dynamic, diverse and contested body of knowledge.

Course Outcomes

After the completion of the course, Students will be able to

- Explain the importance of economic geography in analyzing the societies and economies work.
- Explain and apply key concepts and theoretical approaches in economic geography.
- Discuss and critically evaluate these concepts and theoretical approaches.
- Students will become sensitized to concept of resources.
- Students will become sensitized the classification of resources.

UNIT I

Scope, content and recent trends in economic geography, relation of economic geography with economics and other branches of social sciences, classification of economies; sectors of economy (Primary, secondary and tertiary).

UNIT II

Natural resources: Nature and classification – renewable and non-renewable, biotic and abiotic, conservation of resources, changing nature of economic activities; mining, forestry, agriculture, industry, trade and transport.

UNIT III

Agricultural Resources: Spatial distribution of major food and cash crops of the world (rice, wheat, coffee, tea).

UNIT IV

Minerals resources- Classification of minerals (ferrous and non-ferrous). Major industries: Iron and Steel, Textiles, ship-building and their distribution.

UNIT V

Theories of Industrial location: Alfred Weber and Smith: Geographical factors in the development of major industries. Industrial policy of state and central government.

References:

1. Boesch, H.: A Geography of World Economy, D. Van Nostrand Co., New York, 1964.
2. Chapman, J.D.: Geography and Energy, Longman, London, 1989.
3. Gregor, H.F.: Geography of Agriculture, Prentice Hall, New Jersey, USA, 1970.
4. Griggs, D.B.: The Agricultural Systems of the World, Cambridge University Press, New York, 1974.
5. Hartshorne, T.N. and Alexander, J.W.: Economic Geography, Prentice Hall, New Delhi, 1988.
6. Millar E.: Geography of Manufacturing, Prentice Hall, New York, 1962.
7. Raza, M. and Agrawal, Y.: Transport Geography of India, Concept, New Delhi, 1986.
8. Smith, D.M.: Industrial Location – An Economic Geographical Analysis, John Wiley, New York, 1971.

SEMESTER – V
Major 12A-Practical – Case Studies

Course objectives:

- To help to understand how to conduct a case study.
- To assist, select and complete Case study.

Course Outcomes:

After the completion of the course, Students will be able to

- Develop skill of conducting case study.
- Understand Selection, complete the case study and report writing.

Ex : 1 The students of B.A/BSc Geography 5th Semester have to select a problem and complete case study.

Ex : 2. The students may select one of the following themes for their case study.

- | | |
|-----------------------------------|----------------------------|
| a. Land Evaluation | h. Health Studies |
| b. Land-use / Land cover Analysis | i. Infrastructure Studies |
| c. Water Resources | j. Vegetation Studies |
| d. Slope Studies | k. Transportation net work |
| e. Climate Studies | l. Cropping pattern |
| f. Settlement Studies | m. Urban studies etc |

References:

1. Archer J.E. & dalton T.H. (1968): The fields work in Geography, E.t. Batsford Ltd., London.
2. Haring, Lloyed (1975): Scientific Geographic Research W C. Brow Company USA.
3. Johnes, P.A. (2008): Field Work in Geography, Longman.
4. Kothari C.R.(1996): Research Methodology, VishwasPrakashan, New Delhi
5. Misra R.P. (1991): Research Methodology in Geography, concept pub. New Delhi.

SEMESTER – V
Major 12B-Practical – Socio Economic Survey

Course objectives:

- To help to understand how to conduct a Socio Economic Survey.
- To assist, select and complete Survey.

Course Outcomes:

After the completion of the course, Students will be able to

- Develop skill of conducting Socio Economic Survey.
 - Understand Selection, complete the survey and report writing.
- 1 The students of B.A/BSc Geography 5th Semester have to select a problem and complete Socio Economic survey
 - 2 The students may select some of the following themes for their survey.

a. Land Evaluation	h. Health Studies
b. Land-use / Land cover Analysis	i. Infrastructure Studies
c. Water Resources	j. Vegetation Studies
d. Slope Studies	k. Transportation net work
e. Climatic Studies	l. Cropping pattern
f. Settlement Studies	m. Urban studies etc

References:

1. Archer J.E. & dalton T.H. (1968): The fields work in Geography, E.t. Batsford Ltd., London.
2. Haring, Lloyed (1975): Scientific Geographic Research W C. Brow Company USA.
3. Johnes, P.A. (2008): Field Work in Geography, Longman.
4. Kothari C.R.(1996): Research Methodology, VishwasPrakashan, New Delhi
5. Misra R.P. (1991): Research Methodology in Geography, concept pub. New Delhi.

SEMESTER – V
Major 13A-Practical – Field Studies on Disasters

Course objectives:

- To help to understand how to conduct on Disasters.
- To assist, select and complete Disasters.

Course Outcomes:

After the completion of the course, Students will be able to

- Develop skill of conducting field surveys on Disasters.
- Understand Selection, complete the Disasters and report writing.

- 1 The students of B.A/BSc Geography 5th Semester have to select a disaster affected area for study
- 2 The students may select some of the following themes for their field study.
 - a. Cyclones
 - b. Floods
 - c. Health hazards
 - d. Droughts
 - E. Forest Fires

References:

1. Archer J.E. & dalton T.H. (1968): The fields work in Geography, E.t. Batsford Ltd., London.
2. Haring, Lloyed (1975): Scientific Geographic Research W C. Brow Company USA.
3. Johnes, P.A. (2008): Field Work in Geography, Longman.
4. Kothari C.R.(1996): Research Methodology, VishwasPrakashan, New Delhi
5. Misra R.P. (1991): Research Methodology in Geography, concept pub. New Delhi.

SEMESTER – V
Major 13B-Practical – LULC Studies

Course objectives:

- To help to understand how to conduct on LULC studies.
- To assist, select and complete LULC studies.

Course Outcomes:

After the completion of the course, Students will be able to

- Develop skill of conducting field surveys on LULC studies.
- Understand Selection, complete the LULC study and report writing.

1. The students of B.A/BSc Geography 5th Semester have to select LULC study
2. The students may select some of the following themes for their LULC study.

- a. Urban area
- b. Rural area
- c. Industrial Area
- d. SEZS
- e. Industrial Corridors

References:

1. Archer J.E. & dalton T.H. (1968): The fields work in Geography, E.t. Batsford Ltd., London.
2. Haring, Lloyed (1975): Scientific Geographic Research W C. Brow Company USA.
3. Johnes, P.A. (2008): Field Work in Geography, Longman.
4. Kothari C.R.(1996): Research Methodology, VishwasPrakashan, New Delhi
5. Misra R.P. (1991): Research Methodology in Geography, concept pub. New Delhi.

SEMESTER – V
Major 14-Practical – Map Making

Course objectives:

- To understand how make maps.
- To assist, select and complete map making.

Course Outcomes:

After the completion of the course, Students will be able to

- Develop skill of Map making.
- Understand Selection, complete Map making.

Ex. 01: Appreciation of SOI Toposheet

Ex. 02: Appreciation of NATMO Maps

Ex. 03: Appreciation of Census Atlas of India

Ex. 04: Appreciation of NBSS & LUP Maps

Ex. 05: Appreciation of Resource Atlas of Andhra Pradesh

Ex. 06: Appreciation of GSI Maps

References:

1. Archer J.E. & dalton T.H. (1968): The fields work in Geography, E.t. Batsford Ltd., London.
2. Haring, Lloyed (1975): Scientific Geographic Research W C. Brow Company USA.
3. Johnes, P.A. (2008): Field Work in Geography, Longman.
4. Kothari C.R.(1996): Research Methodology, VishwasPrakashan, New Delhi
5. Misra R.P. (1991): Research Methodology in Geography, concept pub. New Delhi.

SEMESTER – V
Major 15-Practical – Map Analysis

Course objectives:

- To help to understand how to analyse maps.
- To assist, select and complete map analysis.

Course Outcomes:

After the completion of the course, Students will be able to

- Develop skill of map analysis.
- Understand Selection, complete Map analysis.

