

# **RANCHI WOMEN'S COLLEGE**

## **DEPARTMENT OF GEOGRAPHY UNDER-GRADUATE PROGRAMME**

**(Courses Effective From Academic Year 2022-23)**



**Syllabus Offered Under  
Choice Based Credit System (CBCS)**

## Meeting of Board of Studies

### B.A Hon's Department of Geography

A meeting of Board of Studies of Geography was held in the Post Graduate Department of Geography, Ranchi University, Ranchi on 07.04.2021 Wednesday at 11.00 am to formulate and finalise the syllabus for the newly proposed Under Graduate Course, under the Choice Based Credit System. The following members were present and the syllabus was approved unanimously. The B.A Programme in Geography has been proposed to start from Session 2021-2022 and 2022-2023

Agenda: To review the Syllabus and NCC as SEC as per Ranchi University Syllabus.

Members	Name	Designation	Signature
Head of Department	1. Dr. Mrs. Shashi Kanta Toppo	Assistant Professor (Ranchi Women's College)	7.4.21
Faculty, Department of Geography	1. Mis Mary Shalini Pushpa Kerketta	Associate Professor (Ranchi Women's College)	7/4/2021
	2. Dr. Mrs. Smita Linda	Assistant Professor (Ranchi Women's College)	(in attendance)
	3. Dr. Mrs. Surbhi Shah	Assistant Professor (Ranchi Women's College)	7/4/21
	4. Mrs. Archana Kumari	Assistant Professor (Ranchi Women's College) Guest Faculty	7/4/21
University Nominee	1. Dr. Gyan Singh	Associate Professor (P.G. Department Geography)	7/4/2021
College Nominee	1. Dr. Rajiv Ranjan Srivastava	Associate Professor (St. Xavier's College)	7/4/21
P.G Head Department of Geography	1. Dr. Ram Kumar Tiwary	University Professor (P.G. Department Geography)	7/4/21
Meritorious Students	1. Shiwani Kumari	1. U.G. Topper Sem 4 (2019- 2022)	7/4/21
	2. Deepshikha Kumari	2. U.G. Topper Sem 4 (2019- 2022)	7/4/21

Dr. SHASHI KANTA TOPPO

Head  
Department of Geography

Member Secretary  
Academic Council  
Ranchi Women's College

CHAIRPERSON  
ACADEMIC COUNCIL  
RANCHI WOMEN'S COLLEGE

### Choice Based Credit System , B.A (Honours) Geography Syllabus

Semester	Core Courses (14)	Ability Enhancement Compulsory Course (AECC) (2)	Skill Enhancement Course (SEC) (2)	Elective: Discipline Specific (DSE)(4)	Elective :Generic(4) (Optional)
I	Geomorphology	(English/ Hindi/ ML Communication)/ Environmental Science			Geomorphology
	Oceanography				Practical (Cartographic Techniques)
	Cartographic Techniques (Practical)				
II	Human Geography	(English/ ML Communication)/ Environmental Science			Human Geography
	Resource Geography				Practical (Thematic Cartography)
	Thematic Cartography (Practical)				
III	Climatology		Remote Sensing /Computer Application Software		Climatology
	Geography of India		Practical		Practical (Statistical Methods)
	Geography of Jharkhand				
IV	Statistical Methods in Geography (Practical)		Geographical Information/ Computer Application Software System		Economic Geography
	Economic Geography				Practical (Instrumental Survey)
	Environmental Geography		Practical		
	Population Geography				
V	Instrumental Survey (Practical)			Urban Geography	
	Geographical Thought Settlement Geography			Bio Geography	
	Physical Survey (Practical)				
VI	Regional Planning			Political Geography	
	Agricultural Geography				
	Disaster Management based Project Work (Practical)			Hydrology and Oceanography	

### CBCS COURSE STRUCTURE FOR B.A. (HONOURS) GEOGRAPHY

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

### **Core Courses**

#### **Semester I**

CC1-Geomorphology

CC2-Oceanography

Cartographic Techniques (Practical)

#### **Semester II**

CC 3-Human Geography

CC 4- Resource Geography

Thematic Cartography (Practical)

#### **Semester III**

CC5- Climatology

CC6- Geography of India

CC7- Geography of Jharkhand

Statistical Methods in Geography (Practical)

#### **Semester IV**

CC8- Economic Geography

CC9- Environmental Geography

CC10- Population Geography

Instrumental Survey

#### **Semester V**

CC11-Geographical Thought

CC12-Settlement Geography

Physical Survey

#### **Semester VI**

CC13-Regional Planning

CC14-Agricultural Geography

Disaster Management based Project Work

### **Skill Enhancement Course**

#### **Semester III**

SEC1- Remote Sensing/ Computer Application Software

SEC2- Geographical Information System/ Computer Application Software

### **Discipline Specific Elective**

#### **Semester V**

DSE1- Urban Geography

DSE 2- Bio Geography

DSE 3- Political Geography

DSE 4- Hydrology and Oceanography

### **Elective Generic Papers**

#### **Semester I**

GE-1. Geomorphology

GE-2. Human Geography

Practical (Cartographic Techniques)

Practical (Thematic Cartography)

#### **Semester II**

GE-3. Climatology

GE-4. Economic Geography

Practical (Statistical Methods)

Practical (Instrumental Survey)

## Core Courses

### Geomorphology

After the completion of course, the students will have ability to:

1. Understand the functioning of Earth systems in real time and analyze how the natural and

anthropogenic operating factors affects the development of landforms

2. Distinguish between the mechanisms that control these processes

3. Assess the roles of structure, stage and time in shaping the landforms, interpret

geomorphological maps and apply the knowledge in geographical research.

#### **B.A. (Honours) Geography Core Papers**

##### **Semester-I**

##### **CC-1. Geomorphology: Credits-4**

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75(60 + 15 Internal Assessment/Mid Semester)*

*Pass Marks-30*

*Time allotted= 3 hrs*

1. Geomorphology: Nature and Scope.
2. Earth: Interior Structure and Isostasy.
3. Earth Movements: Plate Tectonics, Types of Folds and Faults.
4. Geomorphic Processes: Weathering, Cycle of Erosion (Davis & Penck).
5. Evolution of Landforms (Erosional and Depositional): Fluvial, Karst, Aeolian and Glacial.

##### **Reading List**

1. Bloom A. L., 2003: Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, New Delhi.
2. Bridges E. M., 1990: World Geomorphology, Cambridge University Press, Cambridge.
3. Christopherson, Robert W., (2011), Geosystems: An Introduction to Physical Geography, 8 Ed. Macmillan Publishing Company
4. Kale V. S. and Gupta A., 2001: Introduction to Geomorphology, Orient Longman, Hyderabad.
5. Knighton A. D., 1984: Fluvial Forms and Processes, Edward Arnold Publishers, London.
6. Richards K. S., 1982: Rivers: Form and Processes in Alluvial Channels, Methuen, London.
7. Selby, M.J., (2005), Earth's Changing Surface, Indian Edition, OUP
8. Skinner, Brian J. and Stephen C. Porter (2000), The Dynamic Earth: An Introduction to Physical Geology, 4th Edition, John Wiley and Sons
9. Thornbury W. D., 1968: Principles of Geomorphology, Wiley.
10. Gautam, A (2010): Bhautik Bhugol, Rastogi Publications, Meerut
11. Tikka, R N (1989): Bhautik Bhugol ka Swaroop, Kedarnath Ram Nath, Meerut
12. Singh, S (2009): Bhautik Bhugol ka Swaroop, Prayag Pustak, Allahabad
13. Tiwary Ram Kumar, Bhautik bhugol, Rajasthan Hindi Granth Academy, Jaipur

# Oceanography

## Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the oceanic process and availability of resources.

## CC 2-Oceanography: Credits-4

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75(60 + 15 Internal Assessment/Mid Semester)*

*Pass Marks-30*

*Time allotted= 3 hrs*

1. Ocean Floor Topography-Indian Ocean Pacific Ocean and Atlantic Ocean
2. Oceanic Movements – Currents and Tides.
3. Ocean Salinity and Temperature – Distribution and Determinants.
4. Coral Reefs- Types and Theories of Origin
5. Marine Deposits.

## Reading List

1. Andrew. D. ward and Stanley, Trimble (2004): Environmental Hydrology, 2nd edition, Lewis Publishers, CRC Press.
2. Karanth, K.R., 1988 : Ground Water: Exploration, Assessment and Development, Tata-McGraw Hill, New Delhi.
3. Ramaswamy, C. (1985): Review of floods in India during the past 75 years: A Perspective. Indian National Science Academy, New Delhi.
4. Rao, K.L., 1982 : India's Water Wealth 2nd edition, Orient Longman, Delhi,.
5. Singh, Vijay P. (1995): Environmental Hydrology. Kluwar Academic Publications, The Netherlands.
6. Anikouchine W. A. and Sternberg R. W., 1973: *The World Oceans: An Introduction to Oceanography*, Prentice-Hall.
7. Garrison T., 1998: *Oceanography*, Wordsworth Company, Belmont.
8. Kershaw S., 2000: *Oceanography: An Earth Science Perspective*, Stanley Thornes, UK.
9. Pinet P. R., 2008: *Invitation to Oceanography* (Fifth Edition), Jones and Barlett Publishers, USA. UK and Canada.
10. Sharma R. C. and Vatal M., 1980: *Oceanography for Geographers*, Chaitanya Publishing House, Allahabad.
11. Sverdrup K. A. and Arnbrust, E. V., 2008: *An Introduction to the World Ocean*, McGraw Hill, Boston.
12. Singh, M., Singh, R.B. and Hassan, M I. (Eds.) (2014) Landscape ecology and water management. Proceedings of IGU Rohtak Conference, Volume 2. Advances in Geographical and Environmental Studies, Springer

## Thematic Atlas

After the completion of course, the students will have ability to:

1. Have sound knowledge regarding the classification and elements of maps.
2. Have proper utilization of maps for the development.
3. Appreciate the preparation of various thematic maps with the application of various techniques.

