



ROYAL GLOBAL UNIVERSITY  
— GUWAHATI —

**ROYAL SCHOOL OF ENVIROMENTAL AND EARTH SCIENCES  
(RSEES)**

**DEPARTMENT OF GEOGRAPHY**

**COURSE STRUCTURE & SYLLABUS**

**B.A/B.Sc. (Hons.) Geography**

**6 semester course  
w.e.f 2020-2021**

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SEMESTER	CORE COURSE (14)	credit	Ability Enhancement Compulsory Course (AECC) (9)	credit	Ability Enhancement Elective Course (AEEC) (2) (Skill Based)	credit	Elective: Discipline Specific (DSE) (4)	credit	Elective: Generic (GE) (8)	credit	No of papers per semester
I	Geomorphology	5	Comm. Eng-I	1					GE 1	3	8
	Human and Cultural Geography	5									
	Population And Settlement Geography	5	Behavioural Science-I *	1					GE 2	3	
	Cartographic Techniques	3									
II	Climatology and Oceanography	5	Comm. Eng-II	1					GE 3	3	8
	Geography of India	5									
	Soil and Agricultural Geography	5	Behavioural Science-II *	1					GE 4	3	
	Fundamentals of Geoinformatics	3									
III	Economic Geography	6	Comm. Eng-III	1	AEEC/SEC/ - 1*	2			GE 5	3	7
	Geography of Tourism	6									
	Quantitative Methods in Geography	6	Environmental Science	2					GE 6	3	
IV	Environmental Geography	4	Comm. Eng-IV	1	AEEC/SEC/ - 2*	2			GE 7	3	6
	Social and Political Geography	4									
	Field Techniques, Surveying and Research Methodology	4							GE 8	3	
V	Regional Planning and Sustainable Development	6	Comm. Eng-V	1					DSE 1	6	5
	Project Work	6							DSE 2	6	
VI	Geographical Thought	6	Comm. Eng-VI	1					DSE 3	6	5
	Regional Geography of N. E. India & Assam	6							DSE 4	6	
Total		84		10		4		24		24	39

**Options for Discipline Specific Elective (DSE):**

SEMESTER	COURSE	OPTIONS		
		A	B	C
<b>FIFTH</b> (Choose any two out of three choices)	<b>DSE 1, DSE 2</b>	Geography of Rural Health	Geography of Health	Remote Sensing: Principles & Applications
<b>SIXTH</b> (Choose any two out of three choices)	<b>DSE 3, DSE 4</b>	Disaster Management	Biogeography	Urban Geography

**Options for Generic Elective (GE):**

SEMESTER	Paper Name GE: 1	Paper Name GE: 2
FIRST	Social and Political Geography	Physical Geography
SECOND	Introduction to Geospatial Technology	Regional development of N. E. India
THIRD	Population Studies	Biogeography
FOURTH	Climate Change Vulnerability and Adaptation	Rural and Sustainable Resource Development

**Note: GE papers can be chosen from the list of subjects given by other departments. The GE papers will be only offered once the students opt for the GE papers of the specific subjects.**

Summary of Credits	
Sem-I	26
Sem-II	26
Sem-III	23
Sem-IV	21
Sem-V	25
Sem-VI	25
<b>TOTAL</b>	<b>146</b>

## Preamble

The LOCF is designed to emphasize the teaching-learning process at the postgraduate B.A/B.Sc. level in Geography to sensitize and train the students to develop a sound and systematic approach regarding mechanism and processes of natural and human activities. The focus is to help the students to understand the latest tools and techniques, which would help in giving focused and precise understanding of geographical phenomenon. The purpose is to enhance the capability of the students in perceiving, creating and analyzing sound geographical bases and concepts.

This Learning Outcome based Curriculum Framework is designed to emphasize the teaching and learning process at the postgraduate B.A/B.Sc. from teacher centric to student centric by strengthening the quality of teaching and learning in the present day real life scenario of global, regional and local level. It is considered learning as an activity of creativity of innovations and analyzing geographical phenomena. The committee prepared the major learning outcomes, which would help the students to understand and critically analyze various dimensions of the geographical issues.

The following objectives would be achieved:

- To orient the students towards identification and analysis of various facets of geographical features and processes.
- To develop students' aptitude for acquiring basic skills of carrying out field work.
- To facilitate the students to learn skills of map making.
- To guide students to learn the science and art of collecting, processing and interpreting the data.
- To expose the students to the use of the updated technologies of remote sensing, IRNSS, GNSS, Geographical Information System (GIS) and GIScience.
- The Committee suggests that the following remarks may be taken in to consideration by the faculty members, departments/schools, Boards of studies in Geography Institutes/colleges and Universities, while incorporating the recommendations for utilization:
- The learning outcomes are designed in such a way to assist the students to understand the objectives of studying B.A/B.Sc. in Geography, which is to understand, appreciate and critically evaluate and associate with various time and space aspects.
- The understanding of the LOCF Committee of Geography is to have well defined and justifiable course outcomes and their realization at the end of the course and programs. The department/institute/college/university is expected to encourage the faculty
- To inculcate the best teaching skills with innovative ideas and methods to make students to learn subjects based on field knowledge and updated spatial information.

## Introduction

Learning Outcomes based Curriculum Framework (LOCF) for Geography under CBCS

### 1. Introduction

Geography has been broadly accepted as a bridge discipline between human and physical sciences. In the beginning, geography focussed on the physical aspects of the earth but the modern geography is an all-encompassing discipline that seeks to understand the earth and all of its human and natural processes as integrating elements. Geography has emerged through time as a transdisciplinary subject integrating the regional diversity with the concepts of the timing of space and the spacing of time. It provides broad, human and place-centred perspectives on the transformation of rural ecology to globalized urban landscape at different levels, from the local/regional/national to global. Geography is transformed through:

- Journey from Village Ecology to Urban Regional Studies
- Qualitative Techniques to Spatial Information Technology
- Global to Micro-level Community Perception Approach

It is essential to focus on the current socio-spatial problems, issues and challenges to make the students aware of the application of geography to sort out the societal upcoming problems. It is also essential to rejuvenate the ancestral geographical knowledge to address the current local and global problems. In the light of exponential changes in the field of arts, science and technology, it is to be studied from multifaceted angles. It is important for the policy makers to consider the geo-spatial aspects with references to the location and in context of the best utilization of public utilities. It is further expected that if the above said spatial aspects are considered, it will certainly develop the lagging regions and people living therein.

### 2. Learning Outcomes based Approach to Curriculum Planning

Learning Outcomes based Curriculum Framework (LOCF) for geography curriculum revision incorporates dynamic processes including fundamental and modern techniques, contemporary paradigms such as global initiatives like Sustainable Development Goals (SDGs), Disaster Risk Reduction (DRR), Paris Climate Action and national initiatives like smart cities, Securities of food, water, energy, human health and livelihood, biodiversity,

and disaster management. The approaches are to make geography more scientific and societal-need oriented that could be the panacea of India's developmental challenges. Geography uses scientific knowledge with the current focus that includes spatio-temporal analysis, skill development, GIScience, sustainable development and human security.

2.1 Nature and Extent of the B.A./B.Sc. Programme Geography curriculum inculcates knowledge of essential concepts of physical and human geography together with appropriate techniques using lectures, tutorials, group discussions, presentations, assignment evaluation, lab work and field visits. Thus, pedagogy process includes:

- Identifying and explaining the physical and cultural characteristics globally and processes at varied spatio-temporal contexts.
  - Understanding human-environment and nature-society interactions as well as various global environmental challenges.
  - Analysing geographic information by using geo-spatial technologies.
  - Responding towards the global and national challenges and initiatives.
- 2.2 Aims of M.A./M.Sc. Programme
- Four distinct and new learning outcomes have been incorporated from each Course such as:
  - Appreciate the relevance of geographical knowledge to everyday life.
  - Demonstrate the ability to communicate geographic information by utilising both lecture and practical exercises.
  - Inculcate the ability to evaluate and solve geographical problems effectively.
  - Demonstrate the skills in using geographical research tools including spatial statistics, cartography, remote sensing, GIS, IRNSS and GIScience.
  - Based on the field knowledge and advanced technologies, the students should be able to understand the on-going geographical problems in different regions and levels with appropriate pragmatic solutions.

### 3. Graduate Attributes in Geography

The curriculum uses CBCS framework and organises under Core Course, Skill Enhancement Course, Elective - Discipline Specific and Elective - Generic Courses. The core courses cover key areas of geography about which all students should have basic knowledge. These courses are grouped as follows:

- A. Theory – These courses build up the theoretical and conceptual foundations of geography.
- B. Practical – Three courses on Statistical Techniques in Spatial Analysis; Remote Sensing and Geographical Information System, GIScience and Research Methods and Fieldwork in Geography will strengthen the methodological and practical foundations of geography.
- C. Regional Approach – Such courses focus on World Geography, Geography of India / different states.
- D. Application Oriented – This includes disaster management, climate change, tourism geography, health and wellbeing, etc. Each Course has objective, learning outcomes, uniform contents and reading list incorporating a few Hindi books also wherever possible.