Ex. 1: Interpretation of SOI 1:2, 50,000 Sheets

Ex. 2: Interpretation of SOI 1” to 1 Mile Sheets

Ex. 3: Interpretation of SOI 1:50,000 Sheets

Ex. 4: Interpretation of SOI 1:25,000 Sheets

Ex. 5: Interpretation of SOI OSM Sheets

References:

1. Archer J.E. & dalton T.H. (1968): The fields work in Geography, E.t. Batsford Ltd., London.
2. Haring, Lloyed (1975): Scientific Geographic Research W C. Brow Company USA.
3. Johnes, P.A. (2008): Field Work in Geography, Longman.
4. Kothari C.R.(1996): Research Methodology, VishwasPrakashan, New Delhi
5. Misra R.P. (1991): Research Methodology in Geography, concept pub. New Delhi.

SEMESTER - VII
Major –16A: Geospatial Technology

Course objectives:

- To provide knowledge on software and hardware required for digital image processing, image enhancement and restoration techniques.
- To provides the theoretical knowledge on the Modeling surfaces and integration of Remote sensing with GIS.
- To provide knowledge on GIS and GPS applications in different sectors.

Course Outcomes:

After the completion of the course, Students will be able to

- Acquire knowledge of physical geography and the methods and techniques for observing, measuring, recording and reporting on geographic phenomena.
- Improve knowledge on the Modeling surfaces and integration of Remote sensing with GIS
- Develop knowledge on GIS and GPS applications in different sectors

UNIT I

Digital Image Processing: Introduction to digital image processing; Image processing system characteristics: Hardware and Software; Image restoration Techniques: Restoring line dropouts, Restoring periodic line striping, Restoring line offsets, Filtering random noise; Radiometric corrections and Geometric corrections in image processing.

UNIT II

Image Enhancement Techniques: Contrast enhancement, Density slicing, Edge enhancement, Merging datasets, Synthetic stereo images; Digital mosaics. Information extraction techniques: Principal –component (P.C) transformation analysis, Ratio images, Multispectral classification, Change-detection images.

UNIT III

GIS Data Management: Data Base Management Systems (DBMS) Data Base Models. Data input methods – Spatial Data structures: Raster data and Vector data – Structures – GIS Data Analysis: Spatial measurement methods Reclassification – Buffering – Overlay Analysis.

UNIT IV

Modeling Surfaces: Co-ordinates, Generation of DEM, DTM and TIN models – Spatial Interpolation – GIS output generation – Integration of Remote Sensing and GIS. Network Analysis.

UNIT-V

Overview of GPS – Basic concept, system architecture, space segment, user segment; GPS Signals: - Signal structure, Anti Spoofing (AS), selective availability; GPS coordinate frames Time References: Geodetic and Geo centric coordinate systems, world geodetic 1984 (WGS84), GPS time.

References:

1. American Society of Photogrammetry : Manual of Remote Sensing, ASP, Falls Church, V.A. 1983.

2. Barrett, E. C. and L. F. Curtis: Fundamentals of Remote Sensing and Air Photo Interpretation, Mcmillan, New York, 1992.
3. Compbell, J.: Introduction to Remote Sensing, Guilford, New York, 1989.
4. Curran, Paul, J.: Principles of Remote Sensing, Longman, London, 1985.
5. Hord, R. M.: Digital Image Processing of Remotely Sensed Data; Academic New York, 1989.
6. Luder D.: Aerial photography Interpretation: Principles and Applications, McGraw Hill, New York, 1959.
7. Pratt, W. K.: Digital Image Processing, Wiley, New York, 1978.
8. Rao, D. P. (Eds): Remote Sensing for Earth Resources, Associate of Exploration Geophysicist, Hyderabad, 1998.
9. Thomas, M. Lillesand and Ralph W. Kefer: Remote Sensing and Image Interpretation, John Wiley & Sons, New York, 1994.
10. Aronoff S.: Geographic Information System: A Management Perspective, DDL Publication, Ottawa. 1989.
11. Burrough P. A.: Principles of Geographic Information Systems for Land Resource Assessment. Oxford University Press, New York, 1986.
12. Fraser Taylor D. R.: Geographic Information System. Pergamon Press, Oxford, 1991.
13. Allahabad. Siddiqui, M. A.; 2011, Concepts and Techniques of Geoinformatics, Sharda Pustak Bhavan, Allahabad.
14. GSRAO, Global Navigation Satellite Systems, McGraw-Hill publications, New Delhi, 2010
15. B. Hoffman–Wellenhof, H. Liechtenegger and J. Collins, 'GPS–Theory and Practice', Springer–Wien, New York (2001).

SEMESTER - VII
Major –16B: Geography of Tourism

Course objectives:

- To provide introduction on Scope and subject matter of Tourism, Types of tourism. Tourism environment and Heritage.
- To give Knowledge on tourism and economic importance.
- To provide Understanding on Tourism and its Impact on Human Resources development.
- To provide knowledge on infrastructural and facilities development for tourism.

UNIT-I

Tourism: Definition, nature and Scope Tourism. Types of tourism. Tourism environment and Heritage. Geographical Parameters of Tourism by Robinson

UNIT-II

Economic importance of Tourism. Status of Tourism development in India and Andhra Pradesh. Tourist places in Andhra Pradesh

UNIT-III

Tourism - Human Resource Development: Apprenticeship, Training. Tourism as service based smokeless and non - exporting industry in India.

UNIT-IV

Infrastructural development of Tourism and recreation – Accommodation and Homestays, Food Facilities, Travel and Transport (palace on wheels), Vande Bharat, Drinking water, sanitation, security, banking, marketing and foreign exchange. Planning and policies of Tourism in India and Andhra Pradesh.

UNIT-V

Ecotourism, Medical Tourism, Pilgrimage and Sustainable Tourism. Tourism and Geospatial Technologies.

References:

1. Kaul, C.N; Dynamics of Tourism . A trilogy in three volumes sterling publishers 1985.
2. Alistermathuson and Geefry hall – Tourism: Economic, Physical and social impact-longman, 1982.
3. Chib, som, N.-perspectives on Tourism in India.
4. Bukart, A.J. and Medilik , S- Tourism: past , present and future.
5. Norval, A.j. The tourist Industry.
6. PILLAI, R.N. - Tour and Pilgrimage in India.
7. Ram ACHARYA- Tourism and cultural heritage of India.
8. KAUL.S.N –Tourism in India: all tourist Guide and Reference book 1977.
9. Negi J.M.S. Tourism and hoteling: A worldwide industry 1982, New Delhi: Gitanjali. Publication
10. Bhatia, A.K, - Tourism development: Principal and practices.
11. Dhar, P.N. (2006) International Tourism: Emerging Challenges and Future Prospects. Kanishka, New Delhi. Hall, M. and Stephen, P. (2006) Geography of Tourism and Recreation – Environment, Place and Space, Routledge, London. Kamra, K. K. and Chand, M. (2007) Basics of Tourism: Theory, Operation and Practice, Kanishka Publishers, Pune.
12. Page, S. J. (2011) Tourism Management: An Introduction, Butterworth-Heinemann-USA. Chapter 2.

SEMESTER - VII
Major –17A: Regional Planning and Development

Course objectives:

- To examine the concept of Region and it's planning.
- To explain the types of regions and regional hierarchy.
- To explain the concept of development and underdevelopment.
- To measure human development indicators

Course Outcomes:

After the completion of the course, Students will be able to

- Acquire a solid base of knowledge in the principles and practices Regional planning.
- The skills necessary for the effective practice of planning, including its purpose, meaning elements of plans; adoption, administration, and implementation of plans.
- Develop the values necessary for the effective practice of planning, including problem-solving skills; research skills; computational skills.

UNIT - I

Definition of Region, Evolution and Types of Regional planning: Formal, Functional, and Planning Regions and Regional Planning; Need for Regional Planning; Types of regional Planning.

UNIT – II

Choice of a Region for Planning: Characteristics of an Ideal Planning Region; Delineation of Planning Region; Regionalization of India for Planning (Agro Ecological Zones)

UNIT - III

Theories and Models for Regional Planning: Growth Pole Model of Perroux; Growth Centre Model in Indian Context; Myrdal, Hirschman, Rostow and Friedmann; Village Cluster

UNIT – IV

Changing Concept of Development, Concept of underdevelopment; Efficiency-Equity Debate

UNIT – V

Measuring development: Indicators (Economic, Social and Environmental); Human development.