### **Cartographic Techniques (Practical 1): Credits-4**

*Candidates to answer four (04) questions*

*Full marks= 50*

*Practical Note Book & Viva=10 marks*

*Pass Marks=20*

*Time allotted= 4 hrs*

1. Scales – Concept and application; Graphical Construction of Plain
3. Map Projections – Classification, Properties and Uses; Graphical Construction of Polar Zenithal Stereographic Projection, Simple Conical Projection with One standard parallel and Two Standard Parallels, Bonne's Projections.
4. Topographical Map – Concept and Interpretation of a Mountain /plateau area.
5. Profiles- Cross profiles

### **Reading List**

1. Anson R. and Ormelling F. J., 1994: *International Cartographic Association: Basic Cartographic Vol.* Pregmen Press.
2. Gupta K.K. and Tyagi, V. C., 1992: *Working with Map*, Survey of India, DST, New Delhi.
3. Mishra R.P. and Ramesh, A., 1989: *Fundamentals of Cartography*, Concept, New Delhi.
4. Monkhouse F. J. and Wilkinson H. R., 1973: *Maps and Diagrams*, Methuen, London.
5. Rhind D. W. and Taylor D. R. F., (eds.), 1989: *Cartography: Past, Present and Future*, Elsevier, International Cartographic Association.
6. Robinson A. H., 2009: *Elements of Cartography*, John Wiley and Sons, New York.
7. Sharma J. P., 2010: *Prayogic Bhugol*, Rastogi Publishers, Meerut.
8. Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers.
9. Sarkar, A. (2015) *Practical geography: A systematic approach*. Orient Black Swan Private Ltd., New Delhi
10. Singh R L & Rana P B Singh (1991) *Prayogtmak Bhugol ke Mool Tatva*. Kalyani Publishers, New Delhi
11. Sharma, J P (2010) *Prayogtmak Bhugol ki Rooprekha*, Rastogi Publications, Meerut
12. Singh, R L & Dutta, P K (2012) *Prayogtmak Bhugol*, Central Book Depot, Allahabad



# HUMAN GEOGRAPHY

## 1. STUDY ABOUT MAINKIND

### Semester-II

#### CC 3- Human Geography: Credits-4

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75(60 +15 Internal Assessment/Mid Semester)*

*Pass Marks-30*

*Time allotted= 3 hrs*

1. Meaning, Nature and Scope of Human Geography
2. Cultural Regions of the World; Race; Religion, Major Tribes of the World (Bushmen, Pygmies& Eskimos)
3. Population: Population Growth and Distribution; Population Composition
4. Settlements: Types of Rural Settlements; Classification of Urban Settlements.
5. Population-Resource Relationship, Carrying Capacity of the Earth

#### **Reading List**

1. Chandna, R.C. (2010) Population Geography, Kalyani Publisher.
2. Hassan, M.I. (2005) Population Geography, Rawat Publications, Jaipur
3. Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.
4. Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
5. Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.
6. Kaushik, S.D. (2010) Manav Bhugol, Rastogi Publication, Meerut.
7. Maurya, S.D. (2012) Manav Bhugol, Sharda Pustak Bhawan. Allahabad.
8. Hussain, Majid (2012) Manav Bhugol. Rawat Publications, Jaipur

## Resource Geography Learning Outcome:

After the completion of course, the students will have ability to:

1. Distinguish different types of economic activities and their utilities.
2. Appreciate the factors responsible for the location and distribution of activities.
3. Examine the significance and relevance of theories in relation to the location of different economic activities.

### CC4-Resource Geography: Credits-4

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75(60 +15 Internal Assessment/Mid Semester)*

*Pass Marks-30*

*Time allotted= 3 hrs*

1. Resources: Types, Concept and Classification
2. Distribution, Utilisation, Problems and Management of Land Resources and Water Resources
3. Distribution, Utilisation, Problems and Management of Forests and Energy Resources
4. Appraisal and Conservation of Natural Resources
5. Sustainable Resource Development

### Reading List

1. Cutter S. N., Renwick H. L. and Renwick W., 1991: *Exploitation, Conservation, Preservation: A Geographical Perspective on Natural Resources Use*, John Wiley and Sons, New York.
2. Gadgil M. and Guha R., 2005: *The Use and Abuse of Nature: Incorporating This Fissured Land: An Ecological History of India and Ecology and Equity*, Oxford University Press, USA.
3. Holechek J. L. C., Richard A., Fisher J. T. and Valdez R., 2003: *Natural Resources: Ecology, Economics and Policy*, Prentice Hall, New Jersey.
4. Jones G. and Hollier G., 1997: *Resources, Society and Environmental Management*, Paul Chapman, London.
5. Klee G., 1991: *Conservation of Natural Resources*, Prentice Hall, Englewood.
6. Mather A. S. and Chapman K., 1995: *Environmental Resources*, John Wiley and Sons, New York.
7. Mitchell B., 1997: *Resource and Environmental Management*, Longman Harlow, England.
8. Owen S. and Owen P. L., 1991: *Environment, Resources and Conservation*, Cambridge University Press, New York.
9. Rees J., 1990: *Natural Resources: Allocation, Economics and Policy*, Routledge, London.

## Statistical Methods in Geography (Practical)

### Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the basics of data collection and processing for the meaningful outcomes.
2. Comprehend the representation and interpretation of the results.
3. Put into practice results obtained in representation as well as day-to-day life.

### Thematic Cartography (Practical 2): Credits-4

*Candidates to answer four (04) questions*

*Full marks= 50*

*Practical Note Book & Viva=10 marks*

*Pass Marks=20*

*Time allotted= 4 hrs*

1. Diagrammatic Data Presentation – Line, Bar and Circle. (Manual and Digital) -20 Marks
2. Thematic Mapping Techniques- Preparation and Interpretation of Areal Data: Choropleth Method, Dot Method -10 Marks
3. Preparation and Interpretation of Point Data – Isopleths. -10 Marks

**Practical Record:** A Thematic Atlas should be prepared on a specific theme with five plates of any state in India. -5 + 5(Viva + Record) = 10 Marks

### Reading List

1. Cuff J. D. and Mattson M. T., 1982: *Thematic Maps: Their Design and Production*, Methuen Young Books
2. Dent B. D., Torguson J. S., and Holder T. W., 2008: *Cartography: Thematic Map Design* (6<sup>th</sup> Edition), McGraw-Hill Higher Education
3. Gupta K. K. and Tyagi V. C., 1992: *Working with Maps*, Survey of India, DST, New Delhi.
4. Kraak M.-J. and Ormeling F., 2003: *Cartography: Visualization of Geo-Spatial Data*, Prentice-Hall.
5. Mishra R. P. and Ramesh A., 1989: *Fundamentals of Cartography*, Concept, New Delhi.
6. Sharma J. P., 2010: *Prayogic Bhugol*, Rastogi Publishers, Meerut.
7. Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers.
8. Slocum T. A., McMaster R. B. and Kessler F. C., 2008: *Thematic Cartography and Geovisualization*(3rd Edition), Prentice Hall.
9. Tyner J. A., 2010: *Principles of Map Design*, The Guilford Press.
10. Sarkar, A. (2015) *Practical geography: A systematic approach*. Orient Black Swan Private Ltd., NewDelhi
11. Singh, L R & Singh R (1977): *Manchitra or Prayogatamek Bhugol* , Central Book, Depot, Allahabad
12. Bhopal Singh R L and Dutta P K (2012) *Prayogatama Bhugol*, Central Book Depot, Allahabad.

# Climatology

## Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the elements of weather and climate and its impacts at different scales.
2. Comprehend the climatic aspects and its bearing on planet earth.

### Semester III

#### **CC-5. Climatology: Credits-4**

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75(60 +15 Internal Assessment/Mid Semester)*

*Pass Marks-30*

*Time allotted= 3 hrs*

1. Atmospheric Composition and Structure and Variations in the Atmosphere.
2. Insolation and Temperature – Factors and Distribution, Heat Budget, Temperature Inversion.
3. Atmospheric Pressure and Winds – Planetary Winds, Forces affecting Winds, General Circulation, Jet Streams.
4. Atmospheric Moisture – Evaporation, Humidity, Condensation, Fog and Clouds, Precipitation, Stability and Instability; Climatic Regions (Koppen)
5. Cyclones – Tropical Cyclones, Extra Tropical Cyclones, Monsoon - Origin and Mechanism.

