

## **COURSE & PROGRAM OUTCOMES OF GEOGRAPHY**

### **B.A. Geography (NEP)**

Geography is the study of places and the relationships between people and their environments. Geographers explore both the physical properties of Earth's surface and the human societies spread across it. They also examine how human culture interacts with the natural environment and the way those locations and places can have an impact on people. Geography seeks to understand where things are found, why they are there, and how they develop and change over time. The study of the diverse environments, places, and spaces of Earth's surface and their interactions. It seeks to answer the questions of why things are as they are where they are. The modern academic discipline of geography is rooted in ancient practice, concerned with the characteristics of places, in particular their natural environments and peoples, as well as the relations between the two. Choice Based Credit System (CBCS): Syllabus in Geography

**INTRODUCTION:** In compliance with recent directives from the University Grants Commission, the undergraduate syllabus for Geography is reframed into Choice Based Credit System largely following the model syllabus prepared by the Department of Geography, Deen Dayal Upadhyaya Gorakhpur University, Gorakhpur.

**The objectives:** The main objective of this new curriculum is to give the students a holistic understanding of the subject, putting equal weightage to the core content and techniques used in Geography. The syllabus tries to give equal importance to the two main branches of Geography: Physical and Human. The principal goal of the syllabus is to enable the students to secure a job at the end of the undergraduate programme. Keeping this in mind and in tune with the changing nature of Geography, adequate emphasis is rendered on applied aspects of the subject such as emerging techniques of mapping and field-based data generation. The syllabus emphasizes on development of basic skills of the subject, so that everyone need not go for higher studies in search of professional engagement or employment. To summarize in details:

- 1. To orient the students towards identification and analysis of various facets of geographic and geographical features and processes.*
- 2. To develop students' aptitude for acquiring basic skills of carrying out field work.*
- 3. To facilitate the students to learn skills of map making.*
- 4. To guide students to learn the science and art of collecting, processing and interpreting the data.*
- 5. To expose the students to the use of the updated technologies of remote sensing, GNSS, Geographical Information System (GIS) and GIS science.*

**LEARNING OUTCOMES:** This syllabus is designed to impart basic knowledge on geography as a spatial science and train the undergraduates to secure employment in the sectors of geospatial analysis, development and planning, mapping and surveying.

**ASSESSMENT METHODS:** Different methods will be applied to assess the students over the duration of the programme. These include written assignments and oral examinations, group discussions and presentations, problemsolving exercises, field study, experimental design planning, seminars, preparation and presentation of reports and practical record book.

**Department of Geography**  
**DDU GORAKHPUR UNIVERSITY, GORAKHPUR**  
**B.A.Geography (NEP) Syllabus**

**Semester-wise Titles of the Papers in BA Geography 4 Year Course (NEP)**

<b>Year</b>	<b>Semester</b>	<b>Course Code</b>	<b>Paper Title</b>	<b>Theory /practical</b>	<b>Credit</b>
1	I	GEO101F	Physical Geography	Theory	04
1	I	GEO102F	Fundamentals of Practical In Geography	Practical	02
1	II	GEO103F	Human Geography	Theory	04
1	II	GEO104F	Geological map, Diagrams, Graphs and Survey- Prismatic Compass	Practical	02
2	III	GEO201F	Economic Geography	Theory	04
2	III	GEO202F	Map Projection, Thematic Map, Weather Map & Survey- Indian Clinometer and Sextant	Practical	02
2	IV	GEO203F	World Regional Geography	Theory	04
2	IV	GEO204F	Statistical Method in Geography	Practical	02
3	V	GEO301F	Environment, Disaster Management and Climate Change	Theory	04
3	V	GEO302F	Evolution of Geographical Thought	Theory	04
3	V	GEO303F	Tour and Tour Report & Socio-Economic Survey	Practical	02
3	VI	GEO304F	Geography of India	Theory	04
3	VI	GEO305F	Basic of Remote Sensing	Theory	04
3	VI	GEO306F	Research Methodology & Project Report	Practical	02
<b>UG Degree</b>					
4	VII	GEO401F	Geographical Thought: Concepts and Issues	Theory-Core	04
4	VII	GEO402F	Advance Geomorphology	Theory-Core	04
4	VII	GEO403F	Physical and Economic Geography of India	Theory-Core	04
4	VII	GEO404F	Cartograms & Projections	Practical	04
4	VII	GEO405F	Advance Economic Geography	Theory- Elective	04
4	VII	GEO406F	Remote Sensing	Theory- Elective	04
4	VII	GEO407F	Rural Development	Theory- Elective	04
4	VIII	GEO408F	Climatology	Theory-Core	04

4	VIII	GEO409F	Research Methodology	Theory-Core	04
4	VIII	GEO410F	Regional Development & Planning of India	Theory-Core	04
4	VIII	GEO411F	System Analysis, Geological Maps and Morphometric Analysis	Practical	04
4	VIII	GEO412F	Political Geography	Theory- Elective	04
4	VIII	GEO413F	Urban Geography	Theory- Elective	04
4	VIII	GEO414F	Transport Geography	Theory- Elective	04
<b>UG Honors</b>					
<b>Or</b>					
4	VII	GEO415F	Geographical Thought: Concepts and Issues	Theory-Core	04
4	VII	GEO416F	Advance Geomorphology	Theory-Core	04
4	VII	GEO417F	Physical and Economic Geography of India	Theory-Core	04
4	VII	GEO418F	Cartograms & Projections	Practical	04
4	VII	GEO419F	Advance Economic Geography	Theory- Elective	04
4	VII	GEO420F	Remote Sensing	Theory- Elective	04
4	VII	GEO421F	Rural Development	Theory- Elective	04
4	VIII	GEO422F	Climatology	Theory-Core	04
4	VIII	GEO423F	Research Methodology	Theory-Core	04
4	VIII	GEO424F	Dissertation	Practical	12
<b>UG Honors with Research</b> <b>(For Students who secured 75% Marks in First Six Semester)</b>					

## Semester I

### Course I (Theory)

**Course Title: Physical Geography**

**Course Code: GEO101F**

**Credits-04,**

**Course Outcome-** Student will gain the knowledge of physical geography.

- They will gather knowledge about the fundamental concepts of Geography and will have a general understanding about the geomorphologic and geotectonic process and formation.
- Imbibing knowledge, skills and holistic understanding of the Earth, atmosphere, oceans and the planet through analysis of landform development

Units	Sub Topics	Periods
1.	Nature, Scope & Branches of Physical Geography, Geological Time Scale, Earth Origin Theories; Earth's Interior; Isostasy; Continental drift; Concept of Plate Tectonics.	15
2.	Endogenetic & Exogenetic Forces (Folding & Faulting, Earthquakes and Volcanoes types); Rock types and formation; Denudation; Geomorphic processes and landforms – Fluvial, Arid and Coastal.	15
3.	Composition and structure of atmosphere; Vertical & Horizontal distribution of Temperature; Insolation; Air Pressure and Winds; Humidity; Air masses and front; Cyclone; Koppen's Climatic Classification	15
4.	Major relief features of Ocean Basin; Temperature; Salinity and Major oceanic current; Coral Reefs & Atolls, Tide.	15
Continuous Internal Assessment		

#### Suggested Readings:

1. Bloom, A. L. (2003). Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, New
2. Bunnett, R.B. (2003): Physical Geography in Diagrams, Fourth GCSE edition, Pearson Education (Singapore) Private Ltd. Delhi, India: Prentice-Hall of India.
3. Gautam, Alka (2010): BhautikBhoogol, Rastogi Publications, Meerut.
4. Huggett, R.J. (2007): Fundamentals of Geomorphology. New York, U.S.A.: Routledge.
5. Husain, Mazid (2011) :BhautikBhoogol, Rawat Publication, Jaipur John Wiley and Sons, Inc.
6. Khullar, D.R. (2012). Physical Geography. New Delhi. India: Kalyani Publishers.
7. Lal, D.S. (2012) :BhautikBhoogol, ShardaPustakBhawan, Allahabad.
8. Leong, Goh Cheng (2003): Certificate Physical and Human Geography, Oxford University Press, New Delhi.
9. Singh, Savindra (2018), Physical Geography (Eng./Hindi) Allahabad, India: Prayag Pustak.
10. Strahler, A. H. and Strahler, A N. (2001): Modern Physical Geography (4/E). New York, U.S.A.
11. Thornbury, W. D. (2004): Principal of Geomorphology. New York, U.S.A.: Wiley.
12. Tikka, R. N.(1989): BhautikBhoogol, Kedarnath Ram Nath, Meerut.
13. Trewartha, G. et.al. (2015) : Fundamentals of Physical Geography, McGraw Hill Book Company Inc.
14. Wooldridge, S.W. and Morgan, R.S. (1959): The Physical Basis of Geography- An Outline of Geomorphology, Longman, London

## BA. 1st Year, Sem. I, Course II (Practical)

Course Title: **Fundamentals of Practical in Geography**

Course Code: **GEO102F**

Credits- **02**

**Course Objectives:** 1. Create professional and aesthetically pleasing maps through thoughtful application of cartographic conventions; 2. Develop an understanding of the concepts regarding scale, map projections to suit map purposes and basic knowledge of surveying.

**Learning Outcome:** This is a practical, hands-on course; when you have completed it, you will be able to: 1. explain how maps work, conceptually and technically and will be able to understand science and art of cartography 2. Recognize the benefits and limitations of some common map projections and their use. 3. Understand and perform analysis of different topographical profiles and its interpretation. The Map projections and basics of creation will be taught to provide understanding of shape, size and structure of country while creating shape files and basic knowledge of surveying in different methods.

Credits: 04	
Units	Topic
I	Cartography – Nature and Scope; Scales-Comparative; Diagonal & Vernier Scale.
II	Meaning, Definition of Contour; Representation of Landforms through Contour: Conical Hill, Ridge, Saddle, Plateau, V and U Shape Valley, Spur etc.
III	Study and interpretation of Topographical Map (Mountain, Plateau & Plain) with the help of Cross and Longitudinal Profiles
IV	Surveying- Plane Table Surveying- Radiation or Radial line Methods, Intersection Method, Traverse line method.

### Suggested Readings:

1. Chauhan, P.R. (2014) : Prayogatama Bhoogol, Vashundhara Prakashan, Gorakhpur.
2. Gupta, K.K. and Tyagi, V.C. (1992) : Working with Maps, Survey of India, DST, New Delhi.
3. Hinks, A. R. (1921): Map Projection, Cambridge University Press, London.
4. Mishra, R.P. and Ramesh A. (1989): Fundamentals of Cartography, Concept Publishing Company, New Delhi.
5. Raisz, E. (1962): Principles of Cartography, McGraw Hill, New York..
6. Robinson, A. H., Sale, R., Morrison, J. and Muehrcke, P. C (1984): Elements of Cartography.
7. Sarkar, A. (2015) : Practical Geography - A Systematic Approach. Orient Black Swan Private Ltd., New Delhi.
8. Sharma, J. P. (2001): Prayogik Bhoogol, Rastogi Publication, Meerut.
9. Shrivastava, V.K. and Prasad, Mahatam (1995) : Bhoogol Me Sankhikiya Vidhiyan, Vashundhara Prakashan, Gorakhpur.
10. Singh, L.R. & Singh, R. (1977): Manchitra aur Prayogatama Bhoogol, Central Book Depot, Allahabad.
11. Singh, L.R. (2013): Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad.
12. Singh, R.L. and Dutta, P.K. (2012) : Prayogatama Bhoogol, Central Book Depot, Allahabad.
13. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Hindi and English editions). Kalyani Publishers, New Delhi.
14. Steers, J. A. (1965): An Introduction to the Study of Map Projection. University of London Press, London.
15. Tiwari, R.C. & Tripathi, S. (2000): Prayogatama Bhoogol, Prayag Pustak Bhawan, Allahabad.

## B.A. 1st Year, Sem. II, Course I (Theory)

**Course Title: Human Geography (Theory)**

**Course Code: GEO103F**

**Credits: 04**

**Course Outcomes** Gain knowledge about major themes of human Geography.

- Acquire knowledge on the history and evolution of humans.
- Understand the approaches and processes of Human Geography as well as the diverse patterns of habitat and adaptations.
- Develop an idea about space and society

Unit	Topic	No. of Lectures
I.	Meaning & Scope; Evolution; Principles and Approaches of Human Geography; Man and Environment Relationships- Determinism, Possibilism, Neo-determinism, Evolution of Man, Human Races.	15
II.	World Tribes- Pygmies, Kirghiz, Eskimos, Bushmen, Indian Tribes- Gond, Gaddi, Tharu and Santhal	15
III.	Distribution of population, Global migration causes and consequences, concept of over, under, and optimum population. Population Growth Theories: Malthus and Demographic Transition Theory	15
IV.	Human Settlements: - Rural Settlements- Types and Patterns with Special Reference to India; Urban Settlements- Trend & Pattern of Urbanization in the World.	15
Continuous Internal Assessment		

### Suggested Readings:

1. Blij, H.J.de (1996): Human Geography: Culture, Society and Space (2nd edition), John Wiley and Sons, New York.
2. Chisholm, M. (1985): Human Geography, 2nd edition, Penguin Books, London.
3. Dikshit, S.K. & Tripathi, R.D.: Sanskrit Bhugol, Vashundhara Prakashan, Gorakhpur.
4. Husain, Mazid (1994): Human Geography, Rawat Publications, Jaipur
5. Hussain, Majid (2012): Manav Bhugol, Rawat Publications, Jaipur
6. Kaushik, S.D. (2010): Manav Bhugol, Rastogi Publication, Meerut.
7. Kaushik, S.D. and Sharma, A.K. (1996): Manav Bhoogol Ke Sidhhanth (in Hindi), Rastogi Publication, Meerut.
8. Maurya, S.D. (2012): Manav Bhugol, Sharda Pustak Bhawan, Allahabad.
9. Michael, C.M. (1997): Process and Change in Human Geography, Nelson, London.
10. Norton, W. (1995): Human Geography, Oxford University Press, New York.
11. Singh, K.N. and Singh, J. (2001): Manav Bhugol, Gyanodaya Prakashan, Gorakhpur.
12. Singh, L.R. (2005): Fundamentals of Human Geography, Sharda Pustak Bhawan, Allahabad.
13. Smith, D.M. (1977): Human Geography- A Welfare Approach, Edward Arnold (Publishers) Ltd., London
14. Srivastava, V.K. & Rao, B.P.: Manav Bhugol, Vashundhara Prakashan, Gorakhpur
15. Stoddard, R.H., Wishart, D.J. and Blouet, B.W. (1986): Human Geography, Prentice-Hall, Englewood Cliffs, New Jersey.