References:

1. Blij H. J. De, 1971: Geography: Regions and Concepts, John Wiley and Sons.
2. Claval P., 1998: An Introduction to Regional Geography, Blackwell Publishers, Oxford and Massachusetts.
3. Friedmann J. and Alonso W. (1975): Regional Policy - Readings in Theory and Applications, MIT Press, Massachusetts.
4. Gore C. G., 1984: Regions in Question: Space, Development Theory and Regional Policy, Methuen, London.
5. Gore C. G., Köhler G., Reich U-P. and Ziesemer T., 1996: Questioning Development; Essays on the Theory, Policies and Practice of Development Intervention, Metropolis-Verlag, Marburg.
6. Haynes J., 2008: Development Studies, Polity Short Introduction Series.
7. Johnson E. A. J., 1970: The Organization of Space in Developing Countries, MIT Press, Massachusetts.
8. Peet R., 1999: Theories of Development, The Guilford Press, New York.
9. UNDP 2001-04: Human Development Report, Oxford University Press.
10. World Bank 2001-05: World Development Report, Oxford University Press, New

SEMESTER - VII
Major –17B: Advanced Remote Sensing

Course objectives:

- To give broad knowledge on photogrammetry, Principle, process, platforms and techniques and Aerial photographs.
- To provide knowledge on software and hardware required for digital image processing, image enhancement and restoration techniques.
- To understand the application of remote sensing and photogrammetry in various fields of study.

Course Outcomes:

After the completion of the course, Students will be able to

- Demonstrate knowledge of the foundations and theories of Photogrammetry, aerial photography and remote sensing.
- Acquire knowledge of physical geography and the methods and techniques for observing, measuring, recording and reporting on geographic phenomena.
- Demonstrate their competence to work individually and as a team to develop and present a client-driven GIS solution.
- Prepared to apply their skills in professional careers.

UNIT I

Digital Image Processing : Introduction to digital image processing; Image processing system characteristics: Hardware and Software;

UNIT II

Image restoration Techniques: Restoring line dropouts, Restoring periodic line striping, Restoring line offsets, Filtering random noise; Radiometric corrections and Geometric corrections in image processing.

UNIT III

Image Enhancement Techniques: Contrast enhancement, Density slicing, Edge enhancement, Merging datasets, Synthetic stereo images; Digital mosaics. Information extraction techniques: Principal –component (P.C) transformation analysis, Ratio images, Multispectral classification, Change-detection images.

UNIT IV

Remote Sensing Applications to Geographical Studies: Land use/Land cover mapping; water resources; Geomorphological, waste land studies, Urban and Regional Planning.

UNIT V

Photogrammetry : Introduction; Geometric elements of vertical photographs; scales of Aerial photographs; scale distortions; Flight planning; Relief displacement; parallax measurement; Orthophotography and rectification – principles and procedures.

References:

1. Barrett, E. C. and L. F. Curtis: Fundamentals of Remote Sensing and Air Photo Interpretation, Mcmillan, New York, 1992.
2. Campbell, J.: Introduction to Remote Sensing, Guilford, New York, 1989.
3. Curran, Paul, J: Principles of Remote Sensing, Longman, London, 1985.
4. Hord, R. M.: Digital Image Processing of Remotely Sensed Data; Academic New York, 1989.
5. Luder D.: Aerial photography Interpretation: Principles and Applications, McGraw Hill, New York, 1959.
6. Pratt, W. K: Digital Image Processing, Wiley, New York, 1978.
7. Rao, D. P. (Eds): Remote Sensing for Earth Resources, Associate of Exploration Geophysicist, Hyderabad, 1998.

SEMESTER - VII
Major –18A: Hydrology

Course objectives:

- To appraise the students to various water resources related aspects and hydrological cycle.
- To focus on ground water and soil specifications.
- To develop skill of water and soil management and to study on some case studies.

Course Outcomes:

After the completion of the course, Students will be able to

- Appraise the students to various water resources related aspects and hydrological cycle.
- Focus on ground water and soil specifications.
- Develop skill of water and soil management and to study on some case studies.

UNIT – I:

Definition, Nature and Scope of Hydrology, Global Hydrological Cycle, Basin Hydrological cycle. Anthropological interference on hydrological cycle.

UNIT-II:

Precipitation, Measurement, forms and types, Intensity and duration, Surface water sources- Evapotranspiration, factors affecting evaporation and evapotranspiration, Infiltration, factors affecting infiltration.

UNIT-III:

Run-off, factors affecting run-off, Hydrograph, Stream gauging, water balance and its applications in Hydrological systems.

UNIT– IV:

Ground water, occurrence, Movement, Aquifers Porosity, Specific Yield, Transmissibility, Seepage and ground water quality.

UNIT-V

Conservation of Water Resources, Watershed Concept, Micro Irrigation Technologies, Rain Water Harvesting Structures. Floods and their control.

References:

1. Addison, H.: Land Water and Flood, Chapman and Hall, London, 1961.
2. Chorley, R.J.(ed): Introduction to Physical Hydrology, Methuen, London, 1969.
3. Chorley, R.J.: Water, Earth and Man, Methuen, London, 1961.
4. Dakshinamurthy. C. etal., Water Resources of India and their Utilization in Agriculture, Indian Agriculture Research Institute, New Delhi, 1973.
5. Jones, J.A.A,: Global Hydrology: Processes, Resources and Environmental Management, Longman, 1997.
6. Matter.J.R: Water Resources, Distribution, Use and Management, John Wiley, Marlyance, 1984.
7. Singh. R.A and Singh S.R. Water Management: Principles and Practices, Tara Publication, Varanasi 1972.
8. Todd. D.K.: Ground Water Hydrology, John Wiley, New York, 1959.
9. H.M. Raghunath: Hydrology-Principles, Analysis, Design- New Age International Publishers- 1997.
10. Tideman,E.M.WatershedManagement:GuidelinesforIndianConditions,Omega,NewDelhi,1996.
11. Todd,D.K.:GroundWaterHydrology,JohnWiley,NewYork,1959.
12. Sarma,Hydrology,DhanpatRoy&Sons,NewDelhi.

SEMESTER - VII
Major –18B: Resource Geography

Course objectives:

- To appraise the students to various resources related aspects.
- To focus on Resources specifications.
- To develop skill of resource management and to study on some case studies.

Course Outcomes:

After the completion of the course, Students will be able to

- Appraise the students to various resources related aspects.
- Focus on resource specifications.
- Develop skill of resource management and to study on some case studies.

UNIT –I

Natural Resources: Definition, Nature and Scope, Concept, Classification-Natural and Human Resource and Resource Techniques-Exploration, Extraction, Processing, Grading, Transportation and Consumption.

UNIT –II

Land and Water Resources: Distribution, Utilisation, Problems and Management of Resources: Appraisal and Conservation of Resources.

UNIT-III

Forests and Agricultural Resources: Distribution, Utilisation, Problems and Management of Resources: Appraisal and Conservation of Resources

UNIT – IV

Mineral and Energy Resources: Distribution, Utilisation, Problems and Management of Resources: Appraisal and Conservation of Resources

UNIT-V

Sustainable Resource Development and Role of Geospatial Technologies

References:

1. Cutter S. N., Renwick H. L. and Renwick W., 1991: Exploitation, Conservation, Preservation: A Geographical Perspective on Natural Resources Use, John Wiley and Sons, New York.
2. Gadgil M. and Guha R., 2005: The Use and Abuse of Nature: Incorporating This Fissured Land: An Ecological History of India and Ecology and Equity, Oxford University Press. USA.
3. Holechek J. L. C., Richard A., Fisher J. T. and Valdez R., 2003: Natural Resources: Ecology, Economics and Policy, Prentice Hall, New Jersey.
4. Jones G. and Hollier G., 1997: Resources, Society and Environmental Management, Paul Chapman, London.
5. Klee G., 1991: Conservation of Natural Resources, Prentice Hall, Englewood.
6. Mather A. S. and Chapman K., 1995: Environmental Resources, John Wiley and Sons, New York.
7. Mitchell B., 1997: Resource and Environmental Management, Longman Harlow, England.
8. Owen S. and Owen P. L., 1991: Environment, Resources and Conservation, Cambridge University Press, New York.