#### **Reading List**

1. Barry R. G. and Carleton A. M., 2001: *Synoptic and Dynamic Climatology*, Routledge, UK.
2. Barry R. G. and Corley R. J., 1998: *Atmosphere, Weather and Climate*, Routledge, New York.
3. Critchfield H. J., 1987: *General Climatology*, Prentice-Hall of India, New Delhi
4. Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: *The Atmosphere: An Introduction to Meteorology*, Prentice-Hall, Englewood Cliffs, New Jersey.
5. Oliver J. E. and Hidore J. J., 2002: *Climatology: An Atmospheric Science*, Pearson Education, New Delhi.
6. Trewartha G. T. and Horne L. H., 1980: *An Introduction to Climate*, McGraw-Hill.
7. Gupta L S(2000): *Jalvayu Vigyan*, Hindi Madhyam Karyanvay Nidishalya, Delhi Vishwa Vidhyalaya, Delhi
8. Lal, D S (2006): *Jalvayu Vigyan*, Prayag Pustak Bhavan, Allahabad
9. Vatal, M (1986): *Bhautik Bhugol*, Central Book Depot, Allahabad
10. Singh, S (2009): *Jalvayu Vigyan*, Prayag Pustak Bhawan, Allahabad

## Geography of India

After the completion of course, the students will have ability to:

1. Understand the physical profile of the country
2. Study the resource endowment and its spatial distribution and utilization for sustainable development
3. Synthesise and develop the idea of regional dimensions.

### CC6- Geography of India: Credits-4

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75(60 +15 Internal Assessment/Mid Semester)*

*Pass Marks-30*

*Time allotted= 3 hrs*

1. Structure and Physiographic Divisions of India
2. Drainage and Climate
3. Soil and Natural Vegetation
4. Population: Distribution and Growth, Structure, Race, Sex-Ratio, Religion.
5. Economic: Mineral and Power Resources Distribution and Utilisation of Iron-Ore, Coal, Petroleum, Gas; Agricultural Production and Distribution of Rice and Wheat, Industrial Development: Iron and Steel Industry, Cotton Textile, Cement

### Reading List

1. Deshpande C. D., 1992: *India: A Regional Interpretation*, ICSSR. New Delhi.
2. Johnson, B. L. C., ed. 2001. *Geographical Dictionary of India*. Vision Books, New Delhi.
3. Mandal R. B. (ed.), 1990: *Patterns of Regional Geography – An International Perspective. Vol. 3 –Indian Perspective*.
4. Sdvasuk Galina and P Sengupta (1967): *Economic Regionalisation of India*, Census of India
5. Sharma, T. C. 2003: *India - Economic and Commercial Geography*. Vikas Publ., New Delhi.
6. Singh R. L., 1971: *India: A Regional Geography*, National Geographical Society of India.
7. Singh, Jagdish 2003: *India - A Comprehensive & Systematic Geography*, Gyanodaya Prakashan, Gorakhpur.
8. Spate O. H. K. and Learmonth A. T. A., 1967: *India and Pakistan: A General and Regional Geography*, Methuen.
9. Tirtha, Ranjit 2002: *Geography of India*, Rawat Publs., Jaipur & New Delhi.
10. Pathak, C. R. 2003: *Spatial Structure and Processes of Development in India*. Regional Science Assoc., Kolkata.
11. Tiwari, R.C. (2007) *Geography of India*. Prayag Pustak Bhawan, Allahabad
12. Sharma, T.C. (2013) *Economic Geography of India*. Rawat Publication, Jaipur

## **INFORMATION OF JHARKHAND**

### **CC7- Geography of Jharkhand: Credits-4**

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75(60 +15 Internal Assessment/Mid Semester)*

*Pass Marks-30*

*Time allotted= 3 hrs*

1. Structure and Physiographic Divisions of Jharkhand
2. Drainage and Climate
3. Soil and Natural Vegetation
4. Social Features: Population and Tribes (Santhal, Oraon, Munda)
5. Economic Features: Agriculture, Minerals and Industries- Iron and Steel Industry, Cement

#### **Reading List**

1. Mahto B. K. , 2004, Jharkhand...Ek Adhyayan, Sahitya Bhawan Publication, Agra
2. Mamoria C.B. & Mahto B.K., 2013, Geography of India and Regional Geography of Jharkhand, Sahitya Bhawan Publication, Agra
3. Singh. S.K., 2002, Jharkhand 2002, Readers Corner, Patna
4. Singh S.K. 2015, Jharkhand Pradesh ki Bhougolik Vyakhya, Rajesh Publication, New Delhi.

# Statistical Methods in Geography( Practical)

## Learning Outcomes

After the completion of course the student will have ability to

1. Understand the basic of data collection and processing for the meaningful outcomes .
2. Comprehend the representation and interpretation of the results .
3. Put into practice result obtained in representation as well as day-to-day life.

### Statistical Methods in Geography (Practical 3): Credits-6

*Candidates to answer six (06) questions*

*Full marks= 75*

*Practical Note Book & Viva=15 marks*

*Pass Marks=30*

*Time allotted= 4 hrs*

1. Significance of Statistical Methods in Geography; Sources of Data, Scales of Measurement (Nominal, Ordinal, Interval, Ratio).
2. Tabulation and Descriptive Statistics: Frequencies (Deciles, Quartiles)
3. Central Tendency (Mean, Median and Mode)
4. Dispersion (Standard Deviation, Variance and Coefficient of Variation) Scattered diagram, Histogram, Frequency Polygon & Frequency Curve
5. Sampling: Purposive, Random, Systematic and Stratified.
6. Association and Correlation: Rank Correlation and Simple Regression.

**Class Record:** Each student will submit a record containing five exercises:

1. Measures of central tendency and dispersion would be computed and interpreted for any two attributes.
2. Histograms and frequency curve would be prepared and interpreted for one or two variables.
3. Based on of the sample set and using two relevant attributes, a scatter and regression line would be plotted and mapped with a short interpretation.

### Reading List

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. Hammond P. and McCullagh P. S., 1978: *Quantitative Techniques in Geography: An Introduction*, Oxford University Press.
4. King L. S., 1969: *Statistical Analysis in Geography*, Prentice-Hall.
5. Mahmood A., 1977: *Statistical Methods in Geographical Studies*, Concept.
6. Pal S. K., 1998: *Statistics for Geoscientists*, Tata McGraw Hill, New Delhi.
7. Sarkar, A. (2013) *Quantitative geography: techniques and presentations*. Orient Black Swan Private Ltd., New Delhi
8. Silk J., 1979: *Statistical Concepts in Geography*, Allen and Unwin, London.
9. Spiegel M. R.: *Statistics, Schaum's Outline Series*.
10. Yeates M., 1974: *An Introduction to Quantitative Analysis in Human Geography*, McGraw Hill, New York.
11. Shinha, Indira (2007) *Sankhyiki bhugol*. Discovery Publishing House, New Delhi

## Introduction to Global Economic System Learning

### Outcome:

After the completion of course, the students will have ability to:

1. Distinguish different types of economic activities and their utilities.
2. Appreciate the factors responsible for the location and distribution of activities.
3. Examine the significance and relevance of theories in relation to the location of different economic activities.

### Semester IV

#### CC-8. Economic Geography: Credits-4

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75(60 +15 Internal Assessment/Mid Semester)*

*Pass Marks-30*

*Time allotted= 3 hrs*

1. Introduction: Concept and classification of economic activity
2. Factors Affecting location of Economic Activity with special reference to Agriculture (Von Thunen theory), Industry (Weber's theory).
3. Primary Activities: Subsistence and Commercial agriculture, forestry, fishing and mining.
4. Secondary Activities: Manufacturing (Cotton Textile, Iron and Steel- with reference to world), Concept of Manufacturing Regions, Special Economic Zones
5. Tertiary Activities: Transport, Trade and Services.

#### Reading List

1. Alexander J. W., 1963: *Economic Geography*, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
2. Coe N. M., Kelly P. F. and Yeung H. W., 2007: *Economic Geography: A Contemporary Introduction*, Wiley-Blackwell.
3. Hodder B. W. and Lee Roger, 1974: *Economic Geography*, Taylor and Francis.
4. Combes P., Mayer T. and Thisse J. F., 2008: *Economic Geography: The Integration of Regions and Nations*, Princeton University Press.
5. Wheeler J. O., 1998: *Economic Geography*, Wiley.
6. Durand L., 1961: *Economic Geography*, Crowell.
7. Bagchi-Sen S. and Smith H. L., 200. Environmental Geography – Concept and Scope
2. Ecosystem – Concept, Structure and Functions
3. Concept of Sustainable Development; Green-House Effect and Global Warming
4. Environmental Problems in Tropical, Temperate and Polar Ecosystems
5. Environmental Programmes and Policies – Global, National and Local levels
- 6: *Economic Geography: Past, Present and Future*, Taylor and Francis.
8. Willington D. E., 2008: *Economic Geography*, Husband Press.
9. Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. 2000: *The Oxford*



# Environment and Natural Resource Management

## Learning Outcome:

After the completion of course, the students will have ability to:

1. Understand the dynamic interactive relationship between man and environment.
2. Have sound understanding on distribution, utilization and proper management of natural resources at global level.
3. Make assessment and review of planning and policies related to environment and natural resources.