**B.A. 1st Year Sem.-II,  
Course II (Practical)**

**Course Title: Geological map, Diagrams, Graphs and Survey- Prismatic Compass**

**Course Code: GEO104F**

**Credits: 02**

**Course Outcomes:** Comprehend the concept and principles of Map Design and representation of data through Line, Bar and Circle, Pie diagram.

- Interpret geological and weather maps.
- Learn the usages of survey instruments.
- Brings direct interaction of different types of surveying. Instruments learning
- Develop an idea about different types of thematic mapping techniques.

Unit	Topic	No. of Lectures
I.	Maps – Classification and Types; Principles of Map Design. Diagrammatic Data Presentation – Line diagram,, Bar diagram and Circle diagram, Pie diagram	15
II.	Thematic Mapping Techniques – Properties, Uses and Limitations; Maps Preparation- Isopleths, Choropleth, Dot Map	15
III.	Geological Maps: Types, Conventional Signs, Bed and Bedding plane, Rock Outcrop, Dip, Strike etc. Construction of Geological Sections- Horizontal, Inclined and Folded.	15
IV.	Prismatic Compass Survey	15

**Suggested Readings:**

1. Monkhouse, F. J. and Wilkinson, F.J. (1985): Maps and Diagrams. Methuen, London
2. Raisz, E. (1962): General Cartography. John Wiley and Sons, New York. 5th edition.
3. Sharma, J. P. (2001): Prayogik Bhugol., Rastogi Publication, Meerut 3rd. edition.
4. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Hindi and English editions). Kalyani Publishers, New Delhi,.
5. Singh, L.R. (2006): Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad.
6. Sharma, JP. (2008): Prayogatmak Bhugol Ki Rooprekha, Rastogi Publications-Meerut.

## B.A. IInd Year Sem.-III, Course I (Theory)

**Course Title: Economic Geography**

**Code: GEO201F**

**Credits:-04,**

**Course Outcome:** To Introduces concept and approaches of economic geography and understanding of the Resources

- To impart knowledge on the factors of localization of economic activities and to develop the understanding of the various models and theories related to the economic activities.
- To develop the understanding of the world trade patterns and affecting factors.
- Understand the nature of Economic activities, Resource Distribution.
- To Understand the Effect of globalization on developing countries

Units	Topic	Periods
I	Meaning, concepts and approaches of Economic Geography; Resources: meaning, concept and classification.	15
II	Types of Economic Activities; Agriculture and Factors affecting Agriculture, Theory of Agricultural location-model of J.H.Von Thunen, Distribution and Production of Major Crops: Wheat, Rice, and Tea; Agricultural region of the world of Derwent Whittlesey,.	15
III	World Distribution and Production of Minerals: Iron ore, Coal and Petroleum. Theory of industrial location (Alfred Weber),Types of industries; Distribution of Iron & steel industry and Cotton textiles with reference to USA, China and Japan,	15
IV	WTO and International trade: Patterns and trends. Effect of globalization on developing countries, EU and SAARC	15
Continuous Internal Assessment		

**Suggested Readings:**

1. B.N.Singh (2021) Manav evam Arthik Bhugol, Pravalika Publication, Allahabad
2. Bryson, J., Henry, N., Keeble, D. and Martin, R. (eds.) (1999): The Economic Geography Reader: Producing and Consuming Global Capitalism. John Wiley and Sons, Inc, New York.
3. Clark,G. L., Gertler, M. S. and Feldman, M. P. (eds.) (2000): The Oxford Handbook of Economic Geography.Oxford University Press, USA.
4. Coe, N. (2007): Economic Geography: A Contemporary Introduction. Blackwell Publishers, Inc.,Massachusetts.
5. Gautam,A.(2006): AarthikBhugolKeMoolTattava,ShardaPustakBhawan,Allahabad.
6. Guha,J.S. and Chatteraj,P.R.(2002):A new Approachto Economic Geography: A Study of Resources. The World Press Private Limited, Kolkata.
7. Hanink, D. M. (1997): Principles and Applications of Economic Geography: Economy, Policy, Environment.John Wiley and Sons, Inc, New York.
8. Hartshorne,T.A.andAlexander,J.W.(1988):EconomicGeography(3rdrevisededition)EnglewoodCliff, NewJersey, Prentice Hall
9. Hudson, R.(2005):EconomicGeographies:Circuits,FlowsandSpaces.SagePublications,London.
10. Knowles, R,Wareing, J.(2000):Economic and Social Geography Made Simple, Rupaand Company, New Delhi.
11. Sokal, Martin 2011.Economic Geographics of Globalisation: A short Introduction.Cheltenham,UK: Edward Elgar.
12. Alexander, J.W.(1988):Economic Geography. Prentice-Hall, New Delhi,.



## BA. IInd Year, Sem. III, Course II (Practical)

**Course Title: Map Projection, Weather Map & Survey- Indian Clinometer and Sextant**

**Course Code: GEO202F**

**Credits- 02**

**Course Objectives:** 1. Create professional and aesthetically pleasing maps through thoughtful application of cartographic conventions; 2. Develop an understanding of the concepts regarding scale, map projections to suit map purposes

**Learning Outcome:** This is a practical, hands-on course; when you have completed it, you will be able to: 1. explain how maps work, conceptually and technically and will be able to understand science and art of cartography 2. Recognize the benefits and limitations of some common map projections and their use. 3. Understand and perform analysis of different topographical profiles and its interpretation. The Map projections and basics of creation will be taught to provide understanding of shape, size and structure of country while creating shape files.

Unit	Topic	No of Lectures
I.	Map Projections: meaning, Definition, Elements (Latitude, Longitude, Grid, Gore and Zone), Classification, Usability.	15
II.	Type of Projection, Properties, Merits and Demerits; Conical with One and Two Standard Parallel, Bonne's; Cylindrical Equal Area, Mercator's, Polar Zenithal Equal Area	15
III.	Weather Map: Elements of Climate and Metrological Instruments; Representation of Weather Elements on Map, Weather Symbols, Interpretation of Daily Weather Maps - January and July.	15
IV.	Instrument Survey- Indian Clinometer and Sextant	15

### Suggested Readings:

16. Chauhan, P.R. (2014) :Prayogatama Bhoogol,Vashundhara Prakashan, Gorakhpur.
17. Gupta, K.K. and Tyagi, V.C.(1992) : Working with Maps, Survey of India, DST, New Delhi.
18. Hinks, A. R. (1921): Map Projection, Cambridge University Press, London.
19. Mishra, R.P. and Ramesh A. (1989): Fundamentals of Cartography, Concept Publishing Company, New Delhi.
20. Raisz, E. (1962): Principles of Cartography, McGraw Hill, New York..
21. Robinson, A. H., Sale, R., Morrison, J. and Muehrcke, P. C (1984): Elements of Cartography.
22. Sarkar, A.(2015) : Practical Geography - A Systematic Approach. Orient Black Swan Private Ltd., New Delhi.
23. Sharma, J. P. (2001):Prayogik Bhoogol, Rastogi Publication, Meerut.
24. Shrivastava, V.K. and Prasad, Mahatam (1995) : Bhoogol Me SankhikiyaVidhiyan, Vashundhara Prakashan, Gorakhpur.
25. Singh, L.R. & Singh, R. (1977):Manchitraaur Pryaogatamak Bhoogol, Central Book, Depot, Allahabad.
26. Singh, L.R. (2013): Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad.
27. Singh, R.L. and Dutta, P.K. (2012) :Prayogatamak Bhoogol, Central Book Depot, Allahabad.
28. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Hindi and English editions). Kalyani Publishers, New Delhi.
29. Steers, J. A. (1965): An Introduction to the Study of Map Projection. University of London Press, London.
30. Tiwari, R.C.& Tripathi, S.(2000): Prayogatmack Bhoogol, Prayag Pustak Bhawan, Allahabad.

**BA. IInd Year, Sem. IV,  
Course I (Theory)**

**Course Title: World Regional Geography**

**Code: GEO203F**

**Credits:-04,**

<b>Unit</b>	<b>Topic</b>	<b>No of Lectures</b>
<b>I.</b>	Concept of Region and Regionalization; Tripartite Division of the World, Natural Regions of the World. Bases of Delimitation and salient features of Monsoon Regions of the World.	<b>15</b>
<b>II.</b>	Regional Study of USA- Physical, Climatic & Agricultural Regions, Mineral and Power Resources, Industrial Regions.	<b>15</b>
<b>III.</b>	Regional Study of Brazil - Physical, Climatic & Agricultural Regions, Mineral and Power Resources, Industrial Regions.	<b>15</b>
<b>IV.</b>	Regional Study of Egypt Physical, Climatic & Agricultural Regions, Mineral and Power Resources, Important Industries	<b>15</b>
Continuous Internal Assessment		

**References:**

1. Cole, J. A Geography of the World: Major Regions, Routledge, London, 1996.
2. Dickinson, J.P. et al. The Geography of the Third World, Routledge, London.1996.
3. Kolb, A: East Asia: Geography of the Cultural Regions, Methuen, London, 1977. 3.
4. English, Paul ward & Miller, J. A World Regional Geography: A Question of Place, John Wiley, New York, 1989.
5. S. Jackson, RH & Human L.E. World Regional Geography Issues for Today, John Wiley, New York, 1991.
6. Jagdish Singh, et al.: Monsoon Asia, Tara Publications, Varanasi

**BA. Hnd, Sem.-IV,  
Course - II (Practical)**

**Course Title: Statistical Methods in Geography (Practical)**

**Course Code: GEO204F**

**Credits: 02**

**Course Outcomes:** Learn the significance of statistics in geography.

- Understand the importance of data use in geography
- Recognize the importance and application of Statistics in Geography
- Interpret statistical data for a holistic understanding of geographical phenomena.
- Learn to use tabulation of data. Gain knowledge about association and correlation.

Unit	Topics	No. of Lectures
I.	Types & Sources Data in Geography; Significance of Statistical Methods in Geography; Levels of Measurement (Nominal, Ordinal, Interval, Ratio)	15
II.	Tabulation and Illustration: Frequency Distribution Table, Cross Tabulation,	15
III.	Graphical Presentation of Data; Histograms, Frequency Curve and Cumulative Frequency Curves	15
IV.	Measurement of Central Tendencies - Mean, Median, Mode; Standard Deviation and Correlation.	15
		<b>60</b>

**Suggested Readings:**

1. Berry B.J.L. and Marble D.F.(eds.):Spatial Analysis–A Reader in Geography.
  2. Ebdon D., 1977: Statistics in Geography: A Practical Approach.
  3. Davis,R.E.and Foote,F.S.(1953): Surveying,4<sup>th</sup>edition,McGrawHillPublication,NewYork
  4. Sharma, J P(2001) Prayogik Bhugol ,Rastogi Publication , Meerut
  5. Hammond P.and McCullagh P.S.,1978:  
QuantitativeTechniquesinGeography:AnIntroduction,OxfordUniversityPress.
  6. Sharma, PM,(2009)Bhugol Mesankhkiya Vidhyan, Rajasthan Granth Academy, Jaipur
  7. BansalSC,(2020)Shodh vidhi tantra vasankhikiya Vishyan,RK Books Publication ,New Delhi.
  8. KingL.S., (1969): Statistical Analysis in Geography,Prentice-Hall.
  9. Mahmood A., (1977): Statistical Methods in Geographical Studies, Concept.
  10. PalS .K.,(1998): Statistics for Geoscientists ,Tata McGraw Hill ,New Delhi.
  11. Sarkar,A.(2013): Quantitativegeography:techniquesandpresentations.OrientBlackSwanPrivateLtd.,  
NewDelhi
  12. SilkJ.,(1979): Statistical Concepts in Geography, Allenand Unwin, London.
  13. Spiegel M.R.:Statistics, Schaum's Outline Series.
- YeatsM., (1974): An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, NewYork

### BA. III, Sem.-V, Course - I (Theory)

**Course Title: Environmental Studies**

**Course Code: GEO301F**

**Credits: 04**

**Course Outcomes:** Learn to associate climate with other environmental and human issues

- Student will learn about the man and environmental relationship
- Learn the interaction between the atmosphere and the earth's surface.
- Student will come across the various hazards and their management.
- Student will aware about the earth climate change and its various indicator, causes and consequences.