SEMESTER - VII
Major –19A: Digital Cartography

- To appraise the students to various aspects of cartography.
- To understand the art and science approaches of map making and map analysis.
- To develop the skill of representation and conversions of scales.
- To provide the knowledge on map design, layout, lettering, toponymy, drawing surface and equipment.
- To give the clear picture on the changing process of map making from analogue to digital.

Course Outcomes

After the completion of the course, Students will be able to

- Explain the importance of advanced cartography in map making and presenting.
- Acquire good knowledge about different procedure of map making and various projection system of map making by developing broad knowledge about geotagging.
- Perform map layout and map interpretation for any geographical area.
- Acquire knowledge of different method of surveying and map making by using proper tools and technique and can apply this knowledge in future research works.

UNIT – I

Cartography – Nature and Scope, History and Cartography Today Scales – Concept and application; Graphical Construction of Plain, Comparative and Diagonal Scales.

UNIT – II

Map Projections – Classification, Properties and Uses; Graphical Construction of Polar Zenithal Stereographic, Bonne's and Mercator's Projections, and reference to Universal Transverse Mercator (UTM) Projection.

UNIT – III

Principles of Map Design and symbolization - Colors and Patterns. Generalisation in Cartography.

UNIT – IV

Digital Cartography: Digital Input: Data types & data sources and Thematic Maps. Cartographic processes – Making of various maps - Special merits of digital cartography.

UNIT – V

Web Mapping: Web map design - Mapping cyberspace - Geovisualization - Map as a decision tool - Web based electronic atlases - Web Map Publishing, Geoservers. Geospatial information policy.

References:

1. Anson R. and Ormelling F. J., 1994: *International Cartographic Association: Basic Cartographic Vol.* Pregmen Press.
2. Gupta K.K. and Tyagi, V. C., 1992: *Working with Map*, Survey of India, DST, New Delhi.
3. Mishra R.P. and Ramesh, A., 1989: *Fundamentals of Cartography*, Concept, New Delhi.
4. Monkhouse F. J. and Wilkinson H. R., 1973: *Maps and Diagrams*, Methuen, London.
5. Rhind D. W. and Taylor D. R. F., (eds.), 1989: *Cartography: Past, Present and Future*, Elsevier, International Cartographic Association.
6. Robinson A. H., 2009: *Elements of Cartography*, John Wiley and Sons, New York.
7. Sharma J. P., 2010: *Prayogic Bhugol*, Rastogi Publishers, Meerut.
8. Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers.
9. Sarkar, A. (2015) *Practical geography: A systematic approach*. Orient Black Swan Private Ltd., New Delhi
10. Singh R L & Rana P B Singh (1991) *Prayogatik Bhugol ke Mool Tatva*, Kalyani Publishers, New Delhi

SEMESTER - VII
Major –19B: Digital Image Processing

Course objectives:

- To explain practical knowledge on Remote sensing applications.
- To help to understand Visual and digital interpretation of satellite Images.
- To illustrate interpretation of Aerial photos.
- To acquaint knowledge on allocation of RS in different fields and sectors.

Course Outcomes:

After the completion of the course, Students will be able to

- Explain practical knowledge on Remote sensing applications.
- Understand Visual and digital interpretation of satellite Images.
- Illustrate interpretation of Aerial photos.
- Acquaint knowledge on allocation of RS in different fields and sectors.

UNIT I

Image overview: Data Acquisition, Processing, Analysis and output concepts and Components. Hardware, Software & Processing Principles.

UNIT II

Data Acquisition and Digital Image format: Pre- Processing, Enhancement, Contrast Manipulation, Density Slicing and Colour Coding. Image Rectification – Noise Removal.

UNIT III

Un- supervised Classification – Filtering, Generalization & Thematic Map Extraction.

UNIT IV

Supervised classification – Training Sites, Classifier's Accuracy of estimations.

UNIT V

In Situ Support – Field Data Collection, Equipment in Field Data collection – Radiometers & G.P.S. Post Classification – Design and Layout Principles, Map output.

References:

1. Jensen, JR. Introduction to Digital Image Processing, Prentice Hall.
2. Bernstein, R (Ed) Digital Image Processing of Remotely Sensed Data, I.E.E.E. Press,
3. 1978.
4. E.L. Hall, Computer Image Processing & Recognition, Academic Press, New York,
5. 1979.
6. Hord R.M. Digital Image Processing of Remotely sensed Data, Academic Press, 1982.
7. Tou J.T. & Gonzalez R.C. Pattern Recognition Principles, Addison, Wesley, 1974.
8. Jain A.K. Fundamentals of Digital Image Processing, Prentice Hall, 1989.
9. Rosenfeld A. & Kak A.C. Digital Image Processing, Academic Press, New York, 1982.
10. Marr D. Vision, San Francisco, 1980.
11. Casleman K.R. Digital Image Processing, Prentice Hall, 1979.
12. Lillesand T.M. & Kiefer R.W. Remote Sensing & Image Interpretation, Wiley, 1987.
13. Mather Paul M., Computer Processing of Remotely Sensed Images: An
14. Introduction, John Wiley, New York, 1987.

SEMESTER - VII
Major –20A: Terrain Mapping Techniques

Course Objective

- To appraise the students about the Terrain mapping techniques.
- To project the representation of the landforms by using contour lines.
- To explain the methods of slope analysis.
- To Analyse Morphometry

Course Outcomes

After the completion of the course, Students will be able to

- Students can able to represent the landforms with contour lines.
- Student can perform profiles which are drawn from landforms through contours.
- Student can represent the slope analysis models.

UNIT I	Representation of relief features by contours.
UNIT II	Interpolation of contours and altimetric frequency curve
UNIT III	Profiles: Serial, Superimposed, Projected, Composite.
UNIT IV	Slope Analysis: Smith's and Wentworth's Methods.
UNIT V	Morphometric Analysis

References:

1. Misra, R.P. and Ramesh, A. : Fundamentals of Cartography, concept, New Delhi, 1989.
2. Monkhouse, F.J.H.R. and Wilkinson : Maps and diagrams; Methuen and Co., London, 1984.
3. Peter Toyne& Peter Newby, T. : Techniques in human geography; MacMillan, London, 1972.
4. Bygott, John (1967): An Introduction to Map Work and Practical Geography, University Tutorials.
5. Monkhouse, F.J. and Wilkinson, H.R. (1968): Maps and Diagrams Methuen, London.
6. Singh, R.L. (1979): Elements of Practical Geography, Kalyani Publishers, New Delhi.
7. Bygott, J. and Money, D.C. (1969): An Introduction to Map Work and Practical Geography, University Tutorial Press.
8. Subramanyam, V.P. (1982): Water Balance and its applications, Andhra University Press, Vishakhapatnam.
9. Gopal Singh (1996): Map Work and Practical Geography, Vikas Publishing House, New Delhi.

SEMESTER - VII
Major –20B: Global Navigation Satellite System

Course objectives:

- To develop the skill of understanding GNSS.
- To create awareness on post processing of geodata
- To develop skill of report writing by using geodata.

Course Outcomes:

After the completion of the course, Students will be able to

- Develop the skill of understanding GNSS Concepts.
- Generate awareness on post processing of geodata
- Develop skill of report writing by using geodata.

UNIT-I

Introduction – Basic concepts, system architecture and segments: Geodetic and Geocentric coordinate systems, World Geodetic System 1984 (WGS 84).

UNIT-II

Signal components, Errors – Types of errors and errors in observations and accuracy.
Signal structure and selective availability

UNIT-III

Navigation and Field Data collection – waypoints, routes and tracks using user segment.
Survey mapping in Defense, Agriculture, Environment. Survey Report

UNIT-IV

DGPS. Merits and demerits.

UNIT-V

IRNSS-GAGAN.