### 4. Qualification Descriptors for B.A./B.Sc. Programme

The qualification descriptors for the B.A./B.Sc. Programme in Geography shall have the learning attributes such as field knowledge, use of advance tools and techniques for better comprehension of space and society etc. It also involves awareness among the students regarding the issues of different regions and socio-cultural aspects. The main qualification descriptors for the geography B.A./B.Sc. Programme students are to develop the critical evaluation and understanding. Each Honour student in Geography should be able to;

- Demonstrate systematically geographical knowledge and understanding the theoretical as well as practical applications with understanding of various aspects.
- Demonstrate the ability to understand the significance of geographical aspects in relation to development of the regions and minimizing regional inequalities.
- Demonstrate the ability and geographical thinking critically regarding rural and urban spaces and their day to day problems with the application of geographical knowledge.
- Students have to demonstrate their geographical knowledge acquired in the class and apply the same in real world.
- Recognise the scope of geography in terms of exploring the career opportunities, employment and life-long engagement in teaching and utilise the knowledge for publication for the future academic endeavors.

### 5. The Programme Learning Outcomes B.A./B.Sc Programme

The programme learning outcomes relating to B.A./B.Sc Programme in geography:

- Demonstrating the understanding of basic concepts in geography.
- Demonstrating the coherent and systematic knowledge in the discipline of geography to deal with current issues and their solution.
- Display an ability to read and understand maps and topographic sheets to look at the various aspects on the space.

- Cultivate ability to evaluate critically the wider chain of network of spatial aspects from global to local level on various time scales as well.

### 5.1 Learning Outcomes

Three distinct and new learning outcomes have been incorporated from each course such as to:

1. Understand the relevance of geographical knowledge to everyday life.
2. Getting the ability to communicate geographic information utilizing both lecture and practical exercises.
3. Inculcate the ability to evaluate geographical problems effectively.
4. Exhibit the skill in using geographical research tools including spatial statistics, cartography, remote sensing, GIS, IRNSS and GIScience.

### 5.2 Course Level Learning Outcomes

The course level learning outcomes includes:

1. Basic Concept: The fundamental concepts and philosophical foundation of each course need to be discussed.
2. Understanding Landscape: An understanding of landscape at different levels needs to be discussed and understood for a thorough knowledge of spatial dimensions.
3. Understanding Ecosystem Structure and Potential: To comprehend the dynamic dimensions of human and ecosystem relationships.
4. Human Perception and Behaviour: Learning human perception and behaviour to acquire the geographical knowledge evolved over time, is essential to improve decision making process.
5. Identification of Critical Problems and Issues: Detection and identification of the critical problems and spatial issues are essential for sustainable development.
6. Field Based Knowledge: Field based knowledge is essential to understand the ground reality, spatial patterns and processes.
7. Spatial Tools and Techniques: The basics and applications of spatial tools and techniques are essential to make the studies more scientific and applicable.
8. Statistical Techniques: Use of statistical tools and techniques is essential for precise and objective geographic analysis and interpretation of complex phenomena.

# B.A/B.Sc. (H) Geography

## Programme Structure

### 1<sup>st</sup> SEMESTER

Sl. No	Subject Code	Names of subjects	L	T	P	C	TCP
		<b>Core Courses</b>					
1	GEO162C101	Geomorphology	4	1	0	5	5
2	GEO162C102	Human and Cultural Geography	4	1	0	5	5
3	GEO162C103	Population and settlement Geography	4	1	0	5	5
4	GEO162C114	Cartographic Techniques	0	0	6	3	6
		<b>Ability Enhancement Compulsory Courses (AECC)</b>					
5	CEN984A101	Communicative English-I	1	0	0	1	1
6	BHS984A103	Behavioural Science-I	1	0	0	1	1
		<b>Generic Elective (GE) - (any one)-to be offered by other department</b>					
7	GEO162G101	Social and Political Geography	3	0	0	3	3
8	GEO162G102	Physical Geography	3	0	0	3	3
<b>TOTAL CREDITS (C) = 26 AND TOTAL CONTACT PERIODS (TCP) = 29</b>							

### 2<sup>nd</sup> SEMESTER

Sl. No	Subject Code	Names of subjects	L	T	P	C	TCP
		<b>Core Courses</b>					
1	GEO162C201	Climatology and Oceanography	4	1	0	5	5
2	GEO162C202	Geography of Development of India	4	1	0	5	5
3	GEO162C203	Soil and Agricultural Geography	4	1	0	5	5
4	GEO162C214	Fundamentals of Geoinformatics	0	0	6	3	6
		<b>Ability Enhancement Compulsory Courses (AECC)</b>					
5	CEN984A201	Communicative English-II	1	0	0	1	1
6	BHS984A203	Behavioural Science-II	1	0	0	1	1
		<b>Generic Elective (GE) - (any one)-to be offered by other department</b>					
7	GEO162G201	Introduction to Geospatial Technology	3	0	0	3	3
8	GEO162G202	Regional Development of N.E India	3	0	0	3	3
<b>TOTAL CREDITS (C) = 26 AND TOTAL CONTACT PERIODS (TCP) = 29</b>							

### 3<sup>rd</sup> SEMESTER

Sl. No	Subject Code	Names of subjects	L	T	P	C	TCP
		<b>Core Courses</b>					
1	GEO162C301	Economic Geography	3	1	0	4	4
2	GEO162C302	Geography of Tourism	3	1	0	4	4
3	GEO162C313	Quantitative Methods in Geography	0	0	8	4	8
		<b>Ability Enhancement Compulsory Courses (AECC)</b>					
4	CEN984A301	Communicative English-III	1	0	0	1	1
5	EVS982A303	Environmental Science	2	0	0	2	2
		<b>Ability Enhancement Elective Courses (Any one)</b>					
6		AECC/SEC - 1*	2	0	0	2	2



		<b>Generic Elective (GE) - (any one)-to be offered by other department</b>						
7	GEO162G301	Population Studies	3	0	0	3	3	
8	GEO162G302	Biogeography	3	0	0	3	3	
<b>TOTAL CREDITS (C) = 23 AND TOTAL CONTACT PERIODS (TCP) = 27</b>								
<b>4<sup>th</sup> SEMESTER</b>								
<b>Sl. No</b>	<b>Subject Code</b>	<b>Names of subjects</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>TCP</b>	
		<b>Core Courses</b>						
1	GEO162C401	Social and Political Geography	3	1	0	4	4	
2	GEO162C402	Environmental Geography	3	1	0	4	4	
3	GEO162C402	Field Techniques, Surveying And Research Methodology	0	0	8	4	8	
		<b>Ability Enhancement Compulsory Courses (AECC)</b>						
4	CEN984A401	Communicative English - IV	1	0	0	1	1	
		<b>Ability Enhancement Elective Courses (Any one)</b>						
5		AEEC/SEC - 2*	2	0	0	2	2	
		<b>Generic Elective (GE) - (any one)-to be offered by other department</b>						
6	GEO162G401	Climate Change Vulnerability and Adaptation	3	0	0	3	3	
7	GEO162G402	Rural Development/ Industrial Development/ Sustainable Resource Development	3	0	0	3	3	
<b>TOTAL CREDITS (C) = 21 AND TOTAL CONTACT PERIODS (TCP) = 25</b>								
<b>5<sup>th</sup> SEMESTER</b>								
<b>Sl. No</b>	<b>Subject Code</b>	<b>Names of subjects</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>TCP</b>	
		<b>Core Courses</b>						
1	GEO162C501	Regional Planning and Development	5	1	0	6	6	
2	GEO162C522	Project Work	0	0	2	6	0	
		<b>Ability Enhancement Compulsory Courses (AECC)</b>						
4	CEN984A501	Communicative English - V	1	0	0	1	1	
		<b>Discipline Specific Elective Courses (DSE) (any two)</b>						
5	GEO162D501	Geography of Rural Development	5	1	0	6	6	
6	GEO162D502	Geography of Health	5	1	0	6	6	
7	GEO162D503	Remote sensing: Principles and Applications	5	1	0	6	6	
<b>TOTAL CREDITS (C) = 25 AND TOTAL CONTACT PERIODS (TCP) = 25</b>								
<b>6<sup>th</sup> SEMESTER</b>								
<b>Sl. No</b>	<b>Subject Code</b>	<b>Names of subjects</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>TCP</b>	
		<b>Core Courses</b>						
1	GEO162C601	Geographical Thought	5	1	0	6	6	
2	GEO162C602	Regional Geography of North East India and Assam	5	1	0	6	6	
		<b>Ability Enhancement Compulsory Courses (AECC)</b>						
4	CEN984A601	Communicative English - V	1	0	0	1	1	
		<b>Discipline Specific Elective Courses (DSE) (any two)</b>						
5	GEO162D601	Disaster Management	5	1	0	6	6	
6	GEO162D602	Biogeography	5	1	0	6	6	
7	GEO162D603	Urban Geography	5	1	0	6	6	
<b>TOTAL CREDITS (C) = 25 AND TOTAL CONTACT PERIODS (TCP) = 31</b>								
<b>TOTAL CREDITS (C) = 26 + 23 + 21 + 25 + 25 = 146</b>								