Unit	Topic	No of Lectures
I.	Environment: Concept and component; Ecosystem: Concepts, types & components, Trophic level and Energy flow, Concept of Biogeochemical Cycle	15
II.	Environmental Degradation; Causes and consequences of Deforestation, soil erosion; Pollution: Air & water pollution	15
III.	Environmental Hazard: Concept & typology; Earthquake, Flood, Cyclone & Drought; Concept of Disaster Management.	15
IV.	Climate Change, Green house effects & Global warming, Ozone depletion.	15
<b>Continuous Internal Assessment</b>		

**Suggested Readings:**

1. Casper J.K. (2010). *Changing Ecosystems: Effects of Global Warming*. New York, USA: Infobase Pub.
2. Hudson, T. (2011). *Living with Earth: An Introduction to Environmental Geology*. Delhi, India: PHI Learning Private Limited.
3. Miller, G.T. (2007). *Living in the Environment: Principal, Connections, and Solutions*. Belmont, Australia: Brooks/ Cole Cengage Learning.
4. Singh, R.B. (1993) *Environmental Geography*. Delhi, India: Heritage Publishers.
5. UNEP. (2007). *Global Environment Outlook: GEO4: Environment For Development, United Nations Environment Programme*. UK: University Press, Cambridge.
6. Government of India. (2011). *Disaster Management in India*. Delhi, India: Ministry of Home Affairs.
7. Singh, Savendra (2019) *Pryavaran Bhugol*, Pravalika Publication, Allahabad.
8. Kapur, A. (2010). *Vulnerable India: A Geographical Study of Disasters*. Delhi, India: Sage Publication.
9. Singh, Savendra (2019) *Apada Prabandhan*, Pravalika Publication, Allahabad.
11. Ramkumar, M. (2009). *Geological Hazards: Causes, Consequences and Methods of Containment*. New Delhi, India: New India Publishing Agency.
12. Climate Change: Understanding Climate Change; Green House Gases and Global Warming; Global Climatic Assessment- IPCC
13. Government of India. (2008). *Vulnerability Atlas of India*. New Delhi, India: Building
14. Materials & Technology Promotion Council, Ministry of Urban Development, Government of India
15. Modh, S. (2010). *Managing Natural Disaster: Hydrological, Marine and Geological Disasters*. Delhi, India: Macmillan.
16. Bansal SC,(2020) *Jalvayu vigyanevam Samudra Vigyan*, Meenakshi Publication, Meerut.

## B.A. III, Sem-V

### Course II (Theory)

**Course Title: Evolution of Geographical Thought**

**Course Code: GEO302F**

**Credits: 04**

**Course Outcomes:** Perceive the evolution of the philosophy of Geography. • Appreciate the contribution of the thinkers in Geography. • Give power point presentations on different schools of geographical thought. • Discussing the evolution of geographical thought from ancient to modern times. • Establishing relationship of Geography with other disciplines and man-environment relationships. • Analyzing modern and contemporary principles of Environmentalism, and other dualism approaches in Geography

Unit	Topic	No. of Lectures
I.	Indian Geographical Knowledge System during Vedic, Epic, Puranic and Buddhist Period. Contribution of Ancient Indian Geographers; Contributions of Greek and Roman Geographers; Contribution of Arab geographers.	15
II.	Renaissance and Period of Geographical Discoveries; German School of Geography: Contribution of Humboldt, Ritter, Ratzel, French School of Geography, Contribution of Blache and Brunhes.	15
III.	Contribution of Soviet Geographers, American School- Contribution of Davis, Semple, Huntington, Carl Sauer; British School- Contribution of Mackinder, Herbertson and L.D.Stamp.	15
IV.	Nature and Scope of Geography, Dualism in Geography, Recent Trends of Geography, Progress of Geography of India.	15
Continuous Internal Assessment		60

#### Suggested Readings:

1. Adhikari, Sudepta (2015) : Fundamentals of Geographical Thought, Orient Black Swan Pvt. Ltd.
2. Ali, S.M. (1983): The Geography of Puranas, People's Publishing House, New Delhi, Third Edition.
3. Dickinson, R.E. (1969): Makers of Modern Geography , XIV Frederick A. Praeger, New York
4. Diddee, J. (ed.) (1990): Indian Geography, Institute of Indian Geographers, Pune.
5. Dikshit, R. D. (2003): Geographical Thought: A Critical History of Ideas. Prentice-Hall India, New Delhi. (in English and Hindi).
6. Dube, B.(1967): Geographical Concepts in Ancient India, National Geographical Society of India, Varanasi
7. Getice, A., Getis, J. and Fellman, J. D. (2007): Introduction to Geography. 10th edition. McGraw Hill, New York.
8. Hartshorne R.(1959) : Perspectives on the Nature of Geography, Rand MacNally and Co.
9. Hartshorne, R. (1939): Nature of Geography, Association of American Geographers, Indian Reprint- Rawat Publications, Jaipur.
10. Harvey, D. (1969): Explanations in Geography. Arnold, London.
11. Holt-Jensen A. (2011) : Geography: History and Its Concepts: A Students Guide, SAGE Publication, New Delhi.
12. Kaushik, S.D. and Sharma, A.K. (1995): Geographic Thought and Methodology (in Hindi), Rastogi Publication, Meerut.
13. Mazid Hussain :- Evolution of Geographical Thought(Hindi & English), Jaipur
14. Rawling, E. and Daugherty, R. (eds.) (2005): Geography into the Twenty-first Century. 2<sup>nd</sup> edition. John Wiley and Sons, Chichester.
15. Singh, J. (2001): Bhugolik Chintan Ke Moolaadhar, GyanodayaPrakashan, Gorakhpur.
16. Singh, J :Bhugolik Chintanka KramVikas, Gyanodaya Prakashan, Gorakhpur.
17. Taylor, G. (ed.) (1953): Geography in the Twentieth Century. Methuen and Company, London.

**B.A. III, Sem- V**  
**Course - III (Practical)**

**Course Title: Tour and Tour Report**

**Course Code: GEO303F**

**Credits: 02**

Unit	Topic	No. of Lectures
<b>I</b>	Various aspects of study in Field Tour, Preparation of Surveying in Field Study, and Methods for preparing field report/ Educational Excursion Report.  * The field study (minimum three days stay) must be conducted in the area other than the Gangetic Plain. The TA/DA and other allowances for the tour In-charge of the field study will be withdrawn from the Lab Fund to respective Institution (All the responsibilities should be taken by Head of the Institution –Registrar in the case of the University and Principal in case of the college)	<b>30</b>
<b>II</b>	Report shall be based on Tour as per the study area.	<b>30</b>

**Suggested Readings:**

1. Monkhouse, F. J. and Wilkinson, F.J. (1985): Maps and Diagrams. Methuen, London
2. Raisz, E. (1962): General Cartography. John Wiley and Sons, New York. 5th edition.
3. Sharma, J. P. (2001): PrayogikBhugol., Rastogi Publication, Meerut 3rd. edition.
4. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Hindi and English editions). Kalyani Publishers, New Delhi,.
5. Singh, L.R. (2006): Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad.
6. Sharma, JP. (2008): Prayogatmak Bhugol Ki Rooprekha, Rastogi Publications-Meerut.

## B.A. III, Sem- VI

### Course I (Theory)

**Course Title: Geography of India (Theory)**

**Course Code: GEO304F**

**Credits: 04**

**Course Outcome:**

- Various dimensions of the geographical features of India and their spatial distribution.
- Understanding of regional divisions of India.
- Detailed exposure to the human and physical features of India.
- Understanding socio-Economic base of India.

Unit	Topic	No. of Lectures
1	Physiography; Drainage system and pattern; Indian climate; Types of Soils & Natural Vegetation.	15
2	Population Growth, Distribution and Pattern; population policy ,Major Agricultural Crops- Paddy, Wheat, Cotton and Tea, Characteristics of Indian Agriculture	15
3	Mineral Resources – Iron- ore , Mica and Power Resources - Coal, Petroleum, Non-conventional power resource , Industry: Evolution of industries; Major Industries: Iron & steel, Cotton Textiles	15
4	Transport in India- Rail, Road, Air and Water. Functional classification of Indian towns and Cities; Urbanization in India- Problems and Prospects	15
Continuous Internal Assessment		

#### Suggested Readings:

1. Chauhan, P.R. and Prasad, M. (2003): Bharat Ka Vrihad Bhoogol, Vasundhara Prakashan, Gorakhpur.
2. Farmer, B.H. (1983) : An Introduction to South Asia, Methuen, London.
3. Gautam, A. (2006): Advanced Geography of India, Sharda Pustak Bhawan, Allahabad.
4. Johnson, B.L.C. (1983) : Development in South Asia, Penguin Books, New York.
5. Khullar, D.R. ( 2007): India: A Comprehensive Geography, Kalyani Publishers, New Delhi.
6. Nag, P. and Gupta, S. S. (1992): Geography of India, Concept Publishing Company, New Delhi.
7. Rao, B.P. ( 2016) : Bharat ki Bhaugolik Sameeksha, Vasundhara Prakashan, Gorakhpur.
8. Sharma, T.C. and Coutinho, O. (2003): Economic and Commercial Geography of India, Vikas Publishing House Private Ltd. New Delhi.
9. Singh, J. (2003): India: A Comprehensive Systematic Geography. Gyanodaya Prakashan, Gorakhpur.
10. Singh, J. (2001): Bharat: Bhougolik Aadhar Avam Ayam, Gyanodaya Prakashan, Gorakhpur.
11. Singh, R.L. (ed.) (1971): India: A Regional Geography. National Geographical Society of India, Varanasi.
12. Spate, O.H. K., Learmonth A. T. A. (2004): India, and Pakistan: A General and Regional Geography, Methuen & Co. Ltd., London.

## B.A. III, Sem-VI

### Course II (Theory)

**Course Title: Basic of Remote Sensing**

**Course Code: GEO305F**

**Credits: 04**

**Course Outcomes:**

- Have knowledge of the principles of remote sensing, sensor resolutions and image referencing schemes.
- Interpret satellite imagery and understand the preparation of false color composites from them.
- Analyzing and interpreting remotely sensed satellite images and aerial photographs in order to understand topographical and cultural variations on the Earth surface.

Unit	Topic		No. of Lectures
I.	Basics of Remote Sensing	Meaning, Definition & History of Remote Sensing in the world. Stages, Elements and Types	15
II.	Platform in Remote Sensing;	Platforms: Role of Platform in Remote Sensing; Manned Earth Resource Satellite; Unmanned Earth Resource Satellite, Meteorological Satellite.	15
III.	EMR and its Mechanism	EMR and Mechanism; Principles of Remote Sensing, EMR Interaction, EMR properties; Reflection, Emission, Absorption, Transmission, Scattering Fundamental properties of sensors; Sensors; types, Resolution in Remote Sensing, types of sensors- Passive and active sensors	15
IV.	Indian Remote Sensing:	Indian Remote Sensing: History and Development of IRS system	15
		Continuous Internal Assessment	

**Suggested Readings:**

1. Bhatta, B. (2008). Remote Sensing and GIS. New Delhi, India: Oxford University Press.
2. Campbell J. B. (2007). Introduction to Remote Sensing. UK: Guildford Press
3. Jensen, J. R. (2005). Introductory Digital Image Processing: A Remote Sensing Perspective. USA: Pearson Prentice-Hall.
4. Lillesand T. M., Kiefer R. W. and Chipman J. W. (2004). Remote Sensing and Image Interpretation. USA: Wiley. (Wiley Student Edition).
5. Wolf P. R. and Dewitt B. A., 2000: Elements of Photogrammetry: With Applications in GIS, McGrawHill. Suggestive:
6. Chauniyal, D.D. (2010). SudurSamvedanevamBhogolikSuchanaPranali. Allahabad, India: ShardaPustakBhawan.
7. Li, Z., Chen, J. and Batsavias, E. (2008). Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences. London, UK: CRC Press, Taylor and Francis.
8. Mukherjee, S. (2004). Textbook of Environmental Remote Sensing. Delhi, India: Macmillan. 4. Nag P. and Kudra, M. (1998). Digital Remote Sensing. Delhi, India: Concept.
9. Sarkar, A. (2015). Practical geography: A systematic approach. Delhi, India: Orient Black Swan Private Ltd.



**B.A. III, Sem-VI**  
**Course - III (Practical)**

**Course Title: Research Methodology & Project Report**

**Course Code: GEO306F**

**Credits: 02**

**Course Outcome:**

- Can understand scientific research in Geography.
- Comprehends method and models.
- Explain research process and know report writing.

Unit	Topic	No. of Lectures
I	Meaning, types and significance of Research, Literature review, Research problem, objectives,	15
II	Sources of Data: Primary and Secondary; Formulation of research design	15
III	Sampling: Probability and Non Probability. Research methods: Correlation: Rank Correlation and Simple Regression	15
IV	Techniques of writing scientific reports: Referencing and Bibliographic techniques-APA and Harvard; Abstract and Key words.	15
<b>Note:</b> Prepare the <b>Practical File</b> based on the course content of the paper and Viva-Voce will be conducted for evaluation. <b>Internal Assessment</b> will be done based on continuous assessment from <b>assignment and project work.</b>		

**Suggested Readings:**

1. Monkhouse, F. J. and Wilkinson, F.J. (1985): Maps and Diagrams. Methuen, London
2. Raisz, E. (1962): General Cartography. John Wiley and Sons, New York. 5th edition.
3. Sharma, J. P. (2001): PrayogikBhugol., Rastogi Publication, Meerut 3rd. edition.
4. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Hindi and English editions). Kalyani Publishers, New Delhi,.
5. Singh, L.R. (2006): Fundamentals of Practical Geography, ShardaPustakBhawan, Allahabad.
6. Sharma, JP. (2008): PrayogatmakBhugol Ki Rooprekha, Rastogi Publications-Meerut.