References:

1. Bailey, T. and Gatrell, A. C. (1995): Interactive Spatial Data Analysis. Longman, Harlow.
2. Dorling, D. and Fairborn, D. (1997): Mapping. Ways of Representing the World. Longman, Harlow.
3. Fraser Taylor, D.R. (1980): The Computer in Contemporary Cartography. John Wiley and Sons, New York.
4. Fraser Taylor, D.R. (ed.) (1983): Graphic Communication and Design in Contemporary Cartography. John Wiley and Sons, New York.
5. Kanetkar, T.P. and Kulkarni, S.V. (1967): Surveying and Levelling, Part II, A.V.G. Prakashan, Poona.
6. Keates, J.S. (1973): Cartographic Design and Production, Longman Group Ltd.
7. Mailing, D.H. (1973): Co-ordinate Systems and Map Projections. George Philip and Sons Ltd.
8. Rhind, B. and Adams, T. (ed.) (1983): Computers in Cartography. British Cartographic Society, London.

SEMESTER – VII
Major 16A-Practical – Geospatial Techniques

Course objectives:

- To acquaint knowledge the about especially Geographic Information System (GIS) Software's.
- .To develop the skill of geo-referencing and creation of different data files.
- To improve the practical knowledge on attribute data and linkage.
- To develop the skill on analysis methods of GIS.

Course Outcomes:

After the completion of the course, Students will be able to

- Acquaint knowledge the about especially Geographic Information System (GIS) Software's.
- Develop the skill of geo-referencing and creation of different data files.
- Improve the practical knowledge on attribute data and linkage.
- Develop the skill on analysis methods of GIS.

EX 1 Introduction to GIS Software, Geo-Referencing.

Ex2 Creation of File Geodatabase, Personal Geo-database, shape file .–DataBase generation–Spatial data generation – Digitization (Polygon, line and point) and Non-spatial data.

Ex3 Attribute data base and linkage of data Base.

Ex4: GIS-Analysis Methods

(a) Buffering, (b) Mapoverlay, (c) Interpolation, (d) Contours, (e), Slope, (f) DEM.

Ex5 GPS surveying. Data collection procedures: Point, Line and Area data collection. Post processing of the GPS data. GPS and GIS integrations output preparation. Report

References:

1. IanHeywoodetal.AnIntroductiontoGeographicalInformationSystems,AddisonWesleyLongmanLtd.1998.
2. Mishra,H.C.;GISHandbook,GISIndia,Hyderabad,1996.
3. PeterA.BurroughandRachaelA.McDonnell;PrinciplesofGeographicalInformationSystems;OxfordUniversityPress,NewYork,1998.
4. StarJandJ.Estes; Geographic Information Systems; An Introduction, PrenticeHall, Englewood Cliff, New Jersey, 1994.

SYLLABUS FOR THREE YEAR B.A / B.Sc., DEGREE EXAMINATIONS
SEMESTER – VII Practical
Major 16B-Practical – Geospatial Techniques

Course objectives:

- To acquaint knowledge the about especially Geographic Information System (GIS) Software's.
- .To develop the skill of geo-referencing and creation of different data files.
- To improve the practical knowledge on attribute data and linkage.
- To develop the skill on analysis methods of GIS.

Course Outcomes:

After the completion of the course, Students will be able to

- Acquaint knowledge the about especially Geographic Information System (GIS) Software's.
- . Develop the skill of geo-referencing and creation of different data files.
- Improve the practical knowledge on attribute data and linkage.
- Develop the skill on analysis methods of GIS.

EX 1 Introduction to GIS Software, Geo-Referencing.

Ex2 Creation of File Geodatabase, Personal Geo-database, shape file .–DataBase generation–Spatial data generation – Digitization (Polygon, line and point) and Non-spatial data.

Ex3 Attribute data base and linkage of data Base.

Ex4: GIS-Analysis Methods

(a) Buffering, (b) Mapoverlay, (c) Interpolation, (d) Contours, (e), Slope, (f) DEM.

Ex5 GPS surveying. Data collection procedures: Point, Line and Area data collection. Post processing of the GPS data. GPS and GIS integrations output preparation. Report

References:

1. Ian Heywood et al. An Introduction to Geographical Information Systems, Addison Wesley Longman Ltd. 1998.
2. Mishra, H.C.; GIS Handbook, GIS India, Hyderabad, 1996.
3. Peter A. Burroughs and Rachael A. McDonnell; Principles of Geographical Information Systems; Oxford University Press, New York, 1998.
4. Star J and J. Estes; Geographic Information Systems; An Introduction, Prentice Hall, Englewood Cliff, New Jersey, 1994.

SEMESTER – VII
Major 17A-Practical – Remote sensing Applications

Course objectives:

- To explain practical knowledge on Remote sensing applications.
- To help to understand Visual and digital interpretation of satellite Images.
- To illustrate interpretation of Aerial photos.
- To acquaint knowledge on allocation of RS in different fields and sectors.

Course Outcomes:

After the completion of the course, Students will be able to

- Explain practical knowledge on Remote sensing applications.
- Understand Visual and digital interpretation of satellite Images.
- Illustrate interpretation of Aerial photos.
- Acquaint knowledge on allocation of RS in different fields and sectors.

Ex1: Digital Image Interpretation- Subset

Ex2: Supervised classification

Ex3: Un- Supervised classification

Ex4: Change Detection.

Ex5: Reporting Change detection

References:

1. Curran,Paul,J.:Principles ofRemoteSensing:Longman,London,1985.
2. GautamN.C.etal.SpaceTechnologyandGeography; NationalRemoteSensingAgency,Hyderabad,1994.
3. Thomas M.Lillesandand Ralph, W.Keffer; Remote Sensing and images interpretation, John Willey & Sons, NewYork,1994.

SEMESTER – VII
Major 17B-Practical – Remote sensing Applications

Course objectives:

- To explain practical knowledge on Remote sensing applications.
- To help to understand Visual and digital interpretation of satellite Images.
- To illustrate interpretation of Aerial photos.
- To acquaint knowledge on allocation of RS in different fields and sectors.

Course Outcomes:

After the completion of the course, Students will be able to

- Explain practical knowledge on Remote sensing applications.
- Understand Visual and digital interpretation of satellite Images.
- Illustrate interpretation of Aerial photos.
- Acquaint knowledge on allocation of RS in different fields and sectors.

Ex1: Digital Image Interpretation- Subset

Ex2: Supervised classification

Ex3: Un- Supervised classification

Ex4: Change Detection.

Ex5: Reporting Change detection

References:

1. Curran,Paul,J.:Principles ofRemoteSensing:Longman,London,1985.
2. GautamN.C.etal.Space Technology and Geography; National RemoteSensingAgency, Hyderabad,1994.
3. Thomas M.Lillesandand Ralph, W.Keffer; Remote Sensing and images interpretation, John Willey & Sons, NewYork,1994.

SEMESTER - VIII
Major –21A: Advanced Geospatial Technology

Course objectives:

- To focus on collection, analyzing, interpretation and presenting the data related to Earth.
- To provide the theoretical knowledge on the Modeling surfaces and integration of Remote sensing with GIS.
- To provide knowledge on GIS applications in different sectors.

Course Outcomes:

After the completion of the course, Students will be able to

- Focus on collection, analyzing, interpretation and presenting the data related to Earth.
- Improve knowledge on the Modeling surfaces and integration of Remote sensing with GIS.
- Develops knowledge on GIS applications in different sectors.

UNIT I

GIS applications: GIS as a Decision Support System – GIS as a Land Information System – GIS as a Disaster Management and Emergency Response System

UNIT II

Resource management applications - Facility Management application – Urban Management application. - Application of GIS for sustainable development.

UNIT III

Remote Sensing & GIS in Cyclonic - drought: Cyclone: Historical data and post cyclone remote sensing data analysis - Cyclone damage assessment - detection of zones prone for cyclone damage and its causative factor - remedial strategies. Drought: Mapping of drought area using historical data and remote sensing data - detection of causative factors for drought and remedial measures

UNIT IV

GPS Positioning Types- Absolute Positioning, Differential positioning GPS Surveying Methods and Accuracy: Methods-Static & Rapid Static, Kinematic-Real Time Kinematic Survey- DGPS-GPS Data Processing and Accuracy, Factors Affecting GPS Accuracy Reference Station: Selection of Reference Station, Reference Station Equipment: GPS receiver, GPS antenna. Radio and its types, Radio Antenna.

UNIT – V

Web Mapping: Web map design - Mapping cyberspace - Geovisualization - Map as a decision tool - Web based electronic atlases - Geospatial information policy. Open-source GIS, Web Map Publishing, Geoservers.