**I. Core courses may be of the following:**

(i) Theory (5) + Tutorial (1) = 6 for theory courses

(i) Theory (4) + Tutorial (2) = 6 for theory courses

(i) Theory (4) + Practical (2) = 6 for courses

**Note: There may be variations in Core component of the structure from department to department.**

**It is expected the variation should not be too large in terms of number of papers or in terms of credits.**

**II. Ability Enhancement Compulsory Course (AECC)**

(a) Communicative English: Six courses in all semester – Credit assigned: 1

(i) Developing Oral Communication & Listening Skills

(ii) Conversation & Public Speaking

(iii) Career oriental communication

(iv) Communication & Presentation Skills

(v) Ethics and business communication

(vi) Effective Workplace Communication

**(Subjects may be offered after consultations with Royal School of Languages and requirements of the department.)**

(b) Environmental science in third semester –Credits assigned: 2

(c) Behavioral science: 2 courses in 1st and 2nd semesters –Credits assigned: 1

**(i) Introduction to behavioural science****(ii) Development of Individuals and Behavioural Skills****III. Ability Enhancement Elective Course (AEEC)/ SEC (Skill Enhancement Elective Courses):**

Sl. No.	AEEC/SEC-1 (in third semester) (Choose any one)	AEEC/SEC-2 (in fourth semester) (Choose any one)
1	ILD-1	ILD-2
2	FRENCH-1	FRENCH-2
3	C++	LATEX
4	Any other course offered by other schools of RGU and opted by Student	Any other course offered by other schools of RGU and opted by Student

**IV. Elective: Discipline Specific DSE in 3rd and 4th semesters (any two out of four or more choices)**

Sl. No.	DSE 1 - 2 (in fifth semester) (Choose any two)	DSE 3 - 4 (in sixth semester) (Choose any two)
1	Geography of Rural Development	Disaster Management
2	Geography of Health	Biogeography
3	Regional Geography of Northeast India	Urban Geography

**Note:** DSE5-1 – DSE 5-5 means 5 DSE papers are offered in 5th semester out of which any 2 may be chosen

**V.**

**(a). (i) Generic Elective Papers (GE) (any two) from other Departments/ Disciplines: (Credit: 03 each) for 1st to 4th Semester**

Important Note: Students may add two courses of 3 credits in last two semesters from the Basket course if they wish to do so. (This is only applicable for the students who wish to earn extra credits over and above the normal credits, as specified in CBCS system suggested by UGC.)

**(b). Generic Elective Papers (GE) (two) for other departments/ Disciplines: (Credit: 03-06 each)**

List a number of courses offered by your school/department to other schools/departments which may be taken as a GE.

SEMESTER	SL. NO	Subject Code	Subject Name	L	T	P	C	TCP
I	1	GEO162G10 1	Social and Political Geography	3	0	0	3	3
	2	GEO162G10 2	Physical Geography	3	0	0	3	3
II	3	GEO162G20 1	Introduction to Geospatial Technology	3	0	0	3	3
	4	GEO162G20 2	Regional Development of N.E India	3	0	0	3	3
III	5	GEO162G30 1	Population Studies	3	0	0	3	3
	6	GEO162G30 2	Biogeography	3	0	0	3	3
IV	7	GEO162G40 1	Climate Change Vulnerability and Adaptation	3	0	0	3	3
	8	GEO162G40 2	Rural Development/ Industrial Development/ Sustainable Resource Development	3	0	0	3	3

**Note: The course structure shared is at par with the CBCS system of UGC. Any difference found should be brought to notice immediately.**

**B.A./B. Sc. (Honours) Course in Geography: Semester-I**

<b>Paper I Core Course</b>	<b>GEOMORPHOLOGY</b>			<b>Subject Code: GEO162C10 1</b>
	<b>L-T-P-C: 4-1-0-5</b>	<b>Credit Units: 5</b>	<b>Scheme of Evaluation: (T)</b>	

**Learning Objectives:**

This course intends to make the students:

- Understand the science of geomorphology, its nature and scope, processes and patterns of landform development
- Know shape, size and internal structure of the earth including the location of places

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Geomorphology: Nature, Scope, Key concepts and theories of landform development, Systems approach; Earth Interior and Structure	12
Unit 2	Composition of the Earth with special reference to seismology; Earth Movements: Isostasy. Plate Tectonics, Types of Folds and Faults, Earthquakes and Volcanoes.	12
Unit 3	Geomorphic Processes: Weathering, Mass Wasting, Cycle of Erosion (Davis and Penck).	12
Unit 4	Evolution of Landforms (Erosional and Depositional): Fluvial, Karst, Aeolian and Glacial; Applied Geomorphology.	12
<b>Total</b>		<b>48</b>

**Text Books:**

1. Ahmed, E., 1985: Geomorphology, Kalyani Publishers, New Delhi
2. Bloom A. L., 2003: *Geomorphology: A Systematic Analysis of Late Cenozoic Landforms*, Prentice-Hall of India, New Delhi.
3. Dayal, P. (2nd Ed.) 1996, A Textbook of Geomorphology, Shukla Book Depot, Patna
4. Kale V. S. and Gupta A., 2001: *Introduction to Geomorphology*, Orient Longman, Hyderabad.

5. Khullar D.R. 2012: *Physical Geography*, Kalyani Publishers, New Delhi
6. Skinner, Brian J. and Stephen C. Porter (2000), *The Dynamic Earth: An Introduction to physical Geology*, 4th Edition, John Wiley and Sons
7. Singh, Savindra, 2014: *Geomorphology*, Pravalika Publications, Allahabad-02
8. Thornbury W. D., 1968: *Principles of Geomorphology*, Wiley.
9. Wooldridge W. S. and Morgan R. S., 1959: *An Outline of Geomorphology: The Physical Basis of Geography*, Longmans.

#### **Reference Books:**

1. Bridges E. M., 1990: *World Geomorphology*, Cambridge University Press, Cambridge.
2. Christopherson, Robert W., (2011), *Geosystems: An Introduction to Physical*
3. *Geography*, 8 Ed., Macmillan Publishing Company
4. Selby, M.J., (2005), *Earth's Changing Surface*, Indian Edition, OUP
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

#### **Learning Outcomes:**

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

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

<b>Paper II Core Course</b>	<b>GEOGRAPHY OF HUMAN AND CULTURAL LANDSCAPE</b>			<b>Subject Code: GEO162C102</b>
	<b>L-T-P-C: 4-1-0-5</b>	<b>Credit Units: 5</b>	<b>Scheme of Evaluation: (T)</b>	

### Learning Objectives:

This course intends to make the students:

- Understand the human perspective in Geography
- Know the various parameters and components of the sub branch
- Understand the development of humanistic view of geography.

### Detailed Syllabus:

Modules	Topics and Course Content	Periods
Unit 1	Meaning, Scope, Branches and approaches of Human Geography, Definition and contents; human versus physical geography; branches of Human Geography; Development of Human Geography; Contributions of German and French Geographers.	12
Unit 2	Approaches: determinism, possibilism, human ecology and Positivism, neo-determinism, social determinism, Behaviouralism, welfare geography, humanistic geography Schools: ecology, landscape, locational, marxism and Post-modernism.	12
Unit 3	Definition and Approaches of cultural geography, Its Scope; Major themes of Cultural Geography : Concept of cultural region , Cultural landscape and Cultural Integration	12
Unit 4	Characteristics of culture, its components and functions; Cultural diffusion and factors associated with it, concept of cultural lag and cultural landscape, Major cultural regions of the World	12
<b>Total</b>		<b>48</b>

### Text Books Suggested:

1. Chandna, R.C., (2017): *Population Geography*, Kalyani Publishers, New Delhi.
2. Huntington, E., 1951: *Principles of Human Geography*, John Wiley & Sons, Inc, New York
3. Hussain, M., 1994: *Human Geography*, Rawat Publication, New Delhi.
4. Johnston, R.J. et al (eds.): *The Dictionary of Human Geography*, Basil Blackwell, Oxford.
5. Leong, G.C. and Morgan, G.C., 1992: *Human and Economic Geography*, Oxford University Press, Oxford

### Reference books:

1. Chhokas, K.B., *Understanding Environment*, Sage Publication.
2. Hagget, P., 1972: *Geography: A Modern Synthesis*, Harper & Row, New York
3. Park, C., 1997: *The Environment*, Routledge, London
4. Rozenblat, Celine., Pumain., Denise and Velasquez., Elkin Eds. (2018): *International and Transnational Perspectives on Urban Systems*, Springer, Japan, pages 393.
5. Singh, S., 1991: *Environmental Geography*, PustakBhawan, Allahabad
6. Strahler, A.N. & A.H. Strahler, 1976: *Geography and Man's Environment*, John Willey, New York

### Learning outcomes:

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

- The course will give a detailed understanding about various aspects of human geography
- It will help to understand the humanistic perspective and its dimensions in Geography with relation the physical surrounding.

<b>Paper III Core Course</b>	<b>POPULATION AND SETTLEMENTS GEOGRAPHY</b>			<b>Subject Code:</b>
	<b>L-T-P-C: 4-1-0-5</b>	<b>Credit Units: 5</b>	<b>Scheme of Evaluation: (T)</b>	<b>GEO162C1 03</b>

**Learning Objective:**

- To make the students aware of basic concepts of Population and Settlement Geography.
- To make the clear exposition of spatial and structural characteristics of human settlements.
- To diagnose issues related to population and settlements.