### CC-9 Environmental Geography: Credits-4

Five (05) questions to be answered out of eight (08) questions

Full marks= 75(60 +15 Internal Assessment/Mid Semester)

Pass Marks-30

Time allotted= 3 hrs

1. Environmental Geography – Concept and Scope
2. Human-Environment Relationships – Historical Progression, Adaptation in different Biomes.
3. Ecosystem – Concept, Structure and Functions
4. Environmental Problems in Tropical, Temperate and Polar Ecosystems
5. Environmental Programmes and Policies – Global, National and Local levels

### Reading List

1. Chandna R. C., 2002: *Environmental Geography*, Kalyani, Ludhiana.
2. Cunningham W. P. and Cunningham M. A., 2004: *Principals of Environmental Science: Inquiry and Applications*, Tata Macgraw Hill, New Delhi.
3. Goudie A., 2001: *The Nature of the Environment*, Blackwell, Oxford.
4. Singh, R.B. (Eds.) (2009) *Biogeography and Biodiversity*. Rawat Publication, Jaipur
5. Miller G. T., 2004: *Environmental Science: Working with the Earth*, Thomson Brooks Cole, Singapore.
6. MoEF, 2006: *National Environmental Policy-2006*, Ministry of Environment and Forests, Government of India.
7. Singh, R.B. and Hietala, R. (Eds.) (2014) *Livelihood security in Northwestern Himalaya: Case Studies from Changing Socio-Economic Environments in Himachal Pradesh, India. Advances in Geographical and Environmental Studies*, Springer
8. Odum, E. P. et al, 2005: *Fundamentals of Ecology*, Cengage Learning India.
9. Singh S., 1997: *Environmental Geography*. Prayag Pustak Bhawan. Allahabad.
10. UNEP, 2007: *Global Environment Outlook: GEO4: Environment For Development*, United Nations Environment Programme.
11. Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) *Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Volume I. Advances in Geographical and Environmental Studies*, Springer
12. Singh, R.B. (1998) *Ecological Techniques and Approaches to Vulnerable Environment*, New Delhi, Oxford & IBH Pub..
13. Singh, Savindra (2001) *Paryavaran Bhugol*, Prayag Pustak Bhawan, Allahabad. (in Hindi)
14. Tiwari Ram Kumar (2006) *Paryavaran Adhyayan*, Lakshmi Publication, Delhi

# Demography and Population Studies

## Learning Outcome:

After the completion of course, the students will have ability to:

1. Learn the role of demography and population studies as a distinct fields of human geography
2. Have sound knowledge of key concept, different components of population along with its drivers
3. Examine population dynamics and characteristic with contemporary issues

### CC-10. Population Geography: Credits-4

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75(60 +15 Internal Assessment/Mid Semester)*

*Pass Marks-30*

*Time allotted= 3 hrs*

1. Nature and Scope; Sources of Data with special reference to India (Census and NSS).
2. Population Size, Distribution and Growth – Determinants and Patterns; Malthusian Theory of Population Growth and Demographic Transition Theory.
3. Population Dynamics: Fertility, Mortality and Migration – Measures, Determinants and Implications.
4. Population Composition and Characteristics – Age-Sex Composition; Rural and Urban Composition; Literacy.
5. Contemporary Issues – Ageing of Population; Declining Sex Ratio; HIV/AIDS.

### Reading List

1. Barrett H. R., 1995: *Population Geography*, Oliver and Boyd.
2. Bhende A. and Kanitkar T., 2000: *Principles of Population Studies*, Himalaya Publishing House.
3. Chandna R. C. and Sidhu M. S., 1980: *An Introduction to Population Geography*, Kalyani Publishers.
4. Clarke J. I., 1965: *Population Geography*, Pergamon Press, Oxford.
5. Jones, H. R., 2000: *Population Geography*, 3rd ed. Paul Chapman, London.
6. Lutz W., Warren C. S. and Scherbov S., 2004: *The End of the World Population Growth in the 21st Century*, Earthscan
7. Newbold K. B., 2009: *Population Geography: Tools and Issues*, Rowman and Littlefield Publishers.
8. Pacione M., 1986: *Population Geography: Progress and Prospect*, Taylor and Francis.
9. Wilson M. G. A., 1968: *Population Geography*, Nelson.
10. Panda B P (1988): *Janasankhya Bhugol*, M P Hindi Granth Academy, Bhopal
11. Maurya S D (2009) *Jansankhya Bhugol*, Sharda Putak Bhawan, Allahabad
12. Chandna, R C (2006), *Jansankhya Bhugol*, Kalyani Publishers, Delhi
13. Tiwari Ram Kumar (2015) *Jansankhya Bhugol Pravalika Publication*, Allahabad
14. Roy.D.(2015) *Population Geography*, Books & Allied Publication, Kolkata

## Field Techniques, Surveying and Research Methods (Practical)

### Learning Outcome:

After the completion of course, the students will have ability to:

1. Conduct proper field work for the collection of primary data to bring out grassroots realities.
2. Make use of proper tools and surveying methods for measurement in context of collection and processing of data.
3. Prepare a report based on field data.

### **Instrumental Survey (Practical 4): Credits -6**

*Three questions are to be answered. One will be related to field work and other two of lab work.*

*Full Marks: 75 (Field Work-25, Lab Work-15+15 =30 and Practical Record & Viva-Voce-20)*

*Pass Marks=30*

*Time: 4 hours*

1. Prismatic Compass Survey: Open and Closed Traverse
2. Plane table survey: Radiation, Intersection, Resection
3. Clinometer
4. Dumpy level

**Practical Record:** A project file consisting of 5 exercises on using any method on the basis of above mentioned instruments.

### **Reading List**

1. Monkhouse F. J. and Wilkinson H. R., 1973: *Maps and Diagrams*, Methuen, London.
2. Robinson A. H., 2009: *Elements of Cartography*, John Wiley and Sons, New York.
3. Sarkar, A. (2015) *Practical geography: A systematic approach*. Orient Black Swan Private Ltd., New Delhi
4. Sharma J.P (2015) *Prayogatmak Bhugol Ki Roop Rekha*. Rastogi Publication. Meerut.
5. Singh R L & Rana P B Singh(1991) *PrayogtmaK Bhugol ke Mool Tatva*, Kalyani Publishers. NewDelhi
6. Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers.
7. Singh, L R & Singh R (1977): *Manchitra or Pryogatamek Bhugol*, Central Book Depot, Allahabad
8. Singh, R L & Dutta, P K (2012) *Prayogatmak Bhugol*. Central Book Depot. Allahabad

## Evolution of Geographical Thought

### Learning Outcome:

After the completion of course, the students will have ability to:

1. Distinguish the paradigms in geography discipline through time
2. Understand the geographical thinking in different regions of world
3. Appreciate the past and future trends of world geography in general and Indian geography in particular

### **Semester V** **CC-11. Geographical Thought: Credits-4**

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75(60 +15 Internal Assessment/Mid Semester)*

*Pass Marks-30*

*Time allotted= 3 hrs*

1. Meaning, Nature and Scope of Geography; Geography as an Interdisciplinary Science
2. Pre-Modern – Early Origins of Geographical Thinking with reference to the Classical and Medieval Philosophies.
3. Modern – Evolution of Geographical Thinking and Disciplinary Trends in Germany, France, Britain, United States of America.
4. Debates – Physical and Human, Environmental Determinism and Possibilism, Systematic and Regional.
5. Trends – Quantitative Revolution, Radicalism, Future of Geography.

### **Reading List**

1. Arentsen M., Stam R. and Thuijjs R., 2000: *Post-modern Approaches to Space*, ebook.
2. Bhat, L.S. (2009) *Geography in India (Selected Themes)*. Pearson
3. Bonnett A., 2008: *What is Geography?* Sage.
4. Dikshit R. D., 1997: *Geographical Thought: A Contextual History of Ideas*, Prentice– Hall India.
5. Hartshorne R., 1959: *Perspectives of Nature of Geography*, Rand MacNally and Co.
6. Holt-Jensen A., 2011: *Geography: History and Its Concepts: A Students Guide*, SAGE.
7. Johnston R. J., (Ed.): *Dictionary of Human Geography*, Routledge.
8. Johnston R. J., 1997: *Geography and Geographers, Anglo-American Human Geography since 1945*, Arnold, London.
9. Kapur A., 2001: *Indian Geography Voice of Concern*, Concept Publications.
10. Martin Geoffrey J., 2005: *All Possible Worlds: A History of Geographical Ideas*, Oxford.
11. Soja, Edward 1989. *Post-modern Geographies*, Verso, London. Reprinted 1997: Rawat Publ., Jaipur and New Delhi

# Urbanization

## Learning Outcome:

After the completion of course, the students will have ability to:

1. Understand the fundamentals and patterns of urbanization process
2. Learn the functional classification of cities and Central Place Theory
3. Know contemporary problems of Delhi, Mumbai, Kolkata and Chennai

### CC-12. Settlement Geography: Credits-4

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75(60 +15 Internal Assessment/Mid Semester)*

*Pass Marks-30*

*Time allotted= 3 hrs*

1. Meaning and Scope of Settlement Geography
2. Rural Settlement: Types and Pattern
3. Urban Settlement: Types and Pattern
4. Christaller's System of Urban Hierarchy and Spacing of Cities
5. Concept and Factors of Urbanization
6. Functional Classification of Towns and Cities
7. Concept of Rural–Urban Fringe;
8. Urban Problems and Urban Planning: Emergence of Slums