References:

1. Kumar, Dilip., Singh, R.B., and Kaur, Ranjeet., (2019) Spatial Information Technology for Sustainable Development Goals, Springer.
2. Kraak M.J. (2010) Cartography: Visualization of Geospatial Data, Pearson Education Ltd., London
3. Robinson, A.H. et al. (1995) Elements of Cartography, John Wiley & Sons, U.S.A
4. Monkhouse, F.J. and Wilkinson, H.R. (1994) Maps and Diagrams, Methuen, London.
5. D. Tomlin., (1990): Geographic Information Systems and Cartographic Modelling, Prentice-Hall, Englewood Cliffs, NJ.
6. Heywood, I., Comelius, S., and Carver, S., (1988) An Introduction to Geographical Information Systems, Addison Wiley Longmont, New York.
7. <http://kartoweb.itc.nl/geometrics/Introduction/introduction.html>

B.A./B.Sc. Geography Honors with single Major and Minor
SYLLABUS FOR THREE YEAR B.A / B.Sc., DEGREE EXAMINATIONS
SEMESTER - VIII
Major –21B: Political Geography

Course objectives:

- To explain the historical evolution, of discipline of Political Geography.
- To help to understand about theoretical models related to geopolitics and geo- strategy.
- To provide the knowledge about political attributes that evolved with territorial Structure and geographic influence like state, nation, boundary, elections, and frontier of world in general and India in particular.

Course Outcomes:

After the completion of the course, Students will be able to

- The Students will be able to critically examine the geographical bases of political studies.
- The Students will be able to evaluate and correlate different theories with contemporary geopolitical and geo-strategic issues.

UNIT I

Definition, Nature and scope of political geography. Influence of location, size and shape in political Geography.

UNIT-II

Geographic elements and the state: influence of physical, human and Economic elements. Geo-strategic Theories: Mahan, Mackinder and Spykman.

UNIT-III

Themes in Political geography: State, Nation, Land locked state, and Nation Building: Formation of Frontiers and boundaries, classification of boundaries. Colonialism, De colonialism, Neo colonialism, federalism and other forms of Governance.

UNIT-IV

Geopolitical significance of India and the Indian Ocean, maritime boundaries. The Changing political map of India, Unity in diversity, centripetal and centrifugal forces, stability and instability. International disputes.

UNIT-V

Politics of Displacement: Issues of relief, compensation and rehabilitation: with reference to Dams and Special Economic Zones

References:

1. Prescott, J.R.V: Political Geography, Methuen, London, 1972.
2. Gohen, S.B: Geography of Political in a divide world , Open university press, U.K. 1973.
3. Sukhwai, B.L.: India -A Political Geography, Ahmadabad, 1971.
4. Gohen, S.B. Background to political geography, Museum Press, London, 1967.
5. Maszid Hussain: Political Geography of India, New Delhi.
6. De Blij, H.J. and Glassner, Martin: Systematic Political Geography, John Wiley, New York, 1968.
7. Dikshit, R.D.: Political Geography A contemporary perspective, Tata McGraw Hill, New Delhi, 1996.
8. Dikshit, R.D.: Political geography: A century of 67. 8. Progress, Sage, New Delhi, 1999.

9. Taylor, Peter. *Political Geography*, Longman, London, 1985.
10. Deshpande, C.D. *India -A Regional Interpretation* Northern Book Centre, New Delhi, 1992.
11. Agnew J., 2002: *Making Political Geography*, Arnold.
12. Agnew J., Mitchell K. and Toal G., 2003: *A Companion to Political Geography*, Blackwell.
13. Cox K. R., Low M. and Robinson J., 2008: *The Sage Handbook of Political Geography*, Sage Publications.
14. Cox K., 2002: *Political Geography: Territory, State and Society*, Wiley-Blackwell
15. Gallaher C., et al, 2009: *Key Concepts in Political Geography*, Sage Publications.
16. Glassner M., 1993: *Political Geography*, Wiley.
17. Jones M., 2004: *An Introduction to Political Geography: Space, Place and Politics*, Routledg.
18. Mathur H M and M MCernea (eds.) *Development, Displacement and Resettlement – Focus on Asian Experience*, Vikas, Delhi
19. Painter J. and Jeffrey A., 2009: *Political Geography*, Sage Publications.
20. Taylor P. and Flint C., 2000: *Political Geography*, Pearson Education.
21. Verma M K (2004): *Development, Displacement and Resettlement*, Rawat Publications, Delhi
22. Hodder Dick, Sarah J Llyod and Keith S McLachlan (1998), *Land Locked States of Africa and Asia* (vo.2), Frank Cass

SEMESTER - VIII
Major –22A: Population Geography

Course objectives:

- To understand the historical evolution, of discipline of Population Geography.
- To help to understand about theoretical models related to population.

Course Outcomes:

After the completion of the course, Students will be able to

- The Students will be able to critically examine the concepts of Population studies.
- The Students will be able to evaluate and correlate different theories with contemporary issues.

UNIT-I

Population Geography: Introduction, Definition, Nature and Scope; Sources of Data with special reference to India (Census, Vital Statistics and NSS).

UNIT-II

Role of Geography in Population Size, Distribution and Growth and Patterns; Theories of Growth – Malthusian Theory and Demographic Transition Theory.

UNIT-III

Population Dynamics: Fertility, Mortality and Migration – Measures, Determinants and Implications.

UNIT-IV

Geography of Population Composition and Characteristics – Age-Sex Composition; Rural and Urban Composition; Literacy.

UNIT-V

Contemporary Issues – Ageing of Population; Declining Sex Ratio; HIV/AIDS.

References:

1. Barrett H. R., 1995: Population Geography, Oliver and Boyd.
2. Bhende A. and Kanitkar T., 2000: Principles of Population Studies, Himalaya Publishing House.
3. Chandna R. C. and Sidhu M. S., 1980: An Introduction to Population Geography, Kalyani Publishers.
4. Clarke J. I., 1965: Population Geography, Pergamon Press, Oxford.
5. Jones, H. R., 2000: Population Geography, 3rd ed. Paul Chapman, London.
6. Lutz W., Warren C. S. and Scherbov S., 2004: The End of the World Population Growth in the 21st Century, Earthscan
7. Newbold K. B., 2009: Population Geography: Tools and Issues, Rowman and Littlefield Publishers.
8. Pacione M., 1986: Population Geography: Progress and Prospect, Taylor and Francis.
9. Wilson M. G. A., 1968: Population Geography, Nelson.
10. Panda B P (1988): JanasankyaBhugol, M P Hindi GranthAcademy,Bhopal
11. Maurya S D (2009) JansankyaBhugol, ShardaPutakBhawan, Allahabad
12. Chandna, R C (2006), JansankhyaBhugol, Kalyani Publishers, Delhi

SEMESTER - VIII
Major –22B: Settlement Geography

Course objectives:

- To understand the theoretical emergence of social geography, social well being, gender issues, social differentiation and regional dimensions of sociological changes.
- To understand demographic and social attributes of Earth such as migration and social relations.

Course Outcomes

After the completion of the course, Students will be able to

- Assess the casual role of Geography in production of different social groups and shaping of their unique features.
- Evaluate the emerging social spaces, stratification, social well being, and issues of social justice through spatial perspective.

UNIT – I

Social Geography: Concept, Origin, Nature and Scope.

UNIT – II

Peopling Process of India: Technology and Occupational Change; Migration.

UNIT – III

Social Categories: Caste, Class, Religion, Race and Gender and their Spatial distribution

UNIT – IV

Geographies of Welfare and Well being: Concept and Components – Healthcare, Housing and Education.

UNIT – V

Social Geographies of Inclusion and Exclusion, Slums, Gated CommUnities, Communal Conflicts and Crime.