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Field of Population Geography, key concepts of Population, Geography: under population, optimum population, over population, components of population change: fertility, mortality and migration	12
Unit 2	Population Growth and Distribution: World and India, Influence of population distribution, Measures of population density and distribution, Demographic transition model and theory of population growth by Malthus, Population Resource Relationship	12
Unit 3	Defining the field and scope of Settlement Geography, Types of rural settlement, classification of urban settlement, functional classification of towns, Law of primate city and rank size rule.	12
Unit 4	Concept of urbanization and westernisation, rural-urban fringe, city region, settlement hierarchy of central place theory (Christaller and Losch)	12
<b>Total</b>		<b>48</b>

**Text Books Suggested:**

1. Singh R.Y. ( Rep. 2010 ) - Geography of Settlements, Sharda Pustak Bhawan, Allahabad
2. Chandna R. C. (Rep.2010) – *A Geography of Population, Concepts, Determinants and Patterns*, Kalyani Publishers, New Delhi.
3. Maurya S.D (Rep. 2018): *Settlement Geography*, Sharda Pustak Bhawan, Allahabad
4. Sandram, K. V. and Nangia, S., (eds): *Population Geography*, Heritage Publishers, New Delhi. Inc., New York.

**Reference books:**

1. Clarke, J. I., 1972: *Population Geography*, Pergamon Press, Oxford.
2. Peters, G. L. and Larkin, R. P., 1979: *Population Geography: Problems, Concepts and Prospects*, Kendall/ Hunt Iowa.
3. Trewartha, G. T., 1969: *A Geography of Population: World Pattern*, John Wiley & Sons.
4. Woods, R., 1979: *Population Analysis in Geography*, Longman, London.
5. Robinson, H., 1981: *Population and Resources*, Macmillan Press, London

**Learning outcomes:**

By the end of this course the students will be able to:

- Understand the definition, basic concepts and field of Population and Settlement Geography
- Figure out the fundamental processes associated with Population and Settlement Geography



<b>Paper IV Core Course</b>	<b>CARTOGRAPHIC TECHNIQUES</b>			<b>Subject Code: GE0162C114</b>
	<b>L-T-P-C: 0-0-6-3</b>	<b>Credit Units: 3</b>	<b>Scheme of Evaluation: (P)</b>	

### **Learning Objectives:**

This course intends to make the students develop skills in:

- Reading and interpretation of topographical maps, weather maps
- Drawing and interpretation of graphs and preparation of qualitative and quantitative thematic maps
- Preparation of graticules for drawing maps using selected map projection systems

### **Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Map: Classification and Types : (1) isopleths, choropleths map, thematic maps and their types, Chorochromatic map; dot map	12
Unit 2	Map scales and types: Drawing of Graphical Scale for Miles / Km from a given R. F.); Comparative Scale of Mile and Kilometre from a given R. F. Representation of land use / religious groups/ any suitable distribution by drawing of proportionate pie charts / Urban population by sphere graph	12
Unit 3	Interpretation of topographic maps in terms of physical and cultural features and drawing of transect chart, Measurement of distance, direction between any two places and computation of area (by graphical / geometric or instrumental techniques) in topographic map	12
Unit 4	Diagrammatic representation of data-line, bar, circle; Interpretation of weather maps , Analysis of Slope by Wentworth's method, profile mapping and transect chart	12
<b>Total</b>		<b>48</b>

### **Text Books:**

1. Mishra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi.
2. Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
3. Sarkar, A. (2015) Practical Geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
4. Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers
5. Talukdar. S, 2010 Introduction to Map Projections.

### **Reference Books:**

1. Anson R. and Ormelling F. J., 1994: International Cartographic Association: Basic Cartographic Vol. Pregmen Press. Delhi.
2. Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.
3. Loxton J., 1980: Practical Map Production, John Wiley.
4. Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
5. Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York.
6. Steers J. A., 1965: *An Introduction to the Study of Map Projections*, London

### **Learning Outcomes:**

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

- Prepare graphs / charts, cartograms and thematic maps based on socio-economic, cultural and climatic data
- Interpret topographic and weather maps
- Prepare reference grids for drawing maps using map projection systems
- Use and give importance to maps for regional development and decision making

**B.A./B. Sc. (Generic Elective) Course in Geography: Semester-I**

<b>Paper: GE I Generic Elective</b>	<b>SOCIAL AND POLITICAL GEOGRAPHY</b>			<b>Subject Code:  GEO162G101</b>
	<b>L-T-P-C: 3-0-0-3</b>	<b>Credit Units: 3 (T)</b>	<b>Scheme of Evaluation:</b>	

**Learning Objectives:**

The course aims to make student:

- Understand the basic concepts related to social and cultural geography in geographical framework
- Understand the political system and geopolitics of the world in spatial context

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Concept of social differentiation, social structure and social stratification as reflected in race, tribe, caste, language, dialect and religion in India; concepts of social well-being, Concept of Space: Types and characteristics of space.	6
Unit 2	Review of five year plans and area plans towards social policy in India; Strategies to improve social well-being in tribal, hill, drought and flood prone areas; Spatial distribution of social groups in India	6
Unit 3	Nature, scope and subject matter of political geography Approaches to the study of political geography, The field and school of thoughts in political geography: landscape school, ecology school	6
Unit 4	Concepts in political geography: frontier and boundary (with reference to India), lebensraum, state and nation, core - periphery and capital, buffer zone, federal state, Colonialism, desalinization, theories of Rim-land and Heartland.	6
<b>Total</b>		<b>24</b>

**Text Books suggested:**

1. Sen, J (2016): A text book of Social and Cultural Geography
2. Dwiveda R. L. (2019) : Fundamentals of Political Geography
3. Pounds N. J. G. (1972): *Political Geography*, McGraw Hill, New York

**Reference Books:**

1. John R. S., 1982: An introduction to Political Geography, Routledge, London
2. Ahmad, A., 1999: Social Geography, Rawat Publication, Jaipur and New Delhi
3. Ahmad, A. (ed), 1993: Social Structure and Regional Development: A Social Geography perspective, Rawat Publication, Jaipur

**Learning Outcomes:**

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

- Understand the definition, basic concepts and field of the subject
- Understand the social, cultural and political concept in a broader and analytical manner
- Analyse the socio-cultural and political theme in the geographical dimensions.

<b>Paper:</b> <b>GE II</b> <b>Generic</b> <b>Elective</b>	<b>PHYSICAL GEOGRAPHY</b>		<b>Subject</b> <b>Code:</b>
	<b>L-T-P-C: 3-0-0-3</b>	<b>Credit Units: 3</b>	<b>Scheme of Evaluation: (T)</b> <b>GE0162G102</b>

### Learning Objectives:

The course aims to make student:

- Aware about physical surroundings (land forms, climate, ecosystems and oceanic land forms) their processes and patterns on earth's surface
- Acquire knowledge on Ecological balance, Global climatic changes and consequences

### Detailed Syllabus:

Modules	Topics and Course Content	Periods
Unit 1	Nature, Scope and branches of Physical Geography; Processes of landform development - Exogenic and endogenic processes; Earth materials- Composition of the earth's crust, Rocks and minerals (3); Concept of Cycle of Erosion (1)	6
Unit 2	The lithosphere and Plate Tectonics; Distribution of plants and animals, Structure, functioning and material cycles of Ecosystem, Ecological Balance, Traditional ecological knowledge	6
Unit 3	Elements and factors of weather and climate; Structure and Composition of Atmosphere; Air Circulation, Pressure Systems, Cyclones and anticyclones, Global Climatic patterns and Climatic changes and consequences.	6
Unit 4	Bottom Configuration of oceans with special reference to Atlantic Ocean, Distribution of salinity, temperature and ocean deposits and resources, ocean Currents .	6
		<b>24</b>

### Text Books suggested:

1. Strahler, A. N. and Strahler, A. H. ,1989: *Elements of Physical Geography* (4<sup>th</sup> Edition), John Wiley & Sons, New York.
2. Strahler, Alan, 2013: *Introduction to Physical Geography*, Wiley, New York
3. Dayal, P. (2<sup>nd</sup> Ed.) 1996, *A Textbook of Geomorphology*, Shukla Book Depot, Patna
4. Kale V. S. and Gupta A., 2001: *Introduction to Geomorphology*, Orient Longman, Hyderabad.
5. Singh, S. 2020: *Physical Geography*, Pravalika Publications, Allahabad.

### Reference Books:

1. Hussain, M.: *Fundamentals of Physical Geography*, Rawat Publications, Jaipur
2. Raina, N. S.: *Contemporary Physical Geography*, Rawat Publications, Jaipur
3. Khullar, D. R. , 2012: *Physical Geography*, Kalyani Publishers, New Delhi.
4. Lal, D. S, 2009: *Physical Geography*, Sharada Pustak Bhawan, Allahabad

### Learning Outcomes:

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

- Understand physical processes and the resultant environment and its impact of which shapes our life on planet earth.
- Understand ecological, climatic and atmospheric phenomena of the earth.