## UG Honors

### B.A. IV, Sem-VII

#### Course I (Theory)

**Paper Code: GEO401F**

**Course: Theory -Core**

**Title of the Paper: Geographical Thought: Concepts and Issues**

**Credits 4**

Units	Topics	Sub Topics	Periods
1	Introduction	Indian Knowledge System, Paradigm Shift in Geography, Positivism in Geography	15
2	Quantitative Revolution	Quantitative Revolution and its Impact; Systems and Models in Geography; Theories and Laws in Geography.	15
3	Major Concepts	Concept of Earth Surface; Concept of landscape; Concept of Region; Typology and Regionalization; Concept of Spatial Organization.	15
4	Humanistic Geography	Radical Geography: Geography as a Science of Human Welfare; Behavioralism & Phenomenology in Geography Concept of Post-modernism in Geography; Feminist & Gender Geography	15
<b>Continuous Internal Assessment</b>			

#### Course Outcomes

- Introduce the students changing Paradigm in Geography based on various thoughts from ancient to modern periods,
- It enhances the conceptual and philosophical knowledge of Geography.
- It explain show Geography as a Science of Human Welfare.

#### Reference Books:

1. Adhikari, Sudipto (2009): Fundamentals of Geographical Thought, Chaitanya Pub. House, Allahabad.
2. Arild, H. J. (1999): Geography: History and Concepts, SAGE Publications, London
3. Chorley, R. J. (Ed): Directions in Geography, Matheun and Co., London
4. Chorley, R.J. & Haggett, P. eds. (1967): Integrated Models in Geography, Methuen, London.
5. Davies, W.K.D. (1972): The Conceptual Revolution in Geography, University of London Press, London.
6. Dear, M. J. and Flusty, S. (2002): The Spaces of Postmodernity: Readings in Human Geography. Blackwell Publishers, Oxford.
7. Dickinson, R.E. (1969): The Makers of Modern Geography, Routledge and Kegan Paul, London.
8. Dikshit, R. D. (2004): Geographical Thought. A Critical History of Ideas. Prentice-Hall of India, New Delhi. (in English and Hindi).
9. Dikshit, S.K. (2001): Bhaugolik Chintan Ka Udbhav Avam Vikas, Vishwavidyalaya Prakashan, Varanasi.
10. Hartshorne, R. (1959): Perspectives on the Nature of Geography, John Murray, London.
11. Harvey, D. (1969): Explanation in Geography, Edward Arnold, London.
12. Harvey, M. E. and Holly, P.B. (2002): Themes in Geographic Thought. Rawat Publications., Jaipur and New Delhi.
13. Hubbard, P., Kitchin, R., Bartley, B. and Fuller, D. (2002): Thinking Geographically: Space, Theory and Contemporary Human Geography. Continuum, London.
14. Husain, Majid (2001): Evolution of Geographical Thought, Rawat Publications, Jaipur.
15. James, P.E. & Jones, C.F. (1954): American Geography : Inventory & Prospect, Syracuse Univ. Press, New York.
16. James, P.E. (1980): All Possible World: A Hundred Years of Geography, Sachin Pub. Jaipur.
17. Johnston, R., Gregory D, Pratt G, Watts M. and Whatmore S. (2003): The Dictionary of Human Geography. Blackwell Publishers, Oxford. 5th edition.
18. Johnston, R.J. (1984): Geography and Geographers, Arnold Heinemann, London.
19. Johnston, R.J. (1985): The Future of Geography, Methuen and Company Ltd., New York. (2003 edition published).
20. Johnston, R.J. and Sidaway, J.D. (2004): Geography and Geographers. 6<sup>th</sup> edition, Edward Arnold, London.

## B.A. IV, Sem-VII

### Course II (Theory)

**Code: GEO402F**

**Course: Theory - Core**

**Title of the Paper: Advance of Geomorphology**

**Credits 4**

Units	Topics	Sub Topics	Periods
1	Fundamentals of Geomorphology	Meaning, Scope & Evolution of Geomorphology; Fundamental Concepts of Geomorphology; Concept of Morphogenetic region.	15
2	Theories & Models in Geomorphology	Theories of Landscape Development (Davis, Penck, JT Hack, SA Schumm; Plate Tectonics Associated Process; Slope Development Approach and Theories.	15
3	Techniques in Geomorphology	Denudation chronology, Erosion Surface; Relief and Fluvial Morphometry; Channel Morphology; Digital Elevation Model (DEM).	15
4	Applied Geomorphology	Application of Geomorphology: Disaster Management and Civil Projects: Dams (Tehri and Damodar) and Road Construction (Atal Tunnel, Uttarakhand Tunnel).	15
<b>Continuous Internal Assessment</b>			

#### Course Outcomes

- Introduces concept of time scale in Geomorphology
- Impart knowledge on different models of landscape development
- Explain its scope on applied aspects with respect to civil projects, disaster Management, minerals and energy

#### Reference Books:

1. Anhert, F. (1996): Introduction to Geomorphology, Edward Arnold, London.
  2. Bloom, A.L. (1979): Geomorphology, Prentice Hall, New Jersey, USA.
  3. Chorley, R. J., Schumm, S.A. and Sugden, D.E. (1984): Geomorphology, Methuen, London.
  4. Dayal, P. (1987): Geomorphology (in Hindi), Patna.
  5. Dikshit, K.R. et.al. (1994): India Geomorphological Diversities, Rawat Pub. Jaipur.
  6. Fairbridge, R.W. (1968): Encyclopaedia of Geomorphology, Reinholdts, New York.
  7. Kale, V.S. and Gupta, A. (2001): Introduction to Geomorphology, Orient Longman, Hyderabad.
  8. King, C.A.M. (1968): Techniques in Geomorphology, Edward Arnold, London.
  9. Melhorn, W.N. & Flemal, R.C. (1981): Theories of Landforms Development, George Allen Unwin, London.
  10. Miller, A. A. (1953): The Skin of the Earth, Methuen and Co. Ltd., London
  11. Ollier, C.D. (1981): Tectonics and Landforms, Longman, London.
  12. Sharma, H.S. (1987): Tropical Geomorphology, Concept Publishing Company, New Delhi.
  13. Sharma, H.S. and Kale, V.S. (2009): Indian Geomorphology, Rawat Pub. Jaipur.
  14. Singh, Savindra (2005): Geomorphology, PrayagPustakBhawan, Allahabad. (Hindi & English)
  15. Small, R.J. (1976): The Study of Landforms, Cambridge University Press, Cambridge.
  16. Sparks, B.W. (1988): An Introduction to Geomorphology, Longman, London.
  17. Steers, A. (1958): The Unstable Earth, Methuen, London
  18. Strahler, A.H. and Strahler, A.N. (1992): Modern Physical Geography, John Wiley, New York
- Strahler, A. N. (1964): Quantitative Geomorphology of Drainage Basins and Channel Networks, In: Handbook of Applied Hydro.

**B.A. IV, Sem-VII****Course III (Theory)****Code: GEO403F****Course: Theory- Core****Title of the Paper: Physical and Economic Geography of India****Credits 4+0**

Units	Topics	Sub Topics	Periods
1	Geology & Relief	Geological Structure of India; Origin of Himalayas, Origin of Drainage Systems of India. Delimitation & Characteristics of Physiographic Regions	15
2	Climatic Characteristics	Mechanism and Recent Trends of the Indian Monsoon; Climatic Regions; Agro-Climatic Regions.	15
3	Resource Base	Population growth and distribution; Population Resource Regions; Role of Green Revolution; Agricultural Regions & New Trends in Indian Agriculture; Mineral Resource Regions	15
4	Industrial Development	Industrial Policies & Trend of Industrialization; Industrial Regions, Impact of Globalization on Indian Economy; Regional Development and Disparities, Problems & Prospects of Industrially Backward regions of India	15
<b>Continuous Internal Assessment</b>			

**Course Outcomes**

- Introduces physical aspects of the Indian sub-continent.
- Appraise the climatic characteristics and resource base of India.
- Discuss the pattern and level of development in India.

**Reference Books:**

1. Bansal, S.C. (1999): Advanced Geography of India, Meenakshi Publication, Meerut.
2. Chauhan P.R. (2001): Bharat Ka Vrihat Bhoogol, Vasundhara Prakashan, Gorakhpur.
3. Deshpande C.D (1992): India: A Regional Interpretation, Northern Book Centre, New Delhi.
4. Gautam, Alka (2001): Geography of India, Sharda Pustak Bhawan, Allahabad.
5. Govt. of India : Economic Survey, Ministry of Finance, New Delhi (Different Issues)
6. Hussain, Majid (2008): Advance Geography of India, Tata McGraw Hill, New Delhi.
7. Johnson, B.L.C. (1983): Development in South Asia, Penguin Books, Harmondsworth.
8. Khullar, D.R. (2006): India: A Comprehensive Geography, Kalyani Pub., New Delhi.
9. Krishnan, M. S. (1968): Geology of India and Burma, 4<sup>th</sup> edition. Higgin Bothams Private. Ltd., Madras.
10. Nag, P. and Gupta S. S. (1992): Geography of India, Concept Publishing. Company, New Delhi.
11. Sharma, T. C. (2003): India: Economic and Commercial Geography, Vikas Publication., New Delhi.
12. Singh, J. (2003): India: A Comprehensive and Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
13. Singh, R. L. (ed.) (1971): India. A Regional Geography, National Geographical Society of India, Varanasi.
14. Spate, O.H.K. & Learmonth, A.T.A. (1954): India & Pakistan, Methuen, London.
15. Tiwari, R. C. (2007): Geography of India, Prayag Pustak Bhawan, Allahabad
16. Wadia, D. N. (1959): Geology of India. MacMillan and Company, London and Madras.

**B.A. IV, Sem-VII****Course IV(Practical)****Code: GOE404F****Course: Practical****Title of the Paper: Cartography: Projections and Cartograms****Credits0+4**

Units	Topic	Sub topic	Periods
1	Classification and Types	Meaning, Classification, and Characteristics of Projections;	5
2	Projections with mathematical calculation	Lambert's Conical, Polyconic, Galls', Equatorial Zenithal Projection: Gnomonic, Stereographic and Orthographic Cases; Mollweide & Sinusoidal: Simple and Interrupted	15
3	Contouring	Block Diagram, Raise and Henny Method, Hachures	10
4	Cartograms	Climatic Diagrams; Ergo-graph – Climatic and Circular; Water Budget; Multiple Dot & Spherical map	30
Continuous Internal Assessment			60
Assignment/ Presentation/Exercises/Field Work			

**Course outcomes**

- Impart drawing skill on map projections, various maps and diagrams
- Imparting the skills to understand and draw cartograms

**Reference Books:**

1. Chauhan P.R. (2014): Prayogatmak Bhoogol, Vasundhara Publications, Gorakhpur
2. Davis, R.E. and Foote, F.S.: Surveying - Theory and Practices, Tokyo.
3. Kanetkar, T.P. & Kulkarni, S.V.: Surveying and Leveling, Pune.
4. Mailing, D.H. (1973): Co-ordinate Systems and Map Projections. George Philip and Sons Ltd.
5. Misra, R.P. and Ramesh, A. (1999): Fundamentals of Cartography. Concept Publishing Company, New Delhi.
6. Monkhouse, F.J. and Wilkinson, H. R (1962): Maps and Diagrams, Methuen and Company Ltd. and Company Ltd., London.
7. Raisz, E. (1962): Principles of Cartography. McGraw Hill Books Company, Inc., New York.
8. Robinson (1991): Aerial Photography and Cartography, Mac Millan, London.
9. Robinson, A. H. H., Sale R., Morrison J. and Muehrcke, P. C (1984): Elements of Cartography, 6<sup>th</sup> edition John Wiley and Sons, New York.
10. Sahani, P.B. (1993): Advance Surveying, New Delhi.
11. Singh, J. et.al. (1990): Bhaumikiya Manchitro Ki Ruprekha, Vasundhara Prakashan, Gorakhpur.
12. Singh, L.R. (2001): Practical Geography, Sharda Pustak Bhawan, Allahabad.
13. Singh, R. L. and Singh, Rana P.B. (1993): Elements of Practical Geography. Kalyani Publishers, Ludhiana and New Delhi. (English and Hindi editions).
14. Tiwari, R.C. and Tripathi, Sudhakar (2001): Abhinav Prayogatmak Bhoogol, Prayag Pustak Bhawan, Allahabad.

**B.A. IV, Sem-VII**  
**Course V (Theory)**

**Code: GEO405F**

**Course: Elective**

**Title of the Paper: Advance Economic Geography**

**Credits 4+0**

Units	Topic	Subtopic	Periods
1	Introduction	Nature and scope; Systematic Development of Economic Geography, Approaches and Fundamental Concept of Economic Geography,	15
2	Application & Relevance of Location and Economic Theories	Location Theories-Von-Thunen; Industrial Location Theory-Weber, Hoover and Losch; Central Place Theory of Christaller.	15
3	Economic Development	World Economic Development, Special Economic Zones and Technology Parks, Theories of Economic development-Growth Pole Theory, Myrdal's Cumulative Causation Theory., Sustainable development.	15
4	International Trade	Factors influencing the international trade, Ricardian Theory of International trade, Emerging Trends of World Trade Pattern, Regional Trade Blocks: SAARC and ASEAN	15
Continuous Internal Assessment			

**Course Outcomes**

- Introduces nature, scope, methods, approaches and recent trends in economic geography
- Impart knowledge on different locational theory
- Able to explain changing concept of development, world trade patterns and theory on International trade.