### Reading List

1. Hornby W.F. and M. Jones 1991: *An Introduction to Settlement Geography*. Cambridge, 151 pp.
2. Vartiainen, P. 1989: Counterurbanisation: a challenge for socio-theoretical geography. In: *Journal of Rural Studies*, Vol. 5, pp. 217–225
3. Rain, D. 2007: Towards settlement science: a research agenda for urban geography. In: *Geo Journal*, Vol. 69, pp. 1-8
4. Schuldenrein, J and G. Clark 2001: Prehistoric Landscapes and Settlement Geography along the Wadi Hasa, West-Central Jordan. In: *Environmental Archaeology*, Vol. 6, pp. 23-38
5. Beattie, J. 2008: Colonial Geographies of Settlement: Vegetation, Towns, Disease and Well-Being In Aotearoa/New Zealand, 1830s-1930s. In: *Environment and History*, Vol. 14, pp. 583-610
6. Harte, E. W. 2010: *Settlement geography of African refugee communities in Southeast Queensland : an analysis of residential distribution and secondary migration*. PhD Thesis, Queensland University of Technology, Queensland, 246 pp.
7. Harte, E. W., Childs, Iraphne, Hastings, Peter 2009: *Settlement Patterns of African Refugee Communities in Southeast Queensland* In: *Australian Geographer* Vol 40, pp. 51-67
8. Longley, P, *et al.* 1992: Do green belts change the shape of urban areas? A preliminary analysis of the settlement geography of South East England. In: *Regional Studies* Vol 26, pp. 437-452
9. Stone, K.H. 1965: The Development of a Focus for the Geography of Settlement. In: *Economic Geography*, Vol. 41, No. 4, pp. 346-355
10. Jordan, T.G. 1966: On the nature of settlement geography. In: *The Professional Geographer*, Vol. 18, No. 1. pp. 26-28
11. Mayda, C. 1965: The Development of a Focus for the Geography of Settlement. In: Warf, B: *Encyclopedia of Geography*

## Thematic Atlas

After the completion of course, the students will have ability to:

1. Have sound knowledge regarding the classification and elements of maps.
2. Have proper utilization of maps for the development.
3. Appreciate the preparation of various thematic maps with the application of various techniques.

### Physical Survey (Practical 5): Credits-8

*Full marks= 100{Field Report -80 (No Written Examination) + Viva-Voce – 20}*

*Pass Marks=40*

1. Field Work in Geographical Studies – Role, Value, Data and Ethics of Field-Work
2. Defining the Field and Identifying the Case Study – Rural / Urban / Physical / Human / Environmental.
3. Field Techniques – Merits, Demerits and Selection of the Appropriate Technique; Observation (Participant / Non Participant), Questionnaires (Open/ Closed / Structured / Non-Structured); Interview with Special Focus on Focused Group Discussions; Space Survey (Transects and Quadrants, Constructing a Sketch)
4. Use of Field Tools – Collection of Material for Physical and Socio-Economic Surveys.
5. Designing the Field Report – Aims and Objectives, Methodology, Analysis, Interpretation and Writing the Report.

#### Practical Record

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

#### Reading List

1. Creswell J., 1994: *Research Design: Qualitative and Quantitative Approaches* Sage Publications.
2. Dikshit, R. D. 2003. *The Art and Science of Geography: Integrated Readings*. Prentice-Hall of India, New Delhi.
3. Evans M., 1988: "Participant Observation: The Researcher as Research Tool" in *Qualitative Methods in Human Geography*, eds. J. Eyles and D. Smith, Polity.
4. Mukherjee, Neela 1993. *Participatory Rural Appraisal: Methodology and Application*. Concept Pubs.Co., New Delhi.
5. Mukherjee, Neela 2002. *Participatory Learning and Action: with 100 Field Methods*. Concept Pubs.Co., New Delhi
6. Special Issue on "Doing Fieldwork" *The Geographical Review* 91:1-2 (2001).

## Regional Planning

### Learning Outcomes:

After the completion of course, the students will have ability to:

1. Identify notable lagging regions and solutions for their overall development
2. Have comprehensive understanding regarding the different regions and application of different models and theories for integrated regional development.
3. Select appropriate indicators for the measurement of socio-economic regional development.

### **Semester VI CC-13. Regional Planning: Credits-4**

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75(60 +15 Internal Assessment/Mid Semester)*

*Pass Marks=30*

*Time allotted= 3 hrs*

1. Definition of Region, Evolution, Types and Need of Regional planning: Formal, Functional, and Planning Regions
2. Regional Imbalances and Problems of Functional Regions.
3. Choice of a Region for Planning: Characteristics of an Ideal Planning Region; Delineation of Planning Region; Regionalization of India for Planning (Agro Ecological Zones)
4. Strategies/Models for Regional Planning: Growth Pole Model of Perroux; Growth Centre Model in Indian Context; Village Cluster
5. Problem Regions and Regional Planning: Backward Regions and Regional Plans- Special Area Development Plans in India; DVC-The Success Story and the Failures.

### **Reading List**

1. Adell, Germán (1999) Literature Review: Theories and Models Of The Peri-Urban Interface: A Changing Conceptual Landscape, Peri-urban Research Project Team, Development Planning Unit, University College London at .
2. Bhatt, L.S. (1976) Micro Level Planning in India. KB Publication, Delhi
3. Deshpande C. D., 1992: *India: A Regional Interpretation*. ICSSR, New Delhi.
4. Dreze J. and A. Sen, Indian Development: Select Regional Perspectives (Oxford: Oxford University Press, 1996).
5. Ses, Amratya (2000) Development as Freedom. Random House, Toronto
6. Raza, M., Ed. (1988). Regional Development. Contributions to Indian Geography. New Delhi, Heritage Publishers.
7. Rapley, John (2007) Understanding Development: Theory and Practice in the 3rd World. Lynne Rienner, London.
8. Schmidt-Kallert, Einhard (2005) A Short Introduction to Micro-Regional Planning, Food and Agriculture Organization of the United Nations (FAO) at
9. Sdyasuk Galina and P Sengupta (1967): *Economic Regionalisation of India*, Census of India

# Agriculture

## Learning Outcome:

After the completion of course, the students will have ability to:

1. Conceptualise the agriculture and its determinants.
2. Get the overview of Indian and World agriculture regions and systems.
3. Have sound knowledge of agriculture revolutions and food security

### CC-14 Agricultural Geography: Credits-4

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75(60 +15 Internal Assessment/Mid Semester)*

*Pass Marks=30*

*Time allotted= 3 hrs*

1. Defining the Field: Introduction, Nature and Scope; Land Use/ Land Cover Definition and Classification.
2. Determinants of Agriculture: Physical, Technological and Institutional
3. Agricultural Regions of India: Agro-climatic, Agro-ecological & Crop Combination Regions.
4. Agricultural Systems of the World (Whittlesey's Classification) and Agricultural Land use model (Von Thunen, Modification and Relevance).
5. Agricultural Revolutions in India: Green, White, Blue, Pink

#### Reading List

1. Basu, D.N., and Guha, G.S., 1996: *Agro-Climatic Regional Planning in India*, Vol.I & II, Concept Publication, New Delhi.
2. Bryant, C.R., Johnston, T.R., 1992: *Agriculture in the City Countryside*, Belhaven Press, London.
3. Burger, A., 1994: *Agriculture of the World*, Aldershot, Avebury.
4. Grigg, D.B., 1984: *Introduction to Agricultural Geography*, Hutchinson, London.
5. Ilbery B. W., 1985: *Agricultural Geography: A Social and Economic Analysis*, Oxford University Press.
6. Mohammad, N., 1992: *New Dimension in Agriculture Geography*, Vol. I to VIII, Concept Pub., New Delhi.
7. Roling, N.G., and Wagerutgers, M.A.E.,(ed.) 1998: *Facilitating Sustainable Agriculture*, Cambridge University Press, Cambridge.
8. Shafi, M., 2006: *Agricultural Geography*, Doring Kindersley India Pvt. Ltd., New Delhi
9. Singh, J., and Dhillon, S.S., 1984: *Agricultural Geography*, Tata McGraw Hill, New Delhi.
10. Tarrant J. R., 1973: *Agricultural Geography*, David and Charles, Devon.



## Disaster Management Project Work (Practical)

### Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand processes and impact of disaster
2. Understand both the natural and man-made disaster and human negligence in context of environment
3. Write a field work based report on Disaster Management to minimize the disaster risk/

Risk from Disaster.

### **Disaster Management based Project Work (Practical 6) - 08 Credits**

Full Marks: 100 {Project Report -80 (No Written Examination) + Viva-Voce – 20}

Pass Marks: 40

The Project Report based on any **one case study** among following disasters and **One Disaster Preparedness Plan** of respective college or locality:

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

(HOD will allot the topic for project work in the beginning of Semester IV and students will submit the report before one week of the final examination.)