## B.A/B. Sc. (Honours) Course in Geography: Semester-II

<b>Paper I Core Course</b>	<b>CLIMATOLOGY AND OCEANOGRAPHY</b>	<b>Subject Code:</b>
	<b>L-T-P-C: 4-1-0-5      Credit Units: 5      Scheme of Evaluation: (T)</b>	<b>GEO162C20 1</b>

### Learning Objectives:

- Understand the atmospheric elements, processes and resultant weather and climates
- Comprehend the impact of climates on planet earth.
- Acquainted with the oceanic processes, ocean floor topography and marine resources.

### Detailed Syllabus:

Modules	Topics and Course Content	Periods
Unit 1	The structure and composition of Earth's atmosphere; Elements of weather and climate; Factors affecting the distribution of temperature; Vertical and horizontal and seasonal distribution of temperature; Insolation and heat budget; Temperature inversion; Atmospheric pressure and circulation of planetary winds; Air masses and their characteristics	12
Unit 2	Cyclones: Tropical Cyclones, Temperate Cyclones, Monsoon - Origin and Mechanism, Jet Streams; Atmospheric Moisture: Evaporation, Humidity, Condensation, Fog and Clouds, Precipitation Types, Stability and Instability; Climatic Regions, Climate change and global warming, El Nino.	12
Unit 3	Ocean floor topography of Indian, Atlantic and Pacific oceans; Oceanic water Movements: Waves, Currents, Tsunamis and Tides.	12
Unit 4	Ocean Salinity and Temperature: Distribution and Determinants; Coral Reefs and Marine Deposits and Ocean Resources.	12
<b>Total</b>		<b>48</b>

### Text Books:

1. Barry, R. G. and Carleton, A. M., 2001: *Synoptic and Dynamic Climatology*, Routledge, UK.
2. Barry, R. G. and Chorley, R. J., 1998: *Atmosphere, Weather and Climate*, Routledge, New York.
3. Critchfield, H. J., 1987: *General Climatology*, Prentice-Hall of India, New Delhi
4. Lal, D.S., 2001, *Climatology*, Chaitanya Publishing House, Allahabad
5. Singh, S. *Climatology*, 2007, Sharada Pustak Bhawan, Allahabad
6. Strahler, Arthur. N., 1987: *Modern Physical Geography*, John Wiley and Sons, New York, Singapore.
7. Singapore.
8. Strahler, A., 2018: *Introducing Physical Geography*, John Wiley and Sons, New York, Singapore.
9. Trewartha G. T. and Horne L. H., 1980: *An Introduction to Climate*, McGraw-Hill.
10. Kershaw S., 2000: *Oceanography: An Earth Science Perspective*, Stanley Thornes, UK.
11. King C. A. M., 1962: *Oceanography for Geographers*, Edward Arnold.
12. Sharma R. C. and Vatal M., 1980: *Oceanography for Geographers*, Chaitanya Publishing House, Allahabad.
13. Thurman H. V., 1996: *Essentials of Oceanography*, Prentice-Hall, New Jersey

### Reference Books:

1. Anikouchine W. A. and Sternberg R. W., 1973: *The World Oceans: An Introduction to Oceanography*, Prentice-Hall.
2. Batten L. J., 1979: *Fundamentals of Meteorology*, Prentice-Hall Inc., Englewood Cliffs, New Jersey.

3. Boucher K., 1975: Global Climates, Halstead Press, New York.
4. Garrison T., 1998: Oceanography, Wordsworth Company, Belmont.
5. Gerald S., 1963: General Oceanography: An Introduction, John Willey & Sons, New York.
6. Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey.
7. Pinet P. R., 2008: Invitation to Oceanography (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.
8. Oliver J. E. and Hidore J. J., 2002: Climatology: An Atmospheric Science, Pearson Education, New Delhi.

**Learning Outcomes:**

By the end of this course the students will be able to:

- Understand the elements of weather and climate and its impacts at different scales.
- Comprehend the climatic aspects and its bearing on planet earth.
- Understand the oceanic process and availability of resources.

<b>Paper II Core Course</b>	<b>GEOGRAPHY OF DEVELOPMENT OF INDIA</b>			<b>Subject Code:</b>
	<b>L-T-P-C: 4-1-0-5</b>	<b>Credit Units: 5</b>	<b>Scheme of Evaluation: (T)</b>	<b>GEO162C20 2</b>

**Learning Objectives:**

- To make the students aware of regional basis and significance of India
- To develop the basic ideas of position of India in global context

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	India as a geographical entity, Location and Situation of India, Physiographic divisions of India, Climate : characteristics and classification, soil , drainage and natural vegetation, regionalisation of India by R.L Singh	12
Unit 2	Population : distribution and growth, Social structure and distribution: by race, caste, religion, language , tribes and its correlates.	10
Unit 3	Mineral and power resources and development: Distribution and utilization of iron ore, coal, petroleum and Agricultural Production of Rice, Wheat, Cotton and Sugarcane, agro-climatic regions of India	14
Unit 4	Spatial Pattern of Industrial Development: Automobile and Information Technology, Industrial Regions in India	12
<b>Total</b>		<b>48</b>

**Text Books:**

- Singh, R. L., (ed), 1971: **India: A Regional Geography**, National Geographical Society of India, Varanasi
- Bhatt, L. S., 1973: **Regional Planning in India**, Statistical Publishing Society, Calcutta
- Tirtha R. & Gopal Krishna, 1996: **Emerging India** Reprinted by Rawat Publications, Jaipur

**Reference Books:**

- Dreze, Jean & Amartya Sen (ed.), 1996: **India Economic Development and Social opportunity**, Oxford University Press, New Delhi.
- Kundu A. Raza Moonis, 1982: **Indian Economy: the Regional Dimension**. Spectrum Publishers, New Delhi.
- Robinson, Francis, 1989 : The **Cambridge Encyclopaedia of India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan & Maldives**, Cambridge University Press, London.

**Learning Outcome:**

By the end of this course the students will be able to

- Understand the principles and concepts including techniques involved in India as a regional unit
- Understand various prospects of India
- Understand and analyse the position of India in global prospects

<b>Paper III Core Course</b>	<b>SOIL AND AGRICULTURAL GEOGRAPHY</b>		<b>Subject Code:</b>
	<b>L-T-P-C: 4-1-0-5</b>	<b>Credit Units: 5</b>	<b>Scheme of Evaluation: (T)</b>
			<b>GEO162C20 3</b>

**Learning Objectives:**

- To make the students aware of basic concepts of soil and agricultural geography
- To understand the regional structure of economic activities related to soil and agriculture
- To make the students aware regional basis and significance of Soil

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Soil forming factors: Parent material, organic, climatic, topographic, spatio-temporal dimensions; Processes of soil formation and soil development: Physical, biotic and chemical; Soil profile development; Soil Resource: Definition, types and Distribution	12
Unit 2	Physical properties of soils: Morphology, texture, structure, water, air, temperature and other properties of soil; chemical properties of soil, utilisation and problem of soil resource, soil management	12
Unit 3	Economic Geography of Agriculture, Place of agriculture in global economy, Agricultural System and Regions of the World and India, Types of agriculture, Von Thunen Model of Land Use Planning.	12
Unit 4	Concept of crop combination, diversification and rotation; International trade of Food grains and cash crops.	12
	<b>Total</b>	<b>48</b>

**Text Books:**

1. Roy. and Mukherjee, S. (2nd Edition),1993 : *Economic Geography*, Central Education Enterprises, Calcutta.
2. Sushkin, Yulian, G., 1980: *Economic Geography: Theory and Models*, Progress Publishers, Moscow.
3. Symons, L., 1979: *Agricultural Geography*, West view Press, Colorado

**Reference Books:**

1. Bunting, B. T., 1967: *The Geography of Soil*, Hutchinson, London.
2. Hugget, R. J., 1988: *Fundamentals of Biogeography*. Routledge, London.
3. Singh, S. 1991: *Environmental Geography*, Prayag Publications, Allahabad

**Course Outcome:**

At the end of the course the students will understand:

- The basic theme and meaning of Soil Geography and various economic activities related to agriculture.
- Understand the principles of soil and biogeography
- Understand various concepts related to soil science and its close association with agricultural practices on a geographical basis.