References:

1. Ahmed A., 1999: Social Geography, Rawat Publications.
2. Casino V. J. D., Jr., 2009) Social Geography: A Critical Introduction, Wiley Blackwell.
3. Cater J. and Jones T., 2000: Social Geography: An Introduction to Contemporary Issues, Hodder Arnold.
4. Holt L., 2011: Geographies of Children, Youth and Families: An International Perspective, Taylor & Francis.
5. Panelli R., 2004: Social Geographies: From Difference to Action, Sage.
6. Rachel P., Burke M., Fuller D., Gough J., Macfarlane R. and Mowl G., 2001: Introducing Social Geographies, Oxford University Press.
7. Smith D. M., 1977: Human geography: A Welfare Approach, Edward Arnold, London.
8. Smith D. M., 1994: Geography and Social Justice, Blackwell, Oxford.
9. Smith S. J., Pain R., Marston S. A., Jones J. P., 2009: The SAGE Handbook of Social Geographies, Sage Publications.
10. Sopher, David (1980): An Exploration of India, Cornell University Press, Ithasa
11. Valentine G., 2001: Social Geographies: Space and Society, Prentice Hall.

SEMESTER - VIII
Major –23A: Agricultural Geography

Course objectives:

- To focus on evolution of Agriculture through different ages and approaches.
- To understand the concepts and importance of determinants in different cropping patterns.
- To understand agricultural location theories and also the problems and prospects of Indian Agriculture.

Course Outcomes:

After the completion of the course, Students will be able to

- Know evolution of Agriculture through different ages and approaches.
- Understand the concepts and importance of determinants in different cropping patterns.
- Understand agricultural location theories also the problem and prospects of Indian Agriculture.

UNIT I

Nature, Scope, significance and development of Agricultural Geography. Approaches to the study of agricultural geography; Origin and evolution of agriculture.

UNIT II

Determinants of agriculture – Physical, Socio -economic, technological and political; concepts and methods of land use classification.

UNIT III

Concepts and methods of Agriculture: Crop combination; Crop concentration; Crop diversification; agricultural productivity; agricultural typology.

UNIT IV

Agricultural location theory – Von Thunen and its modifications. Concepts of agricultural region and agricultural regionalization. Whittlesey's agricultural systems of the world.

UNIT V

Agricultural regions of World and India. Green revolution, HYV; Problems and prospects of Indian agriculture.

References:

1. BaylissSmith, T.P.: The Ecology of Agricultural Systems. Cambridge University Press, London, 1987.
2. Berry, B.J.L. et al.: The Geography of Economic Systems. Prentice Hall, New York, 1976.
3. Dyson, T.: Population and Food – Global Trends and Future Prospects. Routledge, London, 1996.
4. Gregor, H.P.: Geography of Agriculture. Prentice Hall, New York, 1970.
5. Grigg, D.B.: The Agricultural Systems of the World. Cambridge University Press, New York, 1974.
6. Hartshorn, T.N. and Alexander, J.W. Economic Geography. Prentice Hall, New Delhi, 1988.
7. Morgan, W.B. and Norton, R.J.C.: Agricultural Geography. Methuen, London, 1971.
8. Singh, J. And Dhillon, S.S.: Agricultural Geography, Tata McGraw Hill Pub., New Delhi, 1988.
9. Tarrant, J.R: Agricultural Geography. Wiley, New York, 1974.

SEMESTER - VIII
Major –23B: Industrial Geography

Course objectives:

- To develop the understanding about industrial Geography.
- To familiarize the students with industrial location theories of geography.
- To enhance knowledge on industrial regions and imbalances in India.

Course Outcomes

After the completion of the course, Students will be able to

- Familiarize the students with industrial location theories, in industrial geography.
- Appreciate the knowledge on industrial classification.
- Enhance knowledge on industrial regions and imbalances in India.

UNIT I

Definition, Nature and scope of industrial Geography, significance of Industrial Geography, Industries; Introduction and definition.

UNIT II

Major geographical factors for industrial locations. Theories of Industrial location: August Losch and Isard.

UNIT III

Classification of Industries: Resource based, agro based, Information Technology (IT). Multitasked: Small scale and large scale industries.

UNIT IV

Industrial Regions: Industrial development in India, Industrialization in Andhra Pradesh. Regional imbalances.

UNIT V

Industrial policies of India with special reference to Andhra Pradesh

References:

1. Isard, W.: Introduction to regional sciences. Prentice Hall.
2. Smith, D.M. : Industrial location, willay international edition -1971
3. Alexander J.N.: Economic Geography. Prentice Hall.
4. Estall, R.C. & industrial activity and Economic Geography, R.O. Buchanan Hutchinson university library, London
5. SINHA, B.N. industrial geography of India
6. Thoman, Concling and Yeats: The Geography of Economic activity, M.cgraw Hill Company.

SEMESTER - VIII
Major –24A: Climate Analysis

Course objectives

- To provide understanding and interpretation Skills of different weather maps.
- To improve the knowledge on Indian Climatic conditions.

Course Outcomes

After the completion of the course, Students will be able to

- Analyse and interpret the weather maps.
- Explain the elements of weather and climate.

UNIT – I

Graphs – Climograph, Hyther graph and Ergo graph.

UNIT – II

Water Balance Techniques – Moisture Adequacy Index– Aridity Index – Humidity Index – Moisture Index and Water Balance Graph.

UNIT-III

Interpretation of Weather Maps.

UNIT-IV

Rainfall Analysis – Mean Rainfall – Rainfall Intensity – Rainfall variability and Rainfall Ratio.

UNIT –V

Temperature Analysis – Mean Temperature, Diurnal and Annual Ranges, Distribution and variability

References:

1. Bygott, John (1967): An Introduction to Map Work and Practical Geography, University Tutorials.
2. Monkhouse, F.J. and Wilkinson, H.R. (1968): Maps and Diagrams Methuen, London.
3. Singh, R.L. (1979): Elements of Practical Geography, Kalyani Publishers, New Delhi.
4. Bygott, J. and Money, D.C. (1969): An Introduction to Map Work and Practical Geography, University Tutorial Press.
5. Subramanyam, V.P. (1982): Water Balance and its applications, Andhra University Press, Vishakhapatnam.
6. Gopal Singh (1996): Map Work and Practical Geography, Vikas Publishing House, New Delhi.
7. Asish Sarkar, Practical Geography- A Systematic Approach, Orient Longman 1997

SEMESTER - VIII
Major –24B: Digital Surface Modeling

Course objectives:

To provide exposure to Surface Data in 2D and 3D and the analytical capabilities.

Course Outcomes:

At the end of the course the student will be able to understand

- The intricacies of implementation textbook knowledge into practice
- The concepts of developments and implementation of new techniques in geomatics

UNIT I:

Topographic Surface Data Format and Sources Sources Of Topographic Data – X.Y.Z
Data – Ground Survey Methods, Airborne Laser Scanner Data, Gps Data,

UNIT II.

Photogrammetry, Stereo Satellite Images, Space based Altimeters: Radar and
LiDAR, Interferometric Sources, SRTM,

UNIT III

Topographic Maps – Comparison of various sources of Topographic Data – Methods of
Representing Topographic Data – Digital Elevation Models, TIN Model, Contours.

UNIT IV

LAND SURFACE MODELLING Geomorphometry – Conceptual and Digital Models of
Land Surface – Land Surface Parameters: Reduction of errors in parameters and objects.

UNIT V:

APPLICATIONS OF 2D LAND SURFACES

Applications of TIN and other surface Data – Hydrological Applications: Flow Algorithm
and Flow Direction.. Landform elements Applications. Meteorological Applications.

References:

1. Tomislav Hengl, Hannes L Reuter, Geomorphometry-Concepts, Software and Applications. Developments in Soil Science, Volume 33, Elsevier, 2009
2. Rudiger Mach. Peter Petschek, Visualization of Digital Terrain and Landscape Data: A Manual. springer, 2007.

SEMESTER - VIII
Major –25A: Field and Research Methodology

Course objectives

- To provide an understanding for the student on statistical concepts to include measurements of location and dispersion, and correlation analysis.
- To calculate and apply measures of location and measures of dispersion -- grouped and ungrouped data cases.

Course outcomes:

After the completion of the course, Students will be able to

- Keeping in view the nature of data and purpose of study and to make a rational choice amongst listed various statistical methods.
- Students shall know how to organize, manage, and present data.
- Understand and use different research methodology in their researches and day to day needs.

UNIT-I

Field Work in Geographical Studies – Role, Value, Data and Ethics of Field-Work

UNIT-II

Defining the Field and Identifying the Case Study – Rural / Urban / Physical / Human / Environmental.