### **Reading List**

1. Government of India. (1997) **Vulnerability Atlas of India**: New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
2. Kapur, A. (2010) **Vulnerable India: A Geographical Study of Disasters**, Sage Publication, New Delhi.
3. Modh, S. (2010) **Managing Natural Disaster: Hydrological, Marine and Geological Disasters**, Macmillan, Delhi.
4. Singh, R.B. (2005) **Risk Assessment and Vulnerability Analysis**, IGNOU, New Delhi. Chapter1, 2 and 3
5. Singh, R. B. (ed.), (2006) **Natural Hazards and Disaster Management: Vulnerability and Mitigation**, Rawat Publications, New Delhi.
6. Sinha, A. (2001). **Disaster Management Lessons Drawn and Strategies for Future**, New United Press, New Delhi.
7. Stoltman, J.P. et al. (2004) **International Perspectives on Natural Disasters**, Kluwer Academic Publications, Dordrecht.
8. Singh, Jagbir (2007) "Disaster Management Future Challenges and Opportunities", I.K. International Pvt. Ltd. S-25, Green Park Extension, New Delhi, India
9. Singh, Savindra (2014) "Disaster management" Pravalika Publication, Allahabad

# Urbanization and Urban System

## Learning Outcome:

After the completion of course, the students will have ability to:

1. Understand the fundamentals and patterns of urbanization process
2. Learn the functional classification of cities and Central Place Theory
3. Know contemporary problems of Delhi, Mumbai, Kolkata and Chennai

## Discipline Specific Papers Semester-V DSE 1 Urban Geography-Credits-4

Five (05) questions to be answered out of eight (08) questions

Full marks= 75(60 +15 Internal Assessment Mid Semester)

Pass Marks=30

25 marks  
57.4.21

Time allotted= 3 hrs

1. Urban geography: Introduction, nature and scope
2. Patterns of Urbanisation in developed and developing countries
3. Functional classification of cities: Quantitative and Qualitative Methods
4. Urban Issues: problems of housing, slums, civic amenities (water and transport)
5. Case studies of Delhi, Mumbai, Kolkata, Chennai and Chandigarh with reference to Land use and Urban Issues

## Reading List

1. Fyfe N. R. and Kenny J. T., 2005: *The Urban Geography Reader*, Routledge.
2. Graham S. and Marvin S., 2001: *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition*, Routledge.
3. Hall T., 2006: *Urban Geography*, Taylor and Francis.
4. Kaplan D. H., Wheeler J. O. and Holloway S. R., 2008: *Urban Geography*, John Wiley.
5. Knox P. L. and McCarthy L., 2005: *Urbanization: An Introduction to Urban Geography*, PearsonPrentice Hall New York.
6. Knox P. L. and Pinch S., 2006: *Urban Social Geography: An Introduction*, Prentice-Hall.
7. Pacione M., 2009: *Urban Geography: A Global Perspective*, Taylor and Francis.
8. Sassen S., 2001: *The Global City: New York, London and Tokyo*, Princeton University Press.
9. Ramachandran R (1989): *Urbanisation and Urban Systems of India*, Oxford University Press, NewDelhi
10. Ramachandran, R., 1992: *The Study of Urbanisation*, Oxford University Press, Delhi
11. Singh, R.B. (Eds.) (2001) *Urban Sustainability in the Context of Global Change*, Science Pub Inc., Enfield (NH), USA and Oxford & IBH Pub., New Delhi.
12. Singh, R.B. (Ed.) (2015) *Urban development, challenges, risks and resilience in Asian megacities*. *Advances in Geographical and Environmental Studies*, Springer

# Biogeography

## Learning Outcome:

After the completion of course, the students will have ability to:

1. Familiarise the dynamics of climate and related theories.
2. Understand of Vegetation as an index of climate.
3. Assess of different aspects of floral and faunal provinces.

## Semester-V DSE 2 Bio Geography– 04 Credits

Five (05) questions to be answered out of eight (08) questions

Full marks= 75(60 +15 Internal Assessment/Mid Semester)

Pass Marks=30

25 marks  
7.4.21

Time allotted= 3 hrs

1. Defining the Field – Concept, And Relevance
2. Evolution of Plants and Animals – Adaptation, Dispersal, Colonization and Extinction.
3. Factors Affecting the Community – Plant Succession, Arresting Factors, Vegetation Climax
4. Biomes – Forest, Grassland, Desert and Mountain.
5. Biodiversity – Preservation and Conservation.

## Reading List

1. Cox, C. B. (2001). The Biogeographic Regions Reconsidered. *Journal of Biogeography*, 28: 511-523.
2. Ebach, M.C. (2015). *Origins of biogeography. The role of biological classification in early plant and animal geography*. Dordrecht: Springer, xiv + 173 pp.,
3. Lieberman, B. S. (2001). "Paleobiogeography: using fossils to study global change, plate tectonics, and evolution". Kluwer Academic, Plenum Publishing,
4. Lomolino, M. V., & Brown, J. H. (2004). *Foundations of biogeography: classic papers with commentaries*. University of Chicago Press,
5. MacArthur, Robert H. (1972). *Geographic Ecology*. New York: Harper & Row.
6. McCarthy, Dennis (2009). *Here be dragons : how the study of animal and plant distributions revolutionized our views of life and Earth*. Oxford & New York: Oxford University Press. ISBN 978-0-19-954246-8.
7. Millington, A., Blumler, M., & Schickhoff, U. (Eds.). (2011). *The SAGE handbook of biogeography*. Sage, London,
8. Nelson, G.J. (1978). From Candolle to Croizat: Comments on the history of biogeography. *Journal of the History of Biology*, 11: 269–305.
9. Udvardy, M. D. F. (1975). *A classification of the biogeographical provinces of the world*. IUCN Occasional Paper no. 18. Morges, Switzerland: IUCN.

# Political Geography

## Course Learning Outcomes:

After the completion of course, the students will have ability to:

1. Learn the concept of nation and state and geopolitical theories
2. Understand the different dimensions of electoral geography and resource conflicts
3. Have sound knowledge of politics of displacement, focusing on dams and SEZ

### **Discipline Specific Papers Semester-VI DSE 3 Political Geography– 04 Credits**

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75(60 +15 Internal Assessment) Mid Semester)*

*Pass Marks=30*

*25 marks  
7.4.21*

*Time allotted= 3 hrs*

1. Introduction: Concepts, Nature and Scope.
2. State, Nation and Nation State – Concept of Nation and State, Attributes of State – Frontiers, Boundaries, Shape, Size, Territory and Sovereignty, Concept of Nation State; Geopolitics; Theories (Heartland and Rimland)
3. Electoral Geography – Geography of Voting, Geographic Influences on Voting pattern, Geography of Representation, Gerrymandering.
4. Political Geography of Resource Conflicts – Water Sharing Disputes, Disputes and Conflicts Related to Forest Rights and Minerals.
5. Politics of Displacement: Issues of relief, compensation and rehabilitation: with reference to Dams and Special Economic Zones

### **Reading List**

1. Agnew J., 2002: *Making Political Geography*, Arnold.
2. Agnew J., Mitchell. K. and Toal. G., 2003: *A Companion to Political Geography*, Blackwell.
3. Cox K. R., Low M. and Robinson J., 2008: *The Sage Handbook of Political Geography*, Sage Publications.
4. Cox K., 2002: *Political Geography: Territory, State and Society*, Wiley-Blackwell
5. Gallaher C., et al, 2009: *Key Concepts in Political Geography*, Sage Publications.
6. Glassner M., 1993: *Political Geography*, Wiley.
7. Jones M., 2004: *An Introduction to Political Geography: Space, Place and Politics*, Routledge .
8. Mathur H M and M M Cernea (eds.) Development, Displacement and Resettlement – Focus on Asian Experience, Vikas, Delhi
9. Painter J. and Jeffrey A., 2009: *Political Geography*, Sage Publications.
10. Taylor P. and Flint C., 2000: *Political Geography*, Pearson Education.
11. Verma M K (2004): Development, Displacement and Resettlement, Rawat Publications, Delhi
12. Hodder Dick, Sarah J Llyod and Keith S McLachlan (1998), *Land Locked States of Africa and Asia* (vo.2), Frank Cass

# Hydrology

After the completion of course, the students will have ability to:

1. Understand the basic components of hydrological cycle and comprehend practices of integrated watershed management.
2. Evaluate the water balancing and river basin and water disputes.

## DSE 4 Hydrology and Oceanography – 04 Credits

Five (05) questions to be answered out of eight (08) questions

Full marks= 75(60 + 15 Internal Assessment/Mid Semester)

Pass Marks=30

Time allotted= 3 hrs

1. Hydrological Cycle: Systems Approach in Hydrology, Human Impact on the Hydrological Cycle; Precipitation, Interception, Evaporation, Evapo-Transpiration, Infiltration, Ground-Water, Run Off and Over Land Flow; Hydrological Input and Output.
2. River Basin and Problems of Regional Hydrology: Characteristics of river basins, basin Surface Run-Off, Measurement of River Discharge; Floods and Droughts.
3. Ocean Floor Topography and Oceanic Movements – Waves, Currents and Tides.
4. Ocean Salinity and Temperature – Distribution and Determinants.
5. Coral Reefs and Marine Deposits and Ocean Resources: Types and Theories of Origin; Biotic, Mineral.