<b>Paper IV Core Course</b>	<b>FUNDAMENTALS OF GEOINFORMATICS</b>		<b>Subject Code:</b>
	<b>L-T-P-C: 0-0-6-3</b>	<b>Credit Units: 3</b>	<b>Scheme of Evaluation: (P)</b>
			<b>GEO162C21 4</b>

#### **Learning Objectives:**

- The course aims to make student:
- Understand the data, tools and technology and applications of Geoinformatics - GIS, Remote Sensing and GPS
- Develop skills in mapping and analysis using Geospatial Technology (Geoinformatics)

#### **Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Geoinformatics- Meaning and scope, The Earth: shape, size, and earth models; Referencing systems; Definition of map, map properties, Geospatial data types and structure and their characteristics; Georeferencing a scanned map <b>(1 Exercise)</b> ; Creation of vector data layers - point, line and polygon and map layout <b>(2 Exercises)</b> ;	10
Unit 2	Vector data editing; Vector Attribute database preparation; Basics of spatial and non-spatial / attribute database, relational database; Attribute mapping / thematic mapping of various attributes of point, line and polygon attributes <b>(3 Exercises)</b> .	14
Unit 3	Basic concept of Remote Sensing; Satellites – geostationary and remote sensing (Land sat and IRS) and Sensors, Resolution (spatial, spectral, radiometric and temporal) - <b>(1 Exercise)</b> Data characteristics, data acquisition and analysis techniques - visual interpretation <b>(2 Exercises)</b> ; Important areas of applications; Global Position System (GPS) and applications: Mapping of utilities and services <b>(1 Exercise)</b>	12
Unit 4	Mapping, visualization, and analysis of Geospatial data: (a) Digital elevation data – Topographic map/GLOBE/GTOPO30 /SRTM - <b>(2 Exercises)</b> (b) Remote Sensing data- Preparation of Land use / Land cover (LU/LC) map from LANDSAT and IRS <b>(2 Exercises)</b> (c) Aerial photograph and its uses - <b>(1 Exercise)</b>	12
	<b>Total</b>	<b>48</b>

#### **Text Books:**

1. Burrough, P.A. and Mc Donnel, R. A., 1998: **Principles of Geographical Information Systems**, Oxford University Press.
2. De Mars, M. N., 1999: **Fundamentals of Geographic Information Systems**, John Wiley & Sons Inc., New York.
3. Jensen, J. R., 2011: **Remote Sensing of the Environment – An Earth Resource Perspective**, 3<sup>rd</sup> Impression, Pearson, New Delhi.

#### **Reference Books:**

1. Curtis, H., 2000: **The GPS Accuracy Improvement Initiative**, GPS World, June, 20
2. Chetry, N., 2019 (Ed): **A Glimpse of Geospatial Technology and Applications**, Eastern Book House, Guwahati
3. Sabins, Floyd F., 1987: **Remote Sensing Principles and Interpretation**, W.H. Freeman and Company, New York.

#### **Learning Outcomes:**

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



- Appreciate the strength and application of Geospatial Technology
- Map the resources, their location and availability
- Apply this knowledge for sustainable development

**NOTE: Software packages: ArcGIS / QGIS /ILWIS, ERDAS Imagine/SAGA/ILWIS.** Record of the exercises (duly signed by the teacher concerned within specified date for each exercise) in the form of Practical Note Book to be made by the students is mandatory. Records of all exercises of each unit is compulsory. Maximum 20-25% marks of Semester End Examination may be kept for viva and practical note book with equal weightage on each aspect. Rest of the marks may be more or less / equally distributed to each exercise depending on difficulty level. Semester End Examination will be of 4 (four) hours duration with maximum 2 (two) exercises only from any of the units

**B. A. / B. Sc. (Generic Elective) Course in Geography: Semester-II**

<b>Paper GE-2 Core Course</b>	<b>INTRODUCTION TO GEOSPATIAL TECHNOLOGY</b>			<b>Subject Code:</b>
	<b>L-T-P-C: 3-0-0-3</b>	<b>Credit Units: 3</b>	<b>Scheme of Evaluation: (T)</b>	<b>GEO162G202</b>

**Learning Objectives:**

The course aims to make student:

- Aware about technological revolution in mapping and analysing of resources and infrastructure using Geospatial Technologies
- Acquire practical knowledge and skill in Remote Sensing, GIS and GPS

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Introduction: Definitions, Concept and Historical development of Geospatial Information Technology; Geospatial Data: Data Products, Web data sources; Data types and structures (Raster, Vector and TIN) and their characteristics	6
Unit 2	Basics of Geographical Information Systems (GIS); Ellipsoids and Coordinate Systems, Database Management Systems, Spatial data registration and projection; Point and line data interpolation and modelling	6
Unit 3	Basic concept of Remote Sensing (RS); Electro-Magnetic Radiation (EMR) Principles; Satellites –geostationary and remote sensing (Landsat and IRS) and Sensors, Resolution (spatial, spectral, radiometric, and temporal); Data interpretation - visual and digital techniques; Important areas of applications	6
Unit 4	Introduction to Global Positioning System: Working Principles and major areas of applications; Geospatial Information Technology for Natural Resource Monitoring, Management and Sustainable Development	6
<b>Total</b>		<b>36</b>

**Text Books:**

1. Burrough, P.A. and Mc Donnel, R. A., 1998: *Principles of Geographical Information Systems*, Oxford University Press.
2. De Mars, M. N., 1999: *Fundamentals of Geographic Information Systems*, John Wiley & Sons Inc., New York.
3. Jensen, J. R., 2011: *Remote Sensing of the Environment – An Earth Resource Perspective*, 3<sup>rd</sup> Impression, Pearson, New Delhi.

**Reference Books:**

1. Curtis, H., 2000: *The GPS Accuracy Improvement Initiative*, GPS World, June, 20
2. Chetry, N., 2019 (Ed): *A Glimpse of Geospatial Technology and Applications*,
3. Eastern Book House, Guwahati
4. Sabins, Floyd F., 1987: *Remote Sensing Principles and Interpretation*, W.H. Freeman and Company, New York.

**Learning Outcomes:**

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

1. Appreciate the basic concepts and historical development of geographical information technology
2. Acquire knowledge on data structure, functions and working of geographical information technology
3. Apply the geographical information technology for sustainable development of the nation

<b>Paper GE-2 Core Course</b>	<b>REGIONAL DEVELOPMENT OF NORTHEAST INDIA</b>		<b>Subject Code: GEO162G202</b>
	<b>L-T-P-C: 3-0-0-3</b>	<b>Credit Units: 3</b>	

**Learning objective:**

- To make the students aware of the regional basis of Northeast India and Assam
- To develop the basic ideas of position of Northeast India and Assam in Indian context

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	North East India: location and situation: Physiographic divisions of India, Climate: characteristics and classification, soil , drainage and natural vegetation	6
Unit 2	Population growth, distribution, population characteristics, Social structure and distribution: by race, caste, religion, language , tribes	6
Unit 3	Natural resources, their utilization and development: Coal, petroleum, natural gas and forests in North East India; constraints of Industrial development	6
Unit 4	Transport and communication system, Disparity in socio-economic development; socio-economic problems, problems and prospects of tourism	6
<b>Total</b>		<b>36</b>

**Text Books:**

- Dutta Ray, B., et. al (eds), 2000: *Population, Poverty and Environment in North East India*, Concept Publishing Co., New Delhi.
- Taher M. and Ahmed, P., 2000: *Geography of North East India*, Mani-Manik Prakash, Guwahati.
- Bhagabati, A. K. *et al*, 2001: *Geography of Assam*, Rajesh Publications, New Delhi.

**Reference books:**

- Barua, P. C., 1990: *Development Planning of North East India*, Mittal Publications, New Delhi.
- North East India Geographical Society: *North Eastern Geographer*, Department of Geography, Gauhati University.

**Learning Outcomes:**

By the end of this course the students will be able to

- Understand the concepts involved explaining India as a regional unit
- Understand various prospects of northeast India and Assam

**B.A./B. Sc. (Honours) Course in Geography: Semester-III**

<b>Paper I Core Course</b>	<b>ECONOMIC GEOGRAPHY</b>		<b>Subject Code: GEO162C30 1</b>
	<b>L-T-P-C: 3-1-0-4</b>	<b>Credit Units: 4</b>	

**Learning Objectives:**

- This paper intends to introduce students to the principles and significance of economic geography
- It seeks to develop new insights among students on the relevance of economy and geography and associated problems in contemporary times.

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Meaning and scope of Economic Geography; Approaches in Economic Geography; Concept and classification of economic activity; factors influencing economic activities.	10
Unit 2	Primary Activities: Subsistence and Commercial agriculture, forestry, fishing and mining; Secondary Activities: Manufacturing (Cotton Textile, Iron and Steel), Concept of Manufacturing Regions; Special Economic Zones and Technology Parks; Tertiary Activities: Transport, Trade and Services.	14
Unit 3	Theories of Economic Geography: Industrial location theories of Weber, E.M. Hoover, A. Losch, A. Pred and D. M. Smith; Theories of economic development by Myrdal and Rostow.	14
Unit 4	Economic Geography of Resources; Global pattern of distribution and production of selected resources: Food grains, iron ore, coal, petroleum and nuclear power; Global economic scenario.	10
<b>Total</b>		<b>48</b>

**Text Book:**

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.

**References:**

1. Wheeler J. O., 1998: *Economic Geography*, Wiley..
2. Durand L., 1961: *Economic Geography*, Crowell.
3. Bagchi-Sen S. and Smith H. L., 2006: *Economic Geography: Past, Present and Future*, Taylor and Francis.
4. Willington D. E., 2008: *Economic Geography*, Husband Press.
5. Clark, G. L., Feldman, M. P., Gertler, M. S., & Williams, K. (Eds.). (2003). *The Oxford handbook of economic geography*. Oxford University Press.

**Learning outcomes:**

- The paper will be useful for students in developing ideas on how geographical aspects organise economic space
- This paper will offer perspectives to students if they wish to pursue a research programme.