**Reference Books:**

1. Alexander, J.W. (2012): Economic Geography, Prentice Hall of India, New Delhi.
2. Berry, B.J.L. et al. (1976): Geography and Economic Systems, Prentice Hall, Englewood Cliff.
3. Boyce, R.D. (1990): Bases of Economic Geography, Holt Rinehart & Winston, New York. Cliffs, N.J. Prentice.
4. Dreze, J. and Sen, A. (1996): Economic Development and Social Opportunity. Oxford University Press, New Delhi.
5. Haggett, P. (1966): Locational Analysis in Human Geography, St. Martin's Press, New York.
6. Hanink, D.M. (1997): Principles and Applications of Economic Geography, Economy,
7. Hartshorne, T.A. & Alexander, J.W. (1994): Economic Geography, Prentice Hall of India, New Delhi.
8. Hodder, B.W. & Lee, R. (1996): Economic Geography, Methuen, London.
9. Janaki, V.A. (1985): Economic Geography, Concept Publishing Co., New Delhi.
10. Jones & Darkenwald (1960): Economic Geography, New York.
11. Knox, P. and J. Agnew (1998): The Geography of the World Economy. Arnold, London.
12. Lloyd, P. And P. Dicken (1972): Location in Space: A theoretical approach to Economic Geography, Harper and Row, New York.
13. McCarty, H.H. and J.B. Lindberg (1966): A preface to Economic Geography, Englewood, New York.
14. Rostov, W.W. (1960): The Stages of Economic Growth, Cambridge Univ. Press, London.
15. Singh, K.N and Siddiqui, A (2012): Economic Geography, PrayagPustakBhawan, Allahabad
16. Singh, K.N. & Singh, J. (1996): ArthikBhoogolKeMooltatva, GyanodayaPrakashan, Gorakhpur.
17. Smith, G.H. (2000): Conservation of Natural Resources, John Wiley, New York.

## B.A. IV, Sem-VII

### Course VI (Theory)

**Code: GEO406F**

**Course: Elective**

**Title of the Paper: Remote Sensing**

**Credits 4+0**

Units	Topics	Sub-topics	Periods
1	Basics of Remote Sensing	Definitions, Scope, potentials and limitations of Remote Sensing; Development in the world and in India, Stages of Remote Sensing, Principles and concept of Remote Sensing: Radiation and Resolution concepts	15
2	Principle of Electromagnetic Radiation	Principle of Electromagnetic Radiation, Electro-magnetic Radiation (EMR)- The nature of radiation; Radiation at source; Radiation in propagation; Radiations at its target; Radiation from sun; Radiation from the earth Properties of EMR; Atmospheric windows; Perturbing effects of the atmosphere.	15
3	Sensors and Sensors	Fundamental properties of sensors; types of sensors- Passive and active sensors; Optical scanner, thermal scanner; Multispectral scanner. Types of Remote Sensing, Platforms and Sensors, LANDSAT And IRS Satellite System	15
4	Geometrics of Aerial photographs	Geometric characteristic of aerial photographs- scale, overlap, side lap, vertical exaggeration, and geometric resolution. Introduction to Elements of Photographic System: Camera System, Film. Basic Geometry & Characteristics of Aerial Photograph, Scale, Image Parallax, Ortho Photo. Photo features, relief displacement.	15
Continuous Internal Assessment			

#### Course outcomes

- It gives an overview of remote sensing process
- It introduces aerial photo and photo grammetry and satellite remote sensing
- Enables image processing procedure and identify applications of remote sensing

#### Reference Books:

1. American Society of Photogrammetry (1983): Manual of Remote Sensing, Falls Church, VA.
2. Avery, T. E. and Berlin, G.L. (1992): Fundamentals of Remote Sensing and Air photo Interpretation, Mc Millan, N. York.
3. Barrett, E.C.& Curtis, L.F. (1992): Introduction to Environmental Remote Sensing, Chapman & Hall, New York.
4. Campbell, J. B. (2002): Introduction to Remote Sensing. 5<sup>th</sup> edition. Taylor and Francis, London.
5. Chaunial, D.D. (2001): Remote Sensing and G.I.S. (in Hindi), Sharda Pustak Bhawan, Allahabad.
6. Cracknell, A.P. and Hayes, L.W.B. (1993): Introduction to Remote Sensing, Taylor & Francis, London.
7. Curran, P.J. (1985): Principles of Remote Sensing, Longman, London.
8. Floyd, F. and Sabins, Jr. (1986): Remote Sensing: Principles and Interpretation, W.H. Freeman, New York.
9. George Joseph (2005): Fundamentals of Remote Sensing, New Delhi.
10. Guham, P. K. (2003): Remote Sensing for Beginners. Affiliated East-West Press Private Ltd., New Delhi.
11. Harry, C.A. (ed.) (1978): Digital Image Processing, IEEE Computer Society, California
12. Hord, R.M. (1982): Digital Image Processing of Remotely Sensed Data, Academic Press, New York.
13. Jensen, J.R. (2000): Remote Sensing of the Environment, Dorling Kundersley Publishing Inc. John Wiley and Sons, Singapore
14. Leuder, D.R. (1959): Aerial Photographic Interpretation: Principles and Application. McGraw Hill, New York.
15. Lillesand, T.M. and Kiefer, R.W. (2000): Remote Sensing and Image Interpretation. 4th edition. John Wiley and Sons, New York.
16. Nag, P. (ed.) 1992: Thematic Cartography and Remote Sensing, Concept Publishing. Company, New Delhi.
17. Sabins, F. F. (1996): Remote Sensing: Principles and Interpretation, W.H Freeman, New York
18. Sharma, H.S. (2003): Remote Sensing for Resource Survey, Concept Publication, New Delhi.

**B.A. IV, Sem-VII**  
**Course VII (Theory)**

**Code: GEO407F**

**Course: Elective**

**Title of the Paper: Rural Development**

**Credits 4**

Units	Topics	Sub Topics	Periods
1	Introduction	Concept, Approach and Need of Rural Development, Sectoral Imbalance in Rural Development	15
2	Spatial Linkages	Panchayati Raj: Structure and Role in Rural Development Rural-Urban Divide and Continuum, Core and Periphery Relations. Backward and Forward Linkages of Rural Economy.	15
3	Major Issues	Issues and Problems of Rural Areas, Causes & Consequences of Rural Population Migration in India. Transition of Rural Livelihood: Risk and Opportunities	15
4	Policies & Programmes	Area Based Approach to Rural Development: DPAP, PMGSY, Target Group Approach to Rural Development: SJSY, MNREGA, Jan Dhan Yojna IRD, PURA,	15
<b>Continuous Internal Assessment</b>			

**Course outcomes**

- It introduces basic concept of rural development and its approaches.
- Appraise problems of rural areas and change in rural livelihood.
- Able to analyses policy planning and integrated rural development

**Reference Books:**

1. Arora, R.C. (1999): Integrated Rural Development, S. Chand & Company, New Delhi.
2. Bhadauria, B.P.S. (1988): Rural Development Strategy and Perspective, Anmol Publication, Delhi.
3. Chauhan, P.R. (1996): Regional Disparities in the Levels of Development, AMGI, Gorakhpur.
4. Dak, T.M. (1987): Social Inequalities and Rural Development, National Publishing House, New Delhi.
5. Desai, Basant (1988): Rural Development VI Vols., Himalaya Publishing House, Mumbai.
6. Dubey, Bechan (1990): Integrated Rural Development (Hindi), Mishra Trading Company, Varanasi.
7. Mishra, R.P. (1987): Rural Development – Capitalist and Socialist Paths, Concept, New Delhi.
8. Misra, R.P. & Sundaram, K.V. (1988): Rural Area Development: Perspective and Approaches, Sterling Publishers, New Delhi.
9. Sharma, S.K. (1990): Integrated Rural Development: Approaches, Strategy and Perspectives, Abhinav Publication, New Delhi.
10. Singh, Katar (1990) Rural Development : Principles, Policies and Management, Sage Publications, New Delhi.
11. Singh, S.K. (2002): Rural Development Policies & Programmes, Northern Book Centre, New Delhi.
12. Srivastava, V.K., Sharma N. & Chauhan, P.R. (2002): Pradeshik Niyojan Avam Santulit Vikas, Vasundhara Prakashan, Gorakhpur.
13. Dikshit, S.K. (2012): Population and Regional Development, Radha Publication, New Delhi.



**B.A. IV, Sem-VIII**  
**Course I (Theory)**

**Code: GEO408F**  
**Course: Theory -Core**  
**Title of the Paper: Climatology**  
**Credits 4+0**

Unit	Topic	Sub-topics	Periods
1	Introduction to climate	Weather and Climate, Nature and Scope of Climatology; Electromagnetic spectrum; Insolation; Lapse rate and Inversion of Temperature; Stability and instability.	15
2	General Circulation	Winds and general circulation models; Humidity, Fog and Clouds type; Precipitation & its type; Mechanism of Monsoon – Recent Concepts, El-Nino, La- Nina and ENSO Event.	15
3	Front and cyclone	Air Masses, Fronts & Frontogenesis; Cyclone: Tropical and Temperate; Anti-cyclone.	15
4	Climatic classification and changes	Koppen's, Thornthwaite's & Trewartha's Classification; Climate Change; Weather Forecasting	15
<b>Continuous Internal Assessment</b>			

**Course outcomes**

- Introduces the meaning, scope and development of modern climatology
- Critically examine the mechanism of monsoon and climatic regionalization.
- Comprehend circulation of atmosphere, human impact on the climate and applied climatology.

**Reference Books:**

1. Banerji, R.C. & Upadhyay, D.S. (1999): Mausam Vigyan, Rajasthan Hindi Granth Academy, Jaipur.
2. Critchfield, H.J. (2002): General Climatology, Prentice Hall of India, New Delhi.
3. Hobbs, J.E. (1983): Applied Climatology, Butterworths, London.
4. Kendrew, W.G. (1972): Climatology, Oxford Uni. Press.
5. Lal, D.S. (2001): Climatology, Chaitanya Pub. House, Allahabad.
6. Lockwood, J.G. (1974): World Climatology and Environmental Approach, Edward Arnold, London.
7. Mathur, J.R. (1974): Climatology: Fundamentals and Applications, Mc Hill Book Company, New York.
8. Negi, B.S. (1999): Climatology and Oceanography (in Hindi), Kedarnath Ramnath, Meerut.
9. Rob Van Den Berg (2009) Evaluating Climate Change and Development. Prentice Hall, Englewood Cliffs, New Jersey 0762, 1998
10. Sidhartha, K. (2002): Atmosphere, Weather and Climate, Kislay Pub. Pvt. Ltd., New Delhi.
11. Singh, Savindra (2005): Climatology, Prayag Pustak Bhawan, Allahabad.
12. Subrahmaniam, V.P. (1992): Contribution to Indian Geography Part – III – General Climatology, Heritage Publication, New Delhi.
13. Trewartha, G.T. (1954): An Introduction to Climate, McGraw Hill Series in Geography. New York
14. Upadhyay, D.P. & Singh, R. (2003): Climatology and Hydrology (in Hindi), Vasundhara Prakashan, Gorakhpur.

**B.A. IV, Sem-VIII**  
**Course II (Theory)**

**Code: GEO409F**

**Course: Theory -Core**

**Title of the Paper: Research Methodology**

**Credits 4+0**

Unit	Topics	Sub-topics	Periods
1	Scientific Research in Geography	Concept, Meaning and Objectives of Research, Types of Research, Overview of Research Process	15
2	Methods and Sources of Data collection	Techniques of Data Collection: Questionnaire and Interview Schedule, Interview, Observation, Case Study; Preparation of Questionnaire, Sampling Design, Selection of Respondents. Sources of Data: (A) Secondary Data: Census, NSS, CSO, Aerial Photographs and Satellite Imageries, Web Portal (B) Primary Data: Observational Method, Questionnaires and Interviews; Sampling Methods.	15
3	Research Process	Defining Research Problem: Identification of Problems, Specification of Objectives, Review of Literature, and Conceptualization of Research Problem, Research Questions and Hypotheses. Research Plan.	15
4	Report writing	Tabulation and Compilation of Data, Content Analysis, Citation, References, Bibliography, Review of Literature, Formatting of Research Reports	15
<b>Continuous Internal Assessment</b> Assignment/ Presentation/Exercises/Field Work			

**Course outcomes**

- Can understand scientific research in Geography.
- Understand the Methods and Sources of Data collection
- Explain research process and know report writing.

**Reference Books:**

1. Davis, P.C. (1985): Data Description and Presentation, Oxford, London.
2. Flowerdew, R. et.al. (1997): Methods in Human Geography: A Guide for Students Doing a Research Project, Longman, Harlow.
3. Goudie, A. (Ed) (2004): Encyclopaedia of Geomorphology, Routledge, London,
4. Gregory, D., Johnston, R., Pratt, G., Watts, M. and Whatmore, S. (2009): The Dictionary of Human Geography, Wiley-Blackwell, Singapore
5. Kothari, C.R. (1982): Research Methodology in Social Sciences, Inter India Pub., New Delhi.
6. Mishra, H.N. & Singh, V.P. (2002): Research Methodology in Geography, Rawat Publications, Jaipur.
7. Misra, R.P. & Ramesh, A. (1999): Fundamentals of Cartography, Concept Pub. Co., New Delhi.
8. Misra, R.P. (1985): Research Methodology, Concept Publishing Co., New Delhi.
9. Stoddart, R.H. (1982): Field, Techniques and Research Methods in Geography, Kendall Hunt, Dubuque.
10. Tandon, B.C. (1997): Research Methodology in Social Sciences, Chaitanya Pub., Allahabad.
11. arf, B. (Ed)(2006): Encyclopedia of Human Geography, SAGE Publications, London

**B.A. IV, Sem-VIII**  
**Course III (Theory)**

**Code: GEO410F**

**Course: Theory-Core**

**Title of the Paper: Regional Geography of India**

**Credits 4+0**

Units	Topics	Sub Topics	Periods
1	Region and Regionalization	Concept of Region and Regional Geography, Types of Region, Methods of Regionalization, Macro, Meso and Micro Regions of India. Attempts of Regionalization with reference to Stamp, Spate, & R.L. Singh	15
2	Regional Analysis of Problematic Regions	Kashmir Himalaya, North Eastern Region, Tribal Regions: Central India, Middle Ganga Plain	15
3	Problems and Prospects of Development- Case Studies	Chhotanagpur Plateau, Malabar Coast, Punjab Plain, Malwa Plateau,	15
4	Development Programmes of Specific Areas	Drought Prone Areas, Flood Prone Areas, Desert Areas, Hill Areas	15
<b>Continuous Internal Assessment</b>			

**Course outcomes**

- It introduces the concept of region and regionalisation and regionalization of India
- Able to identify problems and prospects of development of different region of India
- Comprehend development programmes of specific areas.