## Reading List

1. Andrew. D. Ward and Stanley, Trimble (2004): Environmental Hydrology, 2nd edition, Lewis Publishers, CRC Press.
2. Karanth, K.R., 1988 : Ground Water: Exploration, Assessment and Development, Tata-McGraw Hill, New Delhi.
3. Ramaswamy, C. (1985): Review of floods in India during the past 75 years: A Perspective. Indian National Science Academy, New Delhi.
4. Rao, K.L., 1982 : India's Water Wealth 2nd edition, Orient Longman, Delhi.
5. Singh, Vijay P. (1995): Environmental Hydrology. Kluwer Academic Publications, The Netherlands.
6. Anikouchine W. A. and Sternberg R. W., 1973: *The World Oceans: An Introduction to Oceanography*, Prentice-Hall.
7. Garrison T., 1998: *Oceanography*, Wordsworth Company, Belmont.
8. Kershaw S., 2000: *Oceanography: An Earth Science Perspective*, Stanley Thornes, UK.
9. Pinet P. R., 2008: *Invitation to Oceanography* (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.
10. Sharma R. C. and Vatal M., 1980: *Oceanography for Geographers*, Chaitanya Publishing House, Allahabad.
11. Sverdrup K. A. and Armbrust, E. V., 2008: *An Introduction to the World Ocean*, McGraw Hill, Boston.
12. Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) Landscape Ecology and Water Management. Proceedings of IGU Rohtak Conference, Volume 2. Advances in Geographical and Environmental Studies, Springer

## Geomorphology

After the completion of course, the students will have ability to:

4. Understand the functioning of Earth systems in real time and analyze how the natural and anthropogenic operating factors affects the development of landforms
5. Distinguish between the mechanisms that control these processes
6. Assess the roles of structure, stage and time in shaping the landforms, interpret geomorphological maps and apply the knowledge in geographical research.

Semester - I

**Elective: Generic, GE**

**GE 1 Geomorphology– 04 Credits**

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75*

*Pass Marks=40*

*Time allotted= 3 hrs*

1. Interior Structure of the Earth.
2. Crustal Movements of Earth: Continental Drift and Plate Tectonics
3. Endogenetic forces: Types of Folds and Faults; Earthquakes and Volcanoes
4. Davisian Cycle of Erosion
5. Major Landforms: Fluvial, Aeolian ; Karst

### **Reading List**

1. Bloom A. L., 2003: **Geomorphology: A Systematic Analysis of Late Cenozoic Landforms**, Prentice-Hall of India, New Delhi.
2. Bridges E. M., 1990: **World Geomorphology**. Cambridge University Press, Cambridge.
3. Christopherson, Robert W., (2011), **Geosystems: An Introduction to Physical Geography**, 8 Ed., Macmillan Publishing Company
4. Kale V. S. and Gupta A., 2001: **Introduction to Geomorphology**, Orient Longman, Hyderabad.
5. Knighton A. D., 1984: **Fluvial Forms and Processes**, Edward Arnold Publishers, London.
6. Richards K. S., 1982: **Rivers: Form and Processes in Alluvial Channels**, Methuen, London.
7. Selby, M.J., (2005), **Earth's Changing Surface**, Indian Edition, OUP
8. Skinner, Brian J. and Stephen C. Porter (2000), **The Dynamic Earth: An Introduction to Physical Geology**, 4th Edition, John Wiley and Sons
9. Thornbury W. D., 1968: **Principles of Geomorphology**, Wiley.
10. Gautam, A (2010): **Bhautik Bhugol**, Rastogi Publications, Meerut
11. Tikkaa, R N (1989): **Bhautik Bhugol ka Swaroop**, Kedarnath Ram Nath, Meerut
12. Singh, S (2009): **Bhautik Bhugol ka Swaroop**, Prayag Pustak, Allahabad
13. Tiwary Ram Kumar, **Bhautik bhugol**, Rajasthan Hindi Granth Academy, Jaipur

## Thematic Atlas

After the completion of course, the students will have ability to:

1. Have sound knowledge regarding the classification and elements of maps.
2. Have proper utilization of maps for the development.
3. Appreciate the preparation of various thematic maps with the application of various techniques.

### **Cartographic Techniques (GE 1 Practical): Credits-2**

*Three (03) questions to be answered*

*Full marks= 25*

*Practical Note Book & Viva=10 marks*

*Pass Marks=10*

*Time allotted= 3 hrs*

1. Scales –Graphical Construction of Simple Scale
2. Map Projections –Simple Conical Projection with One standard parallel and Two Standard Parallels, Bonne's Projections.
3. Topographical Map – Concept and Interpretation.

### **Reading List**

1. Anson R. and Ormelling F. J., 1994: *International Cartographic Association: Basic Cartographic Vol.* Pregmen Press.
2. Gupta K.K. and Tyagi, V. C., 1992: *Working with Map*, Survey of India, DST, New Delhi.
3. Mishra R.P. and Ramesh, A., 1989: *Fundamentals of Cartography*, Concept, New Delhi.
4. Monkhouse F. J. and Wilkinson H. R., 1973: *Maps and Diagrams*, Methuen, London.
5. Rhind D. W. and Taylor D. R. F., (eds.), 1989: *Cartography: Past, Present and Future*, Elsevier, International Cartographic Association.
6. Robinson A. H., 2009: *Elements of Cartography*, John Wiley and Sons, New York.
7. Sharma J. P., 2010: *Prayogic Bhugol*, Rastogi Publishers, Meerut.
8. Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers.
9. Sarkar, A. (2015) *Practical geography: A systematic approach*. Orient Black Swan Private Ltd., New Delhi
10. Singh R L & Rana P B Singh (1991) *Prayogtmak Bhugol ke Mool Tatva*, Kalyani Publishers, New Delhi
11. Sharma, J P (2010) *Prayogtmak Bhugol ki Rooprekha*, Rastogi Publications, Meerut
12. Singh, R L & Dutta, P K (2012) *Prayogatmak Bhugol*, Central Book Depot, Allahabad

# **HUMAN GEOGRAPHY**

## **1. STUDY ABOUT MAINKIND**

**Elective: Generic, GE**

**GE 2 Human Geography– 04 Credits**

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75*

*Pass Marks=40*

*Time allotted= 3 hrs*

1. Definition, Scope and Branches of Human Geography
2. Population: Distribution, Density and Growth of Population of the World; International Migration
3. Major Tribes of the world: Eskimos and Bushman
4. Major Tribes of India: Gujjars and Gonds
5. Major Tribes of Jharkhand: Santhals, Mundas and Oraons

### **Reading List**

1. Chandna, R.C. (2010) Population Geography, Kalyani Publisher.
2. Hassan, M.I. (2005) Population Geography, Rawat Publications, Jaipur
3. Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.
4. Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
5. Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.
6. Kaushik, S.D. (2010) Manav Bhugol, Rastogi Publication, Meerut.
7. Maurya, S.D. (2012) Manav Bhugol, Sharda Pustak Bhawan. Allahabad.
8. Hussain, Majid (2012) Manav Bhugol. Rawat Publications, Jaipur



## Thematic Atlas

After the completion of course, the students will have ability to:

1. Have sound knowledge regarding the classification and elements of maps.
2. Have proper utilization of maps for the development.
3. Appreciate the preparation of various thematic maps with the application of various techniques.

### Thematic Cartography (GE 2 Practical): Credits-2

*Candidates to answer three (03) questions*

*Full marks= 25*

*Practical Note Book & Viva=10 marks*

*Pass Marks=10*

*Time allotted= 3 hrs*

1. Maps – Classification and Types
2. Diagrammatic Data Presentation – Line, Bar and Circle.
3. Thematic Mapping Techniques – Point, Line and Areal Data.
4. Thematic Maps – Preparation and Interpretation.

**Practical Record:** A Thematic Atlas should be prepared on a specific theme with five plates of any state in India.

### Reading List

1. Cuff J. D. and Mattson M. T., 1982: *Thematic Maps: Their Design and Production*, Methuen Young Books
2. Dent B. D., Torguson J. S., and Holder T. W., 2008: *Cartography: Thematic Map Design* (6<sup>th</sup> Edition), McGraw-Hill Higher Education
3. Gupta K. K. and Tyagi V. C., 1992: *Working with Maps*, Survey of India, DST, New Delhi.
4. Kraak M.-J. and Ormeling F., 2003: *Cartography: Visualization of Geo-Spatial Data*, Prentice-Hall.
5. Mishra R. P. and Ramesh A., 1989: *Fundamentals of Cartography*, Concept, New Delhi.
6. Sharma J. P., 2010: *Prayogic Bhugol*, Rastogi Publishers, Meerut.
7. Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers.
8. Slocum T. A., McMaster R. B. and Kessler F. C., 2008: *Thematic Cartography and Geovisualization*(3rd Edition), Prentice Hall.
9. Tyner J. A., 2010: *Principles of Map Design*, The Guilford Press.
10. Sarkar, A. (2015) *Practical geography: A systematic approach*. Orient Black Swan Private Ltd., NewDelhi
11. Singh, L R & Singh R (1977): *Manchitra or Pryaogatamek Bhugol* , Central Book, Depot, Allahabad
12. Bhopal Singh R L and Dutta P K (2012) *Prayogatama Bhugol*, Central Book Depot, Allahabad.

# Climatology

## Learning Outcomes:

After the completion of course, the students will have ability to:

1. Understand the elements of weather and climate and its impacts at different scales.
2. Comprehend the climatic aspects and its bearing on planet earth.