<b>Paper II Core Course</b>	<b>GEOGRAPHY OF TOURISM</b>		<b>Subject Code:</b>
	<b>L-T-P-C: 3-1-0-4</b>	<b>Credit Units: 4</b>	<b>Scheme of Evaluation: (T)</b>
			<b>GEO162C30 2</b>

**Learning Objectives:**

- To understand the basic theme and concepts of tourism geography
- To identify the geographical components of tourism
- To appreciate the methods of tourist flow in relation to the geographical setting of an area

**Detailed Syllabus:**

Modules	Topics and Course Content	Periods
Unit 1	Meaning, Scope and contents of Geography of tourism: Definition of tourism geography; Importance of geography of tourism; Types of tourism; Motivations of tourism; Components of Tourism; Tourist map.	10
Unit 2	Impacts of tourism and Sustainable tourism development: Environmental, Social, Cultural, and Economic impacts of tourism; Definition and principles of sustainable tourism development; Concept of carrying capacity; Concept of Responsible tourism; Global environmental change and tourism.	10
Unit 3	Tourism resources: Destination and resource factors; Mass tourism vs. alternative tourism; Ecotourism; Spatial pattern of Tourism Resources in India- National Parks, Wildlife sanctuaries, Tiger Reserves, Biosphere reserves & wetlands, history and culture	14
Unit 4	Spatial aspects in Tourism: Important tourist destinations of India; Tourist destinations in North America, South America, Europe, Africa, Antarctica, Australia and Asia; Travel Flows: models, trends and types; latitude, longitude and international date line.	14
	<b>Total</b>	<b>48</b>

**Text Book:**

1. Bhatia, A. K., 1996: *Tourism Development: Principles and Practices*, Sterling Publishers, New Delhi.
2. Milton, D., 1993: *Geography of World Tourism* Prentice. Hall, New York.
3. Sharma J. K. (ed.), 2000: *Tourism Planning and Development - A new perspective*, Kanishka Publishers, New Delhi.

**References:**

1. Robinson, H., 1996: *A Geography of Tourism*. Macdonald and Evans, London, 1996.
2. Williams Stephen, 1998: *Tourism Geography*, Routledge, Contemporary Human Geography Series, London.
3. Shaw G. and Williams A. M., 1994: *Critical issues in Tourism-A Geographical Perspective*, Oxford: Blackwell.

**Learning outcomes:**

- The paper will be useful for students in developing ideas on how geographical aspects organise economic space
- This paper will offer perspectives to students if they wish to pursue a research programme.

<b>Paper III Core Course</b>	<b>QUANTITATIVE METHODS IN GEOGRAPHY</b>	<b>Subject Code:</b>
	<b>L-T-P-C: 0-0-8-4      Credit Units: 4      Scheme of Evaluation: (P)</b>	<b>GEO162C31 3</b>

**Learning Objectives:**

- This **practical paper** helps to understand the importance of data in geography.
- It deals with the methods and techniques of data collection, data tabulation, data interpretation and analysis.
- This paper provides an understanding of the pure and applied nature of Geography along with the key elements in the discipline.

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Use of Data in Geography, Significance of Statistical Methods in Geography; Sources of Data, Scales of Measurement (Nominal, Ordinal, Interval, Ratio).	10
Unit 2	Summarization of data: Measures of Central Tendency (Mean, Median and Mode), Dispersion (Standard Deviation, Variance and Coefficient of Variation).	14
Unit 3	Sampling: Purposive, Random, Systematic and Stratified and their utilities in geographical data collection and analysis.	12
Unit 4	Time series analysis techniques: Moving average and Least Squares Methods; Correlation analysis (Spearman's Rank correlation and Karl Pearson's product moment correlation coefficient); Regression analysis in geographic studies (linear and non-linear); regression residual mapping.	12
<b>Total</b>		<b>48</b>

**Text Book:**

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. Gregory, S. (2014). *Statistical methods and the geographer*. Routledge.
4. Hammond P. and McCullagh P. S., 1978: *Quantitative Techniques in Geography: An Introduction*, Oxford University Press.
5. King L. S., 1969: *Statistical Analysis in Geography*, Prentice-Hall.

**References:**

1. Mahmood A., 1977: *Statistical Methods in Geographical Studies*, Concept.
2. Monkhouse, F.J. & Wilkinson, H.R., 1989: *Maps and Diagrams*, B.I Publication, New Delhi
3. Pal S. K., 1998: *Statistics for Geoscientists*, Tata McGraw Hill, New Delhi.
4. Sarkar, A. (2013) *Quantitative geography: techniques and presentations*. Orient Black Swan Private Ltd., New Delhi
5. Silk J., 1979: *Statistical Concepts in Geography*, Allen and Unwin, London.
6. Spiegel M. R.: *Statistics, Schaum's Outline Series*.
7. Yeates M., 1974: *An Introduction to Quantitative Analysis in Human Geography*, McGraw Hill, New York.

**Learning outcomes:**

- Thorough understanding of the statistical methods and quantitative techniques used in Geography ;
- Understanding of data tabulation, sample size and types and the methods of handling data in the field.

**B.A./B. Sc. (Honours) Course in Geography: Semester-IV**

<b>Paper I Core Course</b>	<b>SOCIAL AND POLITICAL GEOGRAPHY</b>			<b>Subject Code:</b>
	<b>L-T-P-C: 3-1-0-4</b>	<b>Credit Units: 4</b>	<b>Scheme of Evaluation: (T)</b>	<b>GEO162C40 1</b>

**Learning Objectives:**

- This paper intends to introduce students to the principles and significance of economic geography
- It seeks to develop new insights among students on the relevance of economy and geography and associated problems in contemporary times.

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Nature of Social Geography: Meaning, scope and subject matter of Social Geography; Growth and development of Social Geography; Meaning and characteristics of Society; Types of Society: Tribal, agrarian and industrial; Community: meaning and characteristics; Basic concept of social space, social group, social hierarchy, social inequality and social justice	12
Unit 2	Elements of Society: Social Groups: meaning, classification and characteristics; Importance of social groups; Spatial distribution of social groups in India	12
Unit 3	Nature of Political Geography: Meaning and scope of political geography; Approaches to the study of political geography; The field and school of thoughts in political geography: Landscape school and Ecology school	12
Unit 4	Issues and concepts of Political Geography: Frontier and boundary (with reference to India), lebensraum, state and nation, core-periphery and capital, buffer zone, federal state, Rim-land and Heartland; Mackinder's Heartland theory	12
<b>Total</b>		<b>48</b>

**Text Book:**

1. A Sen, J (2016): A text book of Social and Cultural Geography
2. Dwiveda R. L. : Fundamentals of Political Geography
3. Pounds N. J. G. (1972): **Political Geography**, McGraw Hill, New York.

**References:**

1. John R. S., 1982: **An introduction to Political Geography**, Routledge, London.
2. Ahmad, A., 1999: **Social Geography**, Rawat Publication, Jaipur and New Delhi.
3. Ahmad, A. (ed), 1993: **Social Structure and Regional Development: A Social Geography perspective**, Rawat Publication, Jaipur.
4. Noble, A. G. and Dutta, A. K. (eds): **India: Cultural Pattern and Processes**, West View Press, Colorado.

**Learning outcomes:**

By the end of this course the students will be able to:

- Understand the definition, basic concepts and field of the subject
- Understand the social, cultural and political concept in a broader and analytical manner
- Analyse the socio-cultural and political theme in the geographical dimensions.

<b>Paper II Core Course</b>	<b>ENVIRONMENTAL GEOGRAPHY</b>		<b>Subject Code:</b>
	<b>L-T-P-C: 3-1-0-4</b>	<b>Credit Units: 4</b>	<b>Scheme of Evaluation: (T)</b>
			<b>GEO162C40 2</b>

**Learning Objectives:**

- This paper intends to introduce students to the principles and significance of economic geography
- It seeks to develop new insights among students on the relevance of economy and geography and associated problems in contemporary times.

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Environmental Geography: Concept, Scope and Significance; Human-Environment Relationships: Historical Progression, Adaptation in different Biomes.	14
Unit 2	Eco-system: Concept, types and components, structure and functions; Ecology – Concept and Principles	14
Unit 3	Major Global Environmental Problems: Pollution, Deforestation, Desertification, Global Warming, Bio-Depletion	10
Unit 4	Environmental Programmes and Policies – Global, National and Local levels; Management of Environment and Resources; Importance of Environmental Impact Assessment.	10
	<b>Total</b>	<b>48</b>

**Text Book:**

1. Chandna R. C., 2002: *Environmental Geography*, Kalyani, Ludhiana.
2. Miller G. T., 2004: *Environmental Science: Working with the Earth*, ThomsonBrooksCole, Singapore.
3. Goudie A., 2001: *The Nature of the Environment*, Blackwell, Oxford.
4. MoEF, 2006: *National Environmental Policy-2006*, Ministry of Environment and Forests, Government of India.

**References:**

1. Odum, E. P. et al, 2005: *Fundamentals of Ecology*, Cengage Learning India.
2. Singh S., 1997: *Environmental Geography*, PrayagPustakBhawan, Allahabad.
3. Singh, R.B. (Eds.) (2009) *Biogeography and Biodiversity*. Rawat Publication, Jaipur
4. Singh, R.B. (1998) *Ecological Techniques and Approaches to Vulnerable Environment*, New Delhi, Oxford & IBH Pub

**Learning outcomes:**

- Detailed exposure of human-environment relationship
- In-depth knowledge of environmental issues at global, national, regional and local level.