**Reference Books:**

1. Bansal, S.C. (1999): Advanced Geography of India, Meenakshi Publication, Meerut.
2. Chauhan P.R. (2001): Bharat Ka Vrihat Bhoogol, Vasundhara Prakashan, Gorakhpur.
3. Deshpande C.D (1992): India: A Regional Interpretation, Northern Book Centre, New Delhi.
4. Gautam, Alka (2001): Geography of India, Sharda Pustak Bhawan, Allahabad.
5. Govt. of India: Economic Survey, Ministry of Finance, New Delhi.
6. Hussain, Majid (2008): Advance Geography of India, Tata McGraw Hill, New Delhi.
7. Johnson, B.L.C. (1983): Development in South Asia. Penguin Books, Harmondsworth.
8. Khullar, D.R. (2006) India: A Comprehensive Geography, Kalyani Pub., New Delhi.
9. Krishnan, M. S. (1968): Geology of India and Burma. 4<sup>th</sup> edition. Higginbothams Private. Ltd., Madras.
10. Nag, P. and Gupta S. S. (1992): Geography of India. Concept Publishing. Company, New Delhi.
11. Sharma, T. C. (2003): India: Economic and Commercial Geography. Vikas Publication., New Delhi.
12. Singh, J. (2003): India: A Comprehensive and Systematic Geography. Gyanodaya Prakashan, Gorakhpur.
13. Singh, R. L. (ed.) (1971): India. A Regional Geography. National Geographical Society of India, Varanasi.
14. Spate, O.H.K. & Learmonth, A.T.A. (1954) : India & Pakistan, Methuen, London.
15. Tiwari, R. C. (2007): Geography of India, Prayag Pustak Bhawan, Allahabad
16. Wadia, D. N. (1959): Geology of India. MacMillan and Company, London and Madras.

**B.A. IV, Sem-VIII**  
**Course IV (Practical)**

**Code: GEO411F**

**Course: Practical**

**Title of the Paper: System Analysis, Geological Maps and Morphometric Analysis**

**Credits 0+4**

Units	Topic	Sub topic	Periods
1	Measurement of Inequality	Z score, Lorenz Curve and Gini Coefficient, Location Quotient, Coefficient of Localization, Localization Curve	15
2	Network Analysis	Nearest Neighbour Analysis, Network Analysis and Degree of Connectivity, Shape Analysis, Gravity Models, Retail Gravitation.	15
3	Geological Maps	Beds, bedding Plane, Strike lines, Outcrop Drawing of Cross Sections – Inclined, Folded, Faulted Strata and Unconformable Series; Interpretation of Geological History – Nature of Relief and Rock Structure and their Correlation	15
4	Morphometric Analysis	Drainage: Density, Frequency, Dissection index Slope Analysis: Wentworth Method, Preparation of Hypsometric Curve, Altimetric Frequency Curve, Clinographic Curve using Topographical Sheet of any Hilly and Plateau region	15
Continuous Internal Assessment			

**Course outcomes**

- Introduces different statistical methods to measure inequality.
- Impart knowledge on quantitative measurement of spatial patterns and spatial techniques.

**Reference Books:**

1. Alonso, W. & Friedmann, E. (1970): Regional Development and Planning, Longman, London.
2. Bhat, L.S. (1973): Regional Planning in India, Statistical Publishing Society, Kolkata.
3. Chand, M. and Puri, V. K. (2003): Regional Planning in India, Allied Publishers Pvt. Ltd., New Delhi
4. Chandana, R. C. (2000): Regional Planning: A Comprehensive Text, Kalyani Publishers, Ludhiana
5. Dube, K. N. (1990): Planning and Development in India, Asia Publishing House, New Delhi
6. Dubey, K.K. & Singh. M.B. (1988): PradeshikNiyojan, Tara Publication, Varanasi.
7. Friedmann, J. and Alonso, W. (1967): Regional Development and Planning: A Reader, MIT Press, New York
8. Ginsburg, N.S. (1959): The Regional Concept and Planning, Regional Planning UNO, New York.
9. Glassen, John (1978): An Introduction to Regional Planning, Hutchinson, Educational, London.
10. Glasson, J. and Marshall, T. (2007): Regional Planning, Routledge, New York
11. Glikson, Arther (1985): Regional Planning and Development, London.
12. Govt. of India (1986): Regional Plan 2001: National Capital Region, NCRPB, Ministry of Urban Development, New Delhi
13. India Year Book (2014): Publication Division, New Delhi
14. Isard, W (1963) Methods of Regional Analysis: an Introduction to Regional Science, The MIT Press, Cambridge, Massachusetts.
15. Mishra, H. N. (2005): Regional Planning, Rawat Publication, Jaipur
16. Mishra, R. P. (2002): Regional Planning in India- Concept Publication, New Delhi

**B.A. IV, Sem-VIII**  
**Course V (Theory)**

**Code: GEO412F**

**Course: Elective**

**Title of the Paper: Political Geography**

**Credits 4 +0**

Units	Topics	Sub-topics	Periods
1	Introduction & Approaches	Nature, Scope and Development of Political Geography; Contribution of German, British, American & Indian Scholars; Approaches to the Study of Political Geography in reference to Functional and Unified Field Theory	15
2	Nation and State	The Concept of Nation and State; Spatial Factors and Anatomy of State: Core Areas and Capitals; Frontiers and Boundaries. Evolution of Federalism, Origin and Success of Federalism in India	15
3	Strategic Views	Global Strategic Views with particular emphasis on the ideas of Mahan, Mackinder, Spykman and Deseveresky, Geopolitical Setting of India, Significance of Indian Ocean	15
4	Spatial Organisation	Elements of Electoral Geography; Geopolitical Problems of India in Relation to its Neighbouring Countries; Contemporary issues of India; Regional Co-operations – SAARC, ASEAN, European Union.	15

**Course Outcomes**

- To understand the scope and development of the subject matter with the understanding of the various approaches involved
- To develop the understanding on the concepts related to the anatomy of the state based on the current philosophy and established theories.
- To understand the spatial processes involved in the success of the federalism and electoral geography.
- To understand the Geopolitical Setting of India in relation to the neighbours and its significance in the world regional setting

**Reference Books:**

1. Adhikari, S. (2005): Political Geography of India, SharadaPustakBhawan, Allahabad
2. Busteed, M.A. (1980): Developments in Political Geography, London.
3. Carlson, L. (1971): Geography and World Politics, Prentice Hall, New Jersey.
4. Chauhan, P.R. (1996): RajnitikBhoogol, VasundharaPrakashan, Gorakhpur.
5. Cox, K. (2002): Political Geography: Territory, State and Society, Wiley-Blackwell
6. Dikshit, R.D. (1989): Political Geography: A Contemporary Perspective, Tata McGraw Hill, New Delhi.
7. Dikshit, S.K. (2007): RajnitikBhoogolAvamBhurajni, VishwavidyalayaPrakashan, Varanasi.
8. Dwivedi, R.L. (1980): Political Geography, Chaitanya Publishing House, Allahabad.
9. Glassner, M.L. & Blij, H.J.de (1968): Systematic Political Geography, John Wiley, New York.
10. Johnston, R.J. (1982): Geography and the State, Mac Millan, London.
11. Kasperson, R.E. & Minghi, J.V. (1971): Structure of Political Geography, London.
12. Pounds, N. J.G. (1977): Political Geography, McGraw Hill, New York.
13. Sinha, Manorama (1995): Political Geography, Horizon Publication, Allahabad.
14. Sukhwai, B.L. (1985): Modern Political Geography of India, Sterling Publication, New Delhi.
15. Taylor, P. (1985): Political Geography, Longman, London, 1985.

## B.A. IV, Sem-VIII Course VI (Theory)

**Code: GEO413F**

**Course: Elective**

**Title of the Paper: Urban Geography**

**Credits 4+0**

Units	Topic	Sub-topics	Periods
1	Introduction	Nature, Scope & Development of Urban Geography, Urban Growth in Ancient, Medieval, and Modern Period, Megalopolis & Conurbation, Trend of Urbanisation in India.	15
2	Models in Urban Geography	Urban Growth Models: Concentric Zone, Sectoral, and Multiple nuclei Theory, Concept of Rank Size Rule and Primate City, law of Primacy.	15
3	Urban Morphology	Concept of Urban Morphology, Functional Classification of Urban Centres, Concept of Umland, agglomeration, SUA, Satellite Towns, Statuary Town, Continuum, Rural-Urban Fringe: Concept & Characteristics, Urban Sprawl.	15
4	Urban Policies & Planning	Problems of Cities Concept of Town Planning: Aims & Principles, Problems and Prospects of Town Planning in India Urban Policies & Smart Cities	15
<b>Continuous Internal Assessment</b>			

### Course outcomes

- To know the scope and advancement of the Urban Geography as an established branch of the Geography as a subject
- To understand the spatial processes of urban growth and factors which affect the origin and development of urban settlements.
- To build the theoretical understanding based on certain models related to the processes of the urban morphology.
- To understand the theoretical and functional classification of the urban settlements and the related socio-economic problems and planning issues.

### Reference Books:

1. Alam, S.M. (1965) Hyderabad-Secundrabad : A Study in Urban Geography, Allied Publishers, Mumbai.
2. Bansal, S.C. (2008) Urban Geography (in Hindi), Meenakshi Prakashan, Meerut.
3. Bose, A. (1980): India's Urbanisation, Tata McGraw Hill, New Delhi.
4. Carter, H. (1979): The Study of Urban Geography, Arnold Heinemann, London.
5. Gibbs, J. P. (Ed.), (1961): *Urban Research Methods*, Princeton.
6. Hall, T. (2006): Urban Geography, Routledge, London.
7. Karan, M.P. (1991) Urban Geography (in Hindi), Kitab Ghar Acharya Nagar, Kanpur.
8. Mandal, R.B. (2000) Urban Geography: A Textbook, Concept Publishing Company, New Delhi.
9. Mayer, H.M. & Kohn, C.F. (1967): Reading in Urban Geography, Central Book Depot, Allahabad.
10. Pacione, M. (2009): Urban Geography, Routledge, New York Press, New Delhi.
11. Ramchandran, R. (1997): Urbanization and Urban Systems in India, Oxford University.
12. Rao, B.P. and Sharma, N. (2000) Urban Geography (in Hindi), Vasundhara Prakashan, Gorakhpur.
13. Siddharth, K. and Mukherjee, S. (2013): Cities, Urbanization and Urban System, KishalayPrakashan,
14. Singh, O.P. (1979) Urban Geography (in Hindi), Tara Publication, Varanasi.
15. Singh, R.L. (1955) Banaras: A Study in Urban Geography, Nand Kishore & Sons, Varanasi.
16. Singh, Ujagir (1974) Urban Geography (in Hindi), Uttar Pradesh Hindi Granth Academy, Lucknow.

## B.A. IV, Sem-VIII Course VII (Theory)

**Code: GEO414F**

**Course: Elective**

**Title of the Paper: Transport Geography**

**Credits 4+0**

Units	Topic	Sub-topic	Periods
1	Introduction	Definition, Scope & Relevance to the study of Transport Geography, Historical Development of Transport System, Relative Importance of Different Modes of Transport. Concept of Spatial Interaction	15
2	Structure of Transport Network	Evolution of Transport network with special reference to Taffee, Morrill and Gould's Model. Network analysis- Concept of accessibility and connectivity	15
3	Modes of Transport	Measures of connectivity-Graph theoretic measures – Cyclomatic, Alpha, Beta, Gamma & Detour Index State of Modes and Means of Transport in India – Rail, Road, Waterways and Airways.	15
4	Policy and Planning	Transport policy in India , Transport planning , Role of Transport in Regional development.	15
<b>Continuous Internal Assessment</b>			

### Course outcomes

- It introduces meaning and Scope & relevance of the study of Transport Geography.
- Comprehend concept of spatial interaction and its base.
- Examine mode of transport and policy planning with special reference to India.

### Reference Books:

1. Houle. B.S. (1973): Transport and Development, Mc Millan, London.
2. Hurst, Elliot (1973): Transport Geography – Readings and Comments, Mc Graw Hill Book Co. New York.
3. Jain, J.K. (1997): Transport Economics, Chaitanya Pub. House, Allahabad.
4. Kansky, J. (1963): Structure of Transport Network, University of Chicago, Deptt. of Geography.
5. Raza, M. & Agrawal, Y. (1986): Transport Geography of India, Concept Pub., New Delhi.
6. Robinson, H. & Banford, C. (1978): Geography of Transport, Mc Donald & Evans, London.
7. Singh, J. (1969): Transport Geography of South Bihar, N.G.S.I., B.H.U.
8. Singh, K.N. (1990): Transport Network in Rural Development in Eastern U.P., I.R.E.D., Gorakhpur.
9. Singh, K.N. (2005): Parivahan Bhoogol, Gyanodaya Prakashan, Gorakhpur.
10. Taffee, E.J. & Gauthier, H.L. (1973): Geography of Transportation, Prentice Hall.