**Elective: Generic, GE**

**GE 3 Climatology– 04 Credits**

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75*

*Pass Marks=40*

*Time allotted= 3 hrs*

1. Composition and Structure of Atmosphere
2. Atmospheric Pressure and Pressure Belts
3. Rainfall: Types and distribution
4. Monsoon - Origin and Mechanism
5. Cyclones – Tropical Cyclones, Extra Tropical Cyclones

## Reading List

1. Barry R. G. and Carleton A. M., 2001: *Synoptic and Dynamic Climatology*, Routledge, UK.
2. Barry R. G. and Corley R. J., 1998: *Atmosphere, Weather and Climate*, Routledge, New York.
3. Critchfield H. J., 1987: *General Climatology*, Prentice-Hall of India, New Delhi
4. Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: *The Atmosphere: An Introduction to Meteorology*, Prentice-Hall, Englewood Cliffs, New Jersey.
5. Oliver J. E. and Hidore J. J., 2002: *Climatology: An Atmospheric Science*, Pearson Education, New Delhi.
6. Trewartha G. T. and Horne L. H., 1980: *An Introduction to Climate*, McGraw-Hill.
7. Gupta L S (2000): *Jalvayu Vigyan, Hindi Madhyam Karyanvay Nidishalya*, Delhi Vishwa Vidhyalaya, Delhi
8. Lal, D S (2006): *Jalvayu Vigyan, Prayag Pustak Bhavan*, Allahabad
9. Vatal, M (1986): *Bhautik Bhugol. Central Book Depot*, Allahabad
10. Singh, S (2009): *Jalvayu Vigyan. Prayag Pustak Bhawan. Allahabad*

## STATISTICS

### KNOWLEDGE OF STATISTICS

#### **Statistical Methods in Geography (GE 3 Practical): Credits-2**

*Candidates to answer three (03) questions*

*Full marks= 25*

*Practical Note Book & Viva=10 marks*

*Pass Marks=10*

*Time allotted= 3 hrs*

1. Measures of Central Tendency: Arithmetic Mean, Median and Mode
2. Measurement of Dispersion: Mean Deviation, Standard Deviation, Co-efficient of Variation, Scattered diagram, Histogram
3. Correlation (Karl Pearson and Spearman) and regression analysis.

#### **Reading List**

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. Hammond P. and McCullagh P. S., 1978: *Quantitative Techniques in Geography: An Introduction*, Oxford University Press.
4. King L. S., 1969: *Statistical Analysis in Geography*, Prentice-Hall.
5. Mahmood A., 1977: *Statistical Methods in Geographical Studies*, Concept.
6. Pal S. K., 1998: *Statistics for Geoscientists*, Tata McGraw Hill, New Delhi.
7. Sarkar, A. (2013) *Quantitative geography: techniques and presentations*. Orient Black Swan Private Ltd., New Delhi
8. Silk J., 1979: *Statistical Concepts in Geography*, Allen and Unwin, London.
9. Spiegel M. R.: *Statistics, Schaum's Outline Series*.
10. Yeates M., 1974: *An Introduction to Quantitative Analysis in Human Geography*, McGraw Hill, New York.
11. Shinha, Indira (2007) *Sankhyiki bhugol*. Discovery Publishing House, New Delhi

## Introduction to Global Economic System Learning

### Outcome:

After the completion of course, the students will have ability to:

1. Distinguish different types of economic activities and their utilities.
2. Appreciate the factors responsible for the location and distribution of activities.
3. Examine the significance and relevance of theories in relation to the location of different economic activities.

### **Elective: Generic, GE**

#### **GE 4 Economic Geography– 04 Credits**

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75*

*Pass Marks=40*

*Time allotted= 3 hrs*

1. Nature and Scope of Economic Geography
2. Classification of economic activity
3. Primary Activities: Subsistence agriculture, forestry, fishing and mining.
4. Secondary Activities: Manufacturing (Cotton Textile, Iron and Steel)
5. Tertiary Activities: Transport, Trade and Services.

### **Reading List**

1. Alexander J. W., 1963: *Economic Geography*, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
2. Coe N. M., Kelly P. F. and Yeung H. W., 2007: *Economic Geography: A Contemporary Introduction*, Wiley-Blackwell.
3. Hodder B. W. and Lee Roger, 1974: *Economic Geography*, Taylor and Francis.
4. Combes P., Mayer T. and Thisse J. F., 2008: *Economic Geography: The Integration of Regions and Nations*, Princeton University Press.
5. Wheeler J. O., 1998: *Economic Geography*, Wiley.
6. Durand L., 1961: *Economic Geography*, Crowell.
7. Bagchi-Sen S. and Smith H. L., 200. Environmental Geography – Concept and Scope
2. Ecosystem – Concept, Structure and Functions
3. Concept of Sustainable Development; Green-House Effect and Global Warming
4. Environmental Problems in Tropical, Temperate and Polar Ecosystems
5. Environmental Programmes and Policies – Global, National and Local levels
- 6: *Economic Geography: Past, Present and Future*, Taylor and Francis.
8. Willington D. E., 2008: *Economic Geography*, Husband Press.
9. Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. 2000: *The Oxford*

## Thematic Atlas

After the completion of course, the students will have ability to:

1. Have sound knowledge regarding the classification and elements of maps.
2. Have proper utilization of maps for the development.
3. Appreciate the preparation of various thematic maps with the application of various techniques.

### **Instrumental Survey (GE 4 Practical): Credits -2**

*Candidates to answer three (03) questions*

*Full marks= 25*

*Practical Note Book & Viva=10 marks*

*Pass Marks=10*

*Time allotted= 3 hrs*

1. Prismatic Compass Survey: Open and Closed Traverse
2. Plane table survey: Radiation, Intersection
3. Clinometer

### **Reading List**

1. Monkhouse F. J. and Wilkinson H. R., 1973: *Maps and Diagrams*, Methuen, London.
2. Robinson A. H., 2009: *Elements of Cartography*, John Wiley and Sons, New York.
3. Sarkar, A. (2015) *Practical geography: A systematic approach*. Orient Black Swan Private Ltd., New Delhi
4. Sharma J.P (2015) *Prayogatmak Bhugol Ki Roop Rekha*, Rastogi Publication, Meerut.
5. Singh R L & Rana P B Singh(1991) *Prayogtmak Bhugol ke Mool Tatva*, Kalyani Publishers, NewDelhi
6. Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers.
7. Singh, L R & Singh R (1977): *Manchitra or Pryogatamek Bhugol*, Central Book Depot, Allahabad
8. Singh, R L & Dutta, P K (2012) *Prayogatmak Bhugol*, Central Book Depot, Allahabad

## Digital Remote Sensing (Practical)

### Learning Outcomes:

After the completion of course, the students will have ability to:

1. Develop the skill so as to use digital satellite data using software
2. Prepare the maps based with satellite data to compare with the ground realities.
3. Classify digital data for the land use/land cover and urban studies

### **Skill Enhancement Course**

#### **SEC 1.Remote Sensing -01 Credit**

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75*

*Pass Marks=30*

*Time allotted= 3 hrs*

1. Remote Sensing: Definition and Development; Platforms and Types; Photogrammetry.
2. Satellite Remote Sensing: Principles, EMR Interaction with Atmosphere and Earth Surface; Satellites (Landsat and IRS); Sensors
3. Image Processing (Digital and Manual): Pre-processing (Radiometric and Geometric Correction); Enhancement (Filtering); Classification (Supervised and Un-supervised)
4. Satellite Image Interpretation.
5. Application of Remote Sensing: Land Use Land Cover.

#### **SEC Practical 1 (Remote Sensing) -01 Credit**

*Full marks= 25 (Practical Record=20+ Viva-Voce=5)*

*Pass Marks=10*

**Practical Record:** A project file consisting of 5 exercises on using any method on above mentioned themes

#### **Reading List**

1. Bhatta , B. (2008) Remote Sensing and GIS, Oxford University Press, New Delhi.
2. Campbell J. B., 2007: *Introduction to Remote Sensing*, Guildford Press
3. Chauniyal, D. (2010) Sudur Samvedana Avam Bhaugolik Suchna Pranali, Sharda Pustak Bhawan, Allahabad.
4. Jensen, J. R. (2005) *Introductory Digital Image Processing: A Remote Sensing Perspective*, Pearson Prentice-Hall.
5. Joseph, G. 2005: *Fundamentals of Remote Sensing*, United Press India.
6. Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: *Remote Sensing and Image Interpretation*, Wiley. (Wiley Student Edition).
7. Li, Z., Chen, J. and Batsavias, E. (2008) *Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences* CRC Press, Taylor and Francis, London
8. Mukherjee, S. (2004) *Textbook of Environmental Remote Sensing*, Macmillan, Delhi.
9. Nag P. and Kudra, M., 1998: *Digital Remote Sensing*, Concept. New Delhi.
10. Singh R. B. and Murai S., 1998: *Space-informatics for Sustainable Development*, Oxford and IBIT Pub.

# Geographical Information System (Practical)

## Learning Outcome:

After the completion of course, the students will have ability to:

1. Understand various components and principles of GIS
2. Construct the thematic maps using different digital layers
3. Apply GIS in various geographical studies

## Semester- III

### Skill Enhancement Course

#### SEC 2. Geographical Information System -01 Credit

*Five (05) questions to be answered out of eight (08) questions*

*Full marks= 75*

*Pass Marks=30*

*Time allotted= 3 hrs*

1. Geographical Information System (GIS): Definition and Components.
2. Global Positioning System (GPS) – Principles and Uses; DGPS.
3. GIS Data Structures: Types (spatial and Non-spatial), Raster and Vector Data Structure.
4. GIS Data Analysis: Input: Geo-Referencing; Editing, Output; Overlays.
5. Application of GIS: Land Use Mapping; Urban Sprawl Analysis; Forests Monitoring.

#### SEC Practical 2 (Remote Sensing) -01 Credit

*Full marks= 25 (Practical Record=20+ Viva-Voce=5)*

*Pass Marks=10*

**Practical Record:** A project file consisting of 5 exercises on using any GIS Software on above mentioned themes.

#### Reading List

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