<b>Paper III Core Course</b>	<b>FIELD TECHNIQUES AND MAP PROJECTION</b>		<b>Subject Code:</b>
	<b>L-T-P-C: 0-0-8-4</b>	<b>Credit Units: 4</b>	<b>Scheme of Evaluation: (P)</b>
			<b>GEO162C41 3</b>

### Learning Objectives:

- Understanding the importance of various surveying techniques in geographical study
- General understanding of preparation procedures of different types of plan and map
- An acquaintance of different surveying techniques for representation of various spatial objects/Phenomena.
- Various dimensions of field work and its role in geographical studies.
- Detailed analysis of different field techniques.
- Understanding of the report writing and field tools.
- Develop an understanding of the concepts regarding scale, map projections to suit map purposes

### Detailed Syllabus:

Modules	Topics and Course Content	Periods
Unit 1	Surveying: Plane and Geodetic Surveying; Concept of ground surveying; Conduct of surveying using Plane Table (Radial Method and Intersection Method) <b>(2 Exercises)</b> and Prismatic Compass (Open Traverse and Closed Traverse) <b>(2 Exercises)</b>	10
Unit 2	Field Work in Geographical Studies – Role, Value, Data and Ethics of Field-Work; Defining the Field and Identifying the Case Study – Rural / Urban / Physical / Human / Environmental <b>(1 Exercise)</b> ; Designing the Field Report – Aims and Objectives, Methodology, Analysis, Interpretation and Writing the Report	14
Unit 3	Field Tools and Techniques – Merits, Demerits and Selection of the Appropriate Technique; Observation (Participant / Non Participant), Questionnaires (Open/Closed / Structured / Non-Structured) <b>(1 Exercise)</b> ; Interview with Special Focus on Focused Group Discussions; Space Survey (Transects and Quadrants, Constructing a Sketch) <b>(2 Exercises)</b>	14
Unit 4	Construction of graticules and drawing of maps thereon along with their properties and uses: Zenithal Gnomonic Projection (Equatorial case), Lambert's Conical Equal-Area Projection, Mercator's Projection <b>(3 Exercises)</b>	10
	<b>Total</b>	<b>48</b>

### Text Book:

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. Steers, J. A., 1965: *An Introduction to the Study of Map Projection*, University of London, London.
7. Talukder, S., 2008: *Introduction to Map Projections*, EBH Publishers (India), Guwahati.

### References:

1. Robinson A., 1998: "Thinking Straight and Writing That Way", in *Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences*, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles. Special Issue on "Doing Fieldwork" *The Geographical Review* 91:1-2 (2001).
2. Stoddard R. H., 1982: *Field Techniques and Research Methods in Geography*, Kendall/Hunt.

3. Wolcott, H. 1995. *The Art of Fieldwork*. Alta Mira Press, Walnut Creek, CA

**Learning outcomes:**

- In-depth knowledge of different field techniques. Understanding the field ethics and different tools of field study.
- Develop understanding on scientifically designing and writing a field report.
- Understand the principles and techniques of surveying and map projection.

**B.A./B. Sc. (Honours) Course in Geography: Semester-V**

<b>Paper I Core Course</b>	<b>REGIONAL PLANNING AND DEVELOPMENT</b>			<b>Subject Code:</b>
	<b>L-T-P-C: 5-1-0-6</b>	<b>Credit Units: 6</b>	<b>Scheme of Evaluation: (T)</b>	<b>GEO162C50 1</b>

**Learning Objectives:**

- To make the students aware of regional basis and significance of Regional planning
- This paper intends to introduce students to the rationale underlying the relevance of balanced regional development and spatial inequalities from geographical perspective.
- It seeks to develop new insights among students on the issue of development and associated regional disparities in development.

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Concept of region, regionalization, regionalism and regional development; Types of Regions; Meaning and purpose of regional planning; Approaches to regional planning	10
Unit 2	Identification of resource regions; Concept of Development: Growth versus development; Concept of sustainable development and balanced development, Case studies of regional planning exercises: National Capital Region and River basin planning- a case study from India	12
Unit 3	Decentralization and Multi-level planning - features of decentralised planning, decentralised planning in India, concept and procedures in multilevel planning; stages in the evolution of multi-level planning process, multi-level planning in India, Regional planning strategy under Five Year Plans, Regional Planning in India: Macro, meso and micro level planning; Local level planning and Panchayati Raj (GPDP); Participatory approach in planning; NITI Aayog	12
Unit 4	Disparity of Regional Development in India: Development indicators; Measuring level of development, Regional Development theories and models: Concept and basic ideas of Growth Pole Model of Perroux, Theory of Prebisch, Cumulative Causation Theory of Gunnar Myrdal, Stages of Economic Growth model of Rostow	14
	<b>Total</b>	<b>48</b>

**Text Book:**

1. Alden J. and R. Morgan, 1974: **Regional Planning: A Comprehensive View**, Leonard Hills Books, U.K.
2. Bhat, L. S., 1976: **Micro-Level Planning: A Case Study of Karnal Area, Haryana**, Concept Publishing Co., New Delhi.
3. Chand, M. and Puri, V. K. 1993: **Regional Planning in India**, Allied Publishers Limited, B/M Asraf, Ali Road, New Delhi-110002.
4. Chandna, . R. C., 2000: **Regional Planning: A Comprehensive Text**, Kalyani Publishers, New Delhi .

**References:**

1. Dickinson , R. E: **City, Region and Regionalism**,
2. Hall, P., 1975: **Urban and Regional Planning**, David and Charlos, London.
3. Hilborst,J. G. M. (1971) : **Regional Planning: A System Approach**, Notterdam University Press.
4. Mishra, R. P, 1992: **Regional Planning: Concept, Techniques, Policies and Case Studies**, Concept Publications, New Delhi.

**Learning outcomes:**

- Understand the principles and regional planning
- Understand various concepts related to regional planning on national and global perspective.
- Understand the strategic importance and applicability of planning in multi-level aspects
- Understand the theoretical insights and perspectives to students, if they wish to pursue a higher studies or research in future

<b>Paper II Core Course</b>	<b>PROJECT WORK</b>		<b>Subject Code:</b>
	<b>L-T-P-C: 0-0-2-6</b>	<b>Credit Units: 6</b>	<b>Scheme of Evaluation: (P)</b>
			<b>GEO162C50 2</b>

**Learning Objectives:**

- To understand how to approach a research problem and to formulate research objectives and research questions in proper perspective. In addition, knowledge of formulation of hypothesis and testing, framing of questionnaires, techniques of collection of both qualitative and quantitative data and their analysis.
- To develop understanding of the basics and utility of review of literature and preparation of research report.

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	<p>Identification of research problem / topic on any one of the following aspects (preferably of local area / Gram Panchayat / Revenue circle / District / State) during the 6th semester:- Any kind of geographical studies on physical / socio-economic / cultural issues / demographic problems and characteristics The topic selection / modification may be done just before the 4th Semester End Examination so that the data collection can be done during semester break.</p> <p style="text-align: center;">OR</p> <p>Internship in institutes, organizations, and firms / industry of repute in Northeast India.</p>	24
Unit 2	<p>Preparation of project report in prescribed format during 6th - 8th week of the commencement of course of 5th semester. Submission of the report after a week of the announcement of routine for 5th End Semester Examination. Final project presentation by each student using PowerPoint during on the scheduled date of viva-voce examination of this paper.</p> <p style="text-align: center;">OR</p> <p>Preparation of internship report in prescribed format during 6th - 8th week of the commencement of course of 5th semester. Submission of the report after a week of the announcement of routine for 5<sup>th</sup> End Semester Examination.</p>	24
	<b>Total</b>	<b>48</b>

**Note:** Students will work as an intern during the semester break for 4 weeks after 4th semester. Students not being able to obtain any internship will be assigned project work from the department.

**Text Books:**

As per the list of given in syllabus based on topic selected

**Reference Books:**

As per the list of given in syllabus based on topic selected

**Learning Outcomes:**

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

- Prepare and execute major project by collecting primary and/or secondary data,
- Improve the skill of organizing the study based on project / research objectives
- Process, analyse the data and write scientific project report

<b>DSE PAPER - I</b>	<b>GEOGRAPHY OF RURAL DEVELOPMENT</b>		<b>Subject Code:</b>
	<b>L-T-P-C: 5-1-0-6</b>	<b>Credit Units: 6</b>	<b>Scheme of Evaluation: (T)</b>
			<b>GE0162D501</b>

### **Learning Objectives:**

- This paper intends to introduce the students about basic concepts of rural development from the perspectives of Geography
- It seeks to develop new insights among students on the issue of rural development and associated regional disparities in development.
- To understand the rural development programmes in India

### **Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Rural Development: meaning and dimensions; Need for Rural Development studies in geography; Rural Poverty, Role of Zilla Parishad and Panchayats in Rural Development, Rural Finances – Banks, NABARD etc.	10
Unit 2	Concept of Village, Rural Settlement pattern, Rural Economic Base: Panchayati raj System, Agriculture and Allied Sectors, Seasonality and Need for Expanding Non-Farm