## UG Honors with Research

### B.A. IV, Sem-VII

#### Course I (Theory)

**Paper Code: GEO415F**

**Course: Theory -Core**

**Title of the Paper: Geographical Thought: Concepts and Issues**

**Credits 4**

Units	Topics	Sub Topics	Periods
1	Introduction	Indian Knowledge System; Changing Paradigm of Geography; Positivism in Geography	15
2	Quantitative Revolution	Quantitative Revolution and its Impact; Systems and Models in Geography; Theories and Laws in Geography.	15
3	Major Concepts	Concept of Earth Surface; Concept of landscape; Concept of Region; Typology and Regionalization; Concept of Spatial Organization.	15
4	Humanistic Geography	Radical Geography: Geography as a Science of Human Welfare; Behavioralism & Phenomenology in Geography Concept of Post-modernism in Geography; Feminist & Gender Geography	15
<b>Continuous Internal Assessment</b>			

#### Course Outcomes

- Introduce the students changing Paradigm in Geography based on various thoughts from ancient to modern periods,
- It enhances the conceptual and philosophical knowledge of Geography.
- It explain show Geography as a Science of HumanWelfare.

#### Reference Books:

- Adhikari, Sudipto (2009): Fundamentals of Geographical Thought, Chaitanya Pub. House, Allahabad.
- Arild, H. J. (1999): Geography: History and Concepts, SAGE Publications, London
- Chorley, R. J. (Ed): Directions in Geography, Matheun and Co., London
- Chorley, R.J. & Haggett, P. eds. (1967): Integrated Models in Geography, Methuen, London.
- Davies, W.K.D. (1972): The Conceptual Revolution in Geography, University of London Press, London.
- Dear, M. J. and Flusty, S. (2002): The Spaces of Postmodernity: Readings in Human Geography. Blackwell Publishers, Oxford.
- Dickinson, R.E. (1969): The Makers of Modern Geography, Routledge and Kegan Paul, London.
- Dikshit, R. D. (2004): Geographical Thought. A Critical History of Ideas. Prentice-Hall of India, New Delhi. (in English and Hindi).
- Dikshit, S.K. (2001): BhaugolikChintanKaUdbhavAvam Vikas, VishwavidyalayaPrakashan, Varanasi.
- Hartshorne, R. (1959): Perspectives on the Nature of Geography, John Murray, London.
- Harvey, D. (1969): Explanation in Geography, Edward Arnold, London.
- Harvey, M. E. and Holly, P.B. (2002): Themes in Geographic Thought. Rawat Publications., Jaipur and New Delhi.
- Hubbard, P., Kitchin, R., Bartley, B. and Fuller, D. (2002): Thinking Geographically: Space, Theory and Contemporary Human Geography. Continuum, London.
- Husain, Majid (2001): Evolution of Geographical Thought, Rawat Publications, Jaipur.
- James, P.E. & Jones, C.F. (1954): American Geography : Inventory & Prospect, Syracuse Univ. Press, New York.
- James, P.E. (1980):All Possible World: A Hundred Years of Geography, Sachin Pub. Jaipur.
- Johnston, R, Gregory D, Pratt G, Watts M. and Whatmore S. (2003): The Dictionary of Human Geography. Blackwell Publishers, Oxford. 5th edition.
- Johnston, R.J. (1984): Geography and Geographers, Arnold Heinemann, London.
- Johnston, R.J. (1985): The Future of Geography, Methuen and Company Ltd., New York. (2003 edition published).



## B.A. IV, Sem-VII

### Course II (Theory)

**Code: GEO416F**

**Course: Theory - Core**

**Title of the Paper: Advance Geomorphology**

**Credits 4**

Units	Topics	Sub Topics	Periods
1	Fundamentals of Geomorphology	Meaning, Scope & Evolution of Geomorphology; Fundamental Concepts of Geomorphology; Concept of Morphogenetic region.	15
2	Theories & Models in Geomorphology	Theories of Landscape Development (Davis, Penck, JT Hack, SA Schumm; Plate Tectonics Associated Process; Slope Development Approach and Theories.	15
3	Techniques in Geomorphology	Denudation chronology, Erosion Surface; Relief and Fluvial Morphometry; Channel Morphology; Digital Elevation Model (DEM).	15
4	Applied Geomorphology	Application of Geomorphology: Disaster Management and Civil Projects: Dams (Tehri and Damodar) and Road Construction (Atal Tunnel, Uttarakhand Tunnel).	15
<b>Continuous Internal Assessment</b>			

#### Course Outcomes

- Introduces concept of time scale in Geomorphology
- Impart knowledge on different models of landscape development
- Explain its scope on applied aspects with respect to civil projects, disaster management, minerals and energy

#### Reference Books:

- Anhert, F. (1996): Introduction to Geomorphology, Edward Arnold, London.
- Bloom. A.L. (1979): Geomorphology, Prentice Hall, New Jersey, USA.
- Chorley, R. J., Schumm, S.A. and Sugden, D.E. (1984): Geomorphology, Methuen, London.
- Dayal, P. (1987): Geomorphology (in Hindi), Patna.
- Dikshit, K.R. et.al. (1994): India Geomorphological Diversities, Rawat Pub. Jaipur.
- Fairbridge, R.W. (1968): Encyclopaedia of Geomorphology, Reinholdts, New York.
- Kale, V.S. and Gupta, A. (2001): Introduction to Geomorphology, Orient Longman, Hyderabad.
- King, C.A.M. (1968): Techniques in Geomorphology, Edward Arnold, London.
- Melhorn, W.N. & Flemal, R.C. (1981): Theories of Landforms Development, George Allen Unwin, London.
- Miller, A. A. (1953): The Skin of the Earth, Methuen and Co. Ltd., London
- Ollier, C.D. (1981): Tectonics and Landforms, Longman, London.
- Sharma, H.S. (1987): Tropical Geomorphology, Concept Publishing Company, New Delhi.
- Sharma, H.S. and Kale, V.S. (2009): Indian Geomorphology, Rawat Pub. Jaipur.
- Singh, Savindra (2005): Geomorphology, PrayagPustakBhawan, Allahabad. (Hindi & English)
- Small, R.J. (1976): The Study of Landforms, Cambridge University Press, Cambridge.
- Sparks, B.W. (1988): An Introduction to Geomorphology, Longman, London.
- Steers, A. (1958): The Unstable Earth, Methuen, London
- Strahler, A.H. and Strahler, A.N. (1992): Modern Physical Geography, John Wiley, New York

**B.A. IV, Sem-VII****Course III (Theory)****Code: GEO417F****Course: Theory- Core****Title of the Paper: Physical and Economic Geography of India****Credits 4+0**

Units	Topics	Sub Topics	Periods
1	Geology & Relief	Geological Structure of India; Origin of Himalayas, Origin of Drainage Systems of India. Delimitation & Characteristics of Physiographic Regions	15
2	Climatic Characteristics	Mechanism and Recent Trends of the Indian Monsoon; Climatic Regions; Agro-Climatic Regions.	15
3	Resource Base	Population growth and distribution; Population Resource Regions; Role of Green Revolution; Agricultural Regions & New Trends in Indian Agriculture; Mineral Resource Regions	15
4	Industrial Development	Industrial Policies & Trend of Industrialization; Industrial Regions, Impact of Globalization on Indian Economy; Regional Development and Disparities, Problems & Prospects of Industrially Backward regions of India	15
<b>Continuous Internal Assessment</b>			

**Course Outcomes**

- Introduces physical aspects of the Indian sub-continent.
- Appraise the climatic characteristics and resource base of India.
- Discuss the pattern and level of development in India.

**Reference Books:**

17. Bansal, S.C. (1999): Advanced Geography of India, Meenakshi Publication, Meerut.
18. Chauhan P.R. (2001): Bharat Ka Vrihat Bhoogol, Vasundhara Prakashan, Gorakhpur.
19. Deshpande C.D (1992): India: A Regional Interpretation, Northern Book Centre, New Delhi.
20. Gautam, Alka (2001): Geography of India, Sharda Pustak Bhawan, Allahabad.
21. Govt. of India : Economic Survey, Ministry of Finance, New Delhi (Different Issues)
22. Hussain, Majid (2008): Advance Geography of India, Tata McGraw Hill, New Delhi.
23. Johnson, B.L.C. (1983): Development in South Asia, Penguin Books, Harmondsworth.
24. Khullar, D.R. (2006): India: A Comprehensive Geography, Kalyani Pub., New Delhi.
25. Krishnan, M. S. (1968): Geology of India and Burma, 4<sup>th</sup> edition. Higgin Bothams Private. Ltd., Madras.
26. Nag, P. and Gupta S. S. (1992): Geography of India, Concept Publishing. Company, New Delhi.
27. Sharma, T. C. (2003): India: Economic and Commercial Geography, Vikas Publication., New Delhi.
28. Singh, J. (2003): India: A Comprehensive and Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
29. Singh, R. L. (ed.) (1971): India. A Regional Geography, National Geographical Society of India, Varanasi.
30. Spate, O.H.K. & Learmonth, A.T.A. (1954): India & Pakistan, Methuen, London.
31. Tiwari, R. C. (2007): Geography of India, Prayag Pustak Bhawan, Allahabad
32. Wadia, D. N. (1959): Geology of India. MacMillan and Company, London and Madras.

**B.A. IV, Sem-VII**  
**Course IV (Practical)**

**Code: GOE418F**

**Course: Practical**

**Title of the Paper: Cartography: Projections and Cartograms**

**Credits 0+4**

Units	Topic	Sub topic	Periods
1	Classification and Types	Meaning, Classification, and Characteristics of Projections;	5
2	Projections with mathematical calculation	Lambert's Conical, Polyconic, Galls', Equatorial Zenithal Projection: Gnomonic, Stereographic and Orthographic Cases; Mollweide & Sinusoidal: Simple and Interrupted	15
3	Contouring	Block Diagram, Raise and Henny Method, Hachures	10
4	Cartograms	Climatic Diagrams; Ergo-graph – Climatic and Circular; Water Budget; Multiple Dot & Spherical map	30
Continuous Internal Assessment			60
Assignment/ Presentation/Exercises/Field Work			

**Course outcomes**

- Impart drawing skill on map projections, various maps and diagrams
- Imparting the skills to understand and draw cartograms

**Reference Books:**

15. Chauhan P.R. (2014): Prayogatmak Bhoogol, Vasundhara Publications, Gorakhpur
16. Davis, R.E. and Foote, F.S.: Surveying - Theory and Practices, Tokyo.
17. Kanetkar, T.P. & Kulkarni, S.V.: Surveying and Leveling, Pune.
18. Maling, D.H. (1973): Co-ordinate Systems and Map Projections. George Philip and Sons Ltd.
19. Misra, R.P. and Ramesh, A. (1999): Fundamentals of Cartography. Concept Publishing Company, New Delhi.
20. Monkhouse, F.J. and Wilkinson, H. R (1962): Maps and Diagrams, Methuen and Company Ltd. and Company Ltd., London.
21. Raisz, E. (1962): Principles of Cartography. McGraw Hill Books Company, Inc., New York.
22. Robinson (1991): Aerial Photography and Cartography, Mac Millan, London.
23. Robinson, A. H. H., Sale R., Morrison J. and Muehrcke, P. C (1984): Elements of Cartography, 6<sup>th</sup> edition John Wiley and Sons, New York.
24. Sahani, P.B. (1993): Advance Surveying, New Delhi.
25. Singh, J. et.al. (1990): Bhaumikiya Manচিতro Ki Ruprekha, Vasundhara Prakashan, Gorakhpur.
26. Singh, L.R. (2001): Practical Geography, Sharda Pustak Bhawan, Allahabad.
27. Singh, R. L. and Singh, Rana P.B. (1993): Elements of Practical Geography. Kalyani Publishers, Ludhiana and New Delhi. (English and Hindi editions).
28. Tiwari, R.C. and Tripathi, Sudhakar (2001): Abhinav Prayogatmak Bhoogol, Prayag Pushtak Bhawan, Allahabad.

**B.A. IV, Sem-VII**  
**Course V (Theory)**

**Code: GEO419F**

**Course: Elective**

**Title of the Paper: Advance Economic Geography**

**Credits 4+0**

Units	Topic	Subtopic	Periods
1	Introduction	Nature and scope; Systematic Development of Economic Geography, Approaches and Fundamental Concept of Economic Geography,	15
2	Application & Relevance of Location and Economic Theories	Location Theories-Von-Thunen; Industrial Location Theory-Weber, Hoover and Losch; Central Place Theory of Christaller.	15
3	Economic Development	World Economic Development, Special Economic Zones and Technology Parks, Theories of Economic development-Growth Pole Theory, Myrdal's Cumulative Causation Theory., Sustainable development.	15
4	International Trade	Factors influencing the international trade, Ricardian Theory of International trade, Emerging Trends of World Trade Pattern, Regional Trade Blocks: SAARC and ASEAN	15
Continuous Internal Assessment			

**Course Outcomes**

- Introduces nature, scope, methods, approaches and recent trends in economic geography
- Impart knowledge on different locational theory
- Able to explain changing concept of development, world trade patterns and theory on International trade.