UNIT-III

Field Techniques, Observations (Participant / Non Participant), Questionnaires (Open/ Closed / Structured / Non-Structured); Interview with Special Focus on Focused Group Discussions;

UNIT-IV

Use of Field Tools – Collection of Material for Physical and Socio-Economic Surveys.

UNIT-V

Designing the Field Report – Aims and Objectives, Methodology, Analysis, Interpretation and Writing the Report.

Practical Record

1. Each student will prepare an individual report based on primary and secondary data collected during field work.
2. The duration of the field work should not exceed 10 days.
3. The word count of the report should be about 8000 to 12,000 excluding figures, tables, photographs, maps, References and appendices.
4. One copy of the report on A 4 size paper should be submitted in soft binding.

References:

1. Creswell J., 1994: Research Design: Qualitative and Quantitative Approaches Sage Publications.
2. Dikshit, R. D. 2003. The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.
3. Evans M., 1988: "Participant Observation: The Researcher as Research Tool" in Qualitative Methods in Human Geography, eds. J. Eyles and D. Smith, Polity.
4. Mukherjee, Neela 1993. Participatory Rural Appraisal: Methodology and Application. Concept Publs.Co., New Delhi.
5. Mukherjee, Neela 2002. Participatory Course and Action: with 100 Field Methods. Concept Publs.Co., New Delhi
6. Robinson A., 1998: "*Thinking Straight and Writing That Way*", in *Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences*, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
7. Special Issue on "Doing Fieldwork" *The Geographical Review* 91:1-2 (2001).

SEMESTER - VIII
Major –25B: Geographical Survey

Course objectives:

- To help to understand geo spatial technologies applications in different geographical areas.
- To assist to select the project and completing project and report writing.

Course Outcomes:

After the completion of the course, Students will be able to

- Develop geo spatial technologies applications in different geographical areas.
- Select the topic and complete the project and report writing.

The Project Report based on any two field based case studies among following disasters and one disaster preparedness plan of respective college or locality:

1. Flood
2. Drought
3. Cyclone and Hailstorms
4. Earthquake
5. Landslides
6. Human Induced Disasters: Fire Hazards, Chemical, Industrial accidents

References:

1. Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
2. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
3. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
4. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3
5. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
6. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
7. Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
8. Singh Jagbir (2007) “Disaster Management Future Challenges and OppurtUnities”, 2007. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

SEMESTER – VIII
Major 21A-Practical – Advanced Geospatial Techniques

Course objectives:

- To analyse the Geographical data in 3D
- To integrate Geographical data in NET based applications.
- To use mobiles for asset mapping

Course Outcomes:

After the completion of the course, Students will be able to

- Complete the project using Advanced Geospatial Tools - Digital Surface Modelling
- Use web based application in GIS
- Use mobile for Mapping

EX 1 Digital Surface Modelling -1

Ex2 : Digital Surface Modelling -2

Ex3 : Web GIS – Practical - 1

Ex4: Web GIS - Practical - 2

Ex5 : Mobile Asset Mapping

REFERENCES:

1. Ian Heywood et al. An Introduction to Geographical Information Systems, Addison Wesley Longman Ltd. 1998.
2. Mishra, H.C.; GIS Handbook, GIS India, Hyderabad, 1996.
3. Peter A. Burrough and Rachael A. McDonnell; Principles of Geographical Information Systems; Oxford University Press, New York, 1998.
4. Star J and J. Estes; Geographic Information Systems; An Introduction, Prentice Hall, Englewood Cliff, New Jersey, 1994.

SEMESTER – VIII
Major 21B-Practical –Advanced Geospatial Techniques

Course objectives:

- To analyse the Geographical data in 3D
- To integrate Geographical data in NET based applications.
- To use mobiles for asset mapping

Course Outcomes:

After the completion of the course, Students will be able to

- Complete the project using Advanced Geospatial Tools - Digital Surface Modelling
- .Use web based application in GIS
- Use mobile for Mapping

EX 1 Digital Surface Modelling -1

Ex2 : Digital Surface Modelling -2

Ex3 : Web GIS – Practical - 1

Ex4: Web GIS - Practical - 2

Ex5 : Mobile Asset Mapping

REFERENCES:

1. Ian Heywood et al. An Introduction to Geographical Information Systems, Addison Wesley Longman Ltd. 1998.
2. Mishra, H.C.; GIS Handbook, GIS India, Hyderabad, 1996.
3. Peter A. Burrough and Rachael A. McDonnell; Principles of Geographical Information Systems; Oxford University Press, New York, 1998.
4. Star J and J. Estes; Geographic Information Systems; An Introduction, Prentice Hall, Englewood Cliff, New Jersey, 1994.

SEMESTER – VIII
Major 22A-Practical – Research Techniques

Course objectives

- To provide an understanding for the student on statistical concepts to include measurements of location and dispersion, and correlation analysis.
- To calculate and apply measures of location and measures of dispersion -- grouped and ungrouped data cases.
- To sensitize the different Research and agricultural techniques.

Course outcomes:

After the completion of the course, Students will be able to

- Keeping in view the nature of data and purpose of study and to make a rational choice amongst listed various statistical methods.
- Students shall know how to organize, manage, and present data.
- Understand and use different research techniques in their researches and day to day needs.
- Use different agricultural methods in their research and needed situations.

Ex1: Network analysis: Alfa, Beta, Gama, Eta, Theta indices, Centrality, Connectivity, shortest path matrix analysis and Traffic flow Diagram.

Ex2 : Nearest neighbour distance analysis, Rank size relationship.

Ex3: Detour index, shape index.

Ex4: Drainage basin morphometry – Water Balance.

Ex5: Crop combination, crop diversification Techniques, Agricultural Land use efficiency.

References:

1. Gregory, K.J. and Walling, D.E. Drainage basin form and process: A Geomorphological approach; Arnold; London 1973.
2. Peter Davis: Science in geography, Science Series – 3, Data description and presentation, Oxford University Press, London, 1975.
3. Peter Toyne and Peter Newby, T.: Techniques in Human geography, MacMillan, London, 1972.
4. Peter Toyne and Peter Newby, T. : Techniques in Physical geography; MacMillan, London, 1972.
5. Singh Jasbir and Dhillon, S.S. : Agricultural geography, TATA McGraw Hill, New Delhi, 1984.
6. Singh, R.L. Mapwork and practical geography, central book depot, Allahabad, 1972.

SEMESTER – VIII
Major 22B-Practical – Research Techniques

Course objectives

- To provide an understanding for the student on statistical concepts to include measurements of location and dispersion, and correlation analysis.
- To calculate and apply measures of location and measures of dispersion -- grouped and ungrouped data cases.
- To sensitize the different Research and agricultural techniques.

Course outcomes:

After the completion of the course, Students will be able to

- Keeping in view the nature of data and purpose of study and to make a rational choice amongst listed various statistical methods.
- Students shall know how to organize, manage, and present data.
- Understand and use different research techniques in their researches and day to day needs.
- Use different agricultural methods in their research and needed situations.

Ex1: Network analysis: Alfa, Beta, Gama, Eta, Theta indices, Centrality, Connectivity, shortest path matrix analysis and Traffic flow Diagram.

Ex2 : Nearest neighbour distance analysis, Rank size relationship.

Ex3: Detour index, shape index.

Ex4: Drainage basin morphometry – Water Balance.

Ex5: Crop combination, crop diversification Techniques, Agricultural Land use efficiency.

References:

1. Gregory, K.J. and Walling, D.E. Drainage basin form and process: A Geomorphological approach; Arnold; London 1973.
2. Peter Davis: Science in geography, Science Series – 3, Data description and presentation, Oxford University Press, London, 1975.
3. Peter Toyne and Peter Newby, T.: Techniques in Human geography, MacMillan, London, 1972.
4. Peter Toyne and Peter Newby, T. : Techniques in Physical geography; MacMillan, London, 1972.
5. Singh Jasbir and Dhillon, S.S. : Agricultural geography, TATA McGraw Hill, New Delhi, 1984.
6. Singh, R.L. Mapwork and practical geography, central book depot, Allahabad, 1972.