**Reference Books:**

- Alexander, J.W. (2012): Economic Geography, Prentice Hall of India, New Delhi.
- Berry, B.J.L. et al. (1976): Geography and Economic Systems, Prentice Hall, Englewood Cliff.
- Boyce, R.D. (1990): Bases of Economic Geography, Holt Rinehart & Winston, New York. Cliffs, N.J. Prentice.
- Dreze, J. and Sen, A. (1996): Economic Development and Social Opportunity. Oxford University Press, New Delhi.
- Haggett, P. (1966): Locational Analysis in Human Geography, St. Martin's Press, New York.
- Hanink, D.M. (1997): Principles and Applications of Economic Geography, Economy,
- Hartshorne, T.A. & Alexander, J.W. (1994): Economic Geography, Prentice Hall of India, New Delhi.
- Hodder, B.W. & Lee, R. (1996): Economic Geography, Methuen, London.
- Janaki, V.A. (1985): Economic Geography, Concept Publishing Co., New Delhi.
- Jones & Darkenwald (1960): Economic Geography, New York.
- Knox, P. and J. Agnew (1998): The Geography of the World Economy. Arnold, London.
- Lloyd, P. And P. Dicken (1972): Location in Space: A theoretical approach to Economic Geography, Harper and Row, New York.
- McCarty, H.H. and J.B. Lindberg (1966): A preface to Economic Geography, Englewood, New York.
- Rostov, W.W. (1960): The Stages of Economic Growth, Cambridge Univ. Press, London.
- Singh, K.N and Siddiqui, A (2012): Economic Geography, PrayagPustakBhawan, Allahabad
- Singh, K.N. & Singh, J. (1996): ArthikBhoogolKeMooltatva, GyanodayaPrakashan, Gorakhpur.

## B.A. IV, Sem-VII

### Course VI (Theory)

**Code: GEO420F**

**Course: Elective**

**Title of the Paper: Remote Sensing**

**Credits 4+0**

Units	Topics	Sub-topics	Periods
1	Basics of Remote Sensing	Definitions, Scope, potentials and limitations of Remote Sensing; Development in the world and in India, Stages of Remote Sensing, Principles and concept of Remote Sensing: Radiation and Resolution concepts	15
2	Principle of Electromagnetic Radiation	Principle of Electromagnetic Radiation, Electro-magnetic Radiation (EMR)- The nature of radiation; Radiation at source; Radiation in propagation; Radiations at its target; Radiation from sun; Radiation from the earth Properties of EMR; Atmospheric windows; Perturbing effects of the atmosphere.	15
3	Sensors and Sensors	Fundamental properties of sensors; types of sensors- Passive and active sensors; Optical scanner, thermal scanner; Multispectral scanner. Types of Remote Sensing, Platforms and Sensors, LANDSAT And IRS Satellite System	15
4	Geometrics of Aerial photographs	Geometric characteristic of aerial photographs- scale, overlap, side lap, vertical exaggeration, and geometric resolution. Introduction to Elements of Photographic System: Camera System, Film. Basic Geometry & Characteristics of Aerial Photograph, Scale, Image Parallax, Ortho Photo. Photo features, relief displacement.	15
Continuous Internal Assessment			

#### Course outcomes

- It gives an overview of remote sensing process
- It introduces aerial photo and photo grammetry and satellite remote sensing
- Enables image processing procedure and identify applications of remote sensing

#### Reference Books:

- American Society of Photogrammetry (1983): Manual of Remote Sensing, Falls Church, VA.
- Avery, T. E. and Berlin, G.L. (1992): Fundamentals of Remote Sensing and Air photo Interpretation, Mc Millan, N. York.
- Barrett, E.C.& Curtis, L.F. (1992): Introduction to Environmental Remote Sensing, Chapman & Hall, New York.
- Campbell, J. B. (2002): Introduction to Remote Sensing. 5<sup>th</sup> edition. Taylor and Francis, London.
- Chaunial, D.D. (2001): Remote Sensing and G.I.S. (in Hindi), Sharda Pustak Bhawan, Allahabad.
- Cracknell, A.P. and Hayes, L.W.B. (1993): Introduction to Remote Sensing, Taylor & Francis, London.
- Curran, P.J. (1985): Principles of Remote Sensing, Longman, London.
- Floyd, F. and Sabins, Jr. (1986): Remote Sensing: Principles and Interpretation, W.H. Freeman, New York.
- George Joseph (2005): Fundamentals of Remote Sensing, New Delhi.
- Guham, P. K. (2003): Remote Sensing for Beginners. Affiliated East-West Press Private Ltd., New Delhi.
- Harry, C.A. (ed.) (1978): Digital Image Processing, IEEE Computer Society, California
- Hord, R.M. (1982): Digital Image Processing of Remotely Sensed Data, Academic Press, New York.
- Jensen, J.R. (2000): Remote Sensing of the Environment, Dorling Kundersley Publishing Inc. John Wiley and Sons, Singapore
- Leuder, D.R. (1959): Aerial Photographic Interpretation: Principles and Application. McGraw Hill, New York.
- Lillesand, T.M. and Kiefer, R.W. (2000): Remote Sensing and Image Interpretation. 4th edition. John Wiley and Sons, New York.
- Nag, P. (ed.) 1992: Thematic Cartography and Remote Sensing, Concept Publishing. Company, New Delhi.
- Sabins, F. F. (1996): Remote Sensing: Principles and Interpretation, W.H Freeman, New York
- Sharma, H.S. (2003): Remote Sensing for Resource Survey, Concept Publication, New Delhi.

**B.A. IV, Sem-VII**  
**Course VII (Theory)**

**Code: GEO421F**

**Course: Elective**

**Title of the Paper: Rural Development**

**Credits 4**

Units	Topics	Sub Topics	Periods
1	Introduction	Concept, Approach and Need of Rural Development, Sectoral Imbalance in Rural Development	15
2	Spatial Linkages	Panchayati Raj: Structure and Role in Rural Development Rural-Urban Divide and Continuum, Core and Periphery Relations. Backward and Forward Linkages of Rural Economy.	15
3	Major Issues	Issues and Problems of Rural Areas, Causes & Consequences of Rural Population Migration in India. Transition of Rural Livelihood: Risk and Opportunities	15
4	Policies & Programmes	Area Based Approach to Rural Development: DPAP, PMGSY, Target Group Approach to Rural Development: SJSY, MNREGA, Jan Dhan Yojna IRDP, PURA,	15
<b>Continuous Internal Assessment</b>			

**Course outcomes**

- It introduces basic concept of rural development and its approaches.
- Appraise problems of rural areas and change in rural livelihood.
- Able to analyses policy planning and integrated rural development.

**Reference Books:**

14. Arora, R.C. (1999): Integrated Rural Development, S. Chand & Company, New Delhi.
15. Bhadauria, B.P.S. (1988): Rural Development Strategy and Perspective, Anmol Publication, Delhi.
16. Chauhan, P.R. (1996): Regional Disparities in the Levels of Development, AMGI, Gorakhpur.
17. Dak, T.M. (1987): Social Inequalities and Rural Development, National Publishing House, New Delhi.
18. Desai, Basant (1988): Rural Development VI Vols., Himalaya Publishing House, Mumbai.
19. Dubey, Bechan (1990): Integrated Rural Development (Hindi), Mishra Trading Company, Varanasi.
20. Mishra, R.P. (1987): Rural Development – Capitalist and Socialist Paths, Concept, New Delhi.
21. Misra, R.P. & Sundaram, K.V. (1988): Rural Area Development: Perspective and Approaches, Sterling Publishers, New Delhi.
22. Sharma, S.K. (1990): Integrated Rural Development: Approaches, Strategy and Perspectives, Abhinav Publication, New Delhi.
23. Singh, Katar (1990) Rural Development : Principles, Policies and Management, Sage Publications, New Delhi.
24. Singh, S.K. (2002): Rural Development Policies & Programmes, Northern Book Centre, New Delhi.
25. Srivastava, V.K., Sharma N. & Chauhan, P.R. (2002): Pradeshi Niyojan Avam Santulit Vikas, Vasundhara Prakashan, Gorakhpur.
26. Dikshit, S.K. (2012): Population and Regional Development, Radha Publication, New Delhi.

**B.A. IV, Sem-VIII**  
**Course I (Theory)**

**Code: GEO422F**

**Course: Theory -Core**

**Title of the Paper: Climatology**

**Credits 4+0**

Unit	Topic	Sub-topics	Periods
1	Introduction to climate	Weather and Climate, Nature and Scope of Climatology; Electromagnetic spectrum; Insolation; Lapse rate and Inversion of Temperature; Stability and instability.	15
2	General Circulation	Winds and general circulation models; Humidity, Fog and Clouds type; Precipitation & its type; Mechanism of Monsoon – Recent Concepts, El-Nino, La- Nina and ENSO Event.	15
3	Front and cyclone	Air Masses, Fronts & Frontogenesis; Cyclone: Tropical and Temperate; Anti-cyclone.	15
4	Climatic classification and changes	Koppen's, Thornthwaite's & Trewartha's Classification; Climate Change; Weather Forecasting	15
<b>Continuous Internal Assessment</b>			

**Course outcomes**

- Introduces the meaning, scope and development of modern climatology
- Critically examine the mechanism of monsoon and climatic regionalization.
- Comprehend circulation of atmosphere, human impact on the climate and applied climatology.

**Reference Books:**

15. Banerji, R.C. & Upadhyay, D.S. (1999): Mausam Vigyan, Rajasthan Hindi Granth Academy, Jaipur.
16. Critchfield, H.J. (2002): General Climatology, Prentice Hall of India, New Delhi.
17. Hobbs, J.E. (1983): Applied Climatology, Butterworths, London.
18. Kendrew, W.G. (1972): Climatology, Oxford Uni. Press.
19. Lal, D.S. (2001): Climatology, Chaitanya Pub. House, Allahabad.
20. Lockwood, J.G. (1974): World Climatology and Environmental Approach, Edward Arnold, London.
21. Mathur, J.R. (1974): Climatology: Fundamentals and Applications, Mc Hill Book Company, New York.
22. Negi, B.S. (1999): Climatology and Oceanography (in Hindi), Kedarnath Ramnath, Meerut.
23. Rob Van Den Berg (2009) Evaluating Climate Change and Development. Prentice Hall, Englewood Cliffs, New Jersey 0762, 1998
24. Sidhartha, K. (2002): Atmosphere, Weather and Climate, Kislav Pub. Pvt. Ltd., New Delhi.
25. Singh, Savindra (2005): Climatology, Prayag Pustak Bhawan, Allahabad.
26. Subrahmaniam, V.P. (1992): Contribution to Indian Geography Part – III – General Climatology, Heritage Publication, New Delhi.
27. Trewartha, G.T. (1954): An Introduction to Climate, McGraw Hill Series in Geography. New York
28. Upadhyay, D.P. & Singh, R. (2003): Climatology and Hydrology (in Hindi), Vasundhara Prakashan, Gorakhpur.

**B.A. IV, Sem-VIII**  
**Course III (Theory)**

**Code: GEO423F**

**Course: Theory -Core**

**Title of the Paper: Research Methodology**

**Credits 4+0**

Unit	Topics	Sub-topics	Periods
1	Scientific Research in Geography	Concept, Meaning and Objectives of Research, Types of Research, Overview of Research Process	15
2	Methods and Sources of Data collection	Techniques of Data Collection: Questionnaire and Interview Schedule, Interview, Observation, Case Study; Preparation of Questionnaire, Sampling Design, Selection of Respondents. Sources of Data: (A) Secondary Data: Census, NSS, CSO, Aerial Photographs and Satellite Imageries, Web Portal (B) Primary Data: Observational Method, Questionnaires and Interviews; Sampling Methods.	15
3	Research Process	Defining Research Problem: Identification of Problems, Specification of Objectives, Review of Literature, and Conceptualization of Research Problem, Research Questions and Hypotheses. Research Plan.	15
4	Report writing	Tabulation and Compilation of Data, Content Analysis, Citation, References, Bibliography, Review of Literature, Formatting of Research Reports	15
<b>Continuous Internal Assessment</b>			

**Course outcomes**

- Can understand scientific research in Geography.
- Understand the Methods and Sources of Data collection
- Explain research process and know report writing.

**Reference Books:**

12. Davis, P.C. (1985): Data Description and Presentation, Oxford, London.
13. Flowerdew, R. et.al. (1997): Methods in Human Geography: A Guide for Students Doing a Research Project, Longman, Harlow.
14. Goudie, A. (Ed) (2004): Encyclopaedia of Geomorphology, Routledge, London,
15. Gregory, D., Johnston, R., Pratt, G., Watts, M. and Whatmore, S. (2009): The Dictionary of Human Geography, Wiley-Blackwell, Singapore
16. Kothari, C.R. (1982): Research Methodology in Social Sciences, Inter India Pub., New Delhi.
17. Mishra, H.N. & Singh, V.P. (2002): Research Methodology in Geography, Rawat Publications, Jaipur.
18. Misra, R.P. & Ramesh, A. (1999): Fundamentals of Cartography, Concept Pub. Co., New Delhi.
19. Misra, R.P. (1985): Research Methodology, Concept Publishing Co., New Delhi.
20. Stoddart, R.H. (1982): Field, Techniques and Research Methods in Geography, Kendall Hunt, Dubuque.
21. Tandon, B.C. (1997): Research Methodology in Social Sciences, Chaitanya Pub., Allahabad.
22. arf, B. (Ed)(2006): Encyclopedia of Human Geography, SAGE Publications, London



**B.A. IV, Sem-VIII**  
**Course II (Practical)**

**Code: GEO424F**

**Course: Practical**

**Title of the Paper: Dissertation**

**Credits 0+12**

<b>Instruction for Dissertation Writing</b>
<ul style="list-style-type: none"><li>• The Dissertation can be done on any topic related to geography, it will be like a mini Thesis. It should be compiled in various chapters. The introduction chapter presents the core research question and aims. The literature review chapter assesses what the current research says about this question. The methodology, results and discussion chapters go about undertaking new research about this question.</li><li>• Typewriting of the dissertation work should always be on an A4 size sheet. The font must be vivid and clear. Use a similar font in the entire dissertation.</li></ul> <p><b>(As per UGC Guideline)</b></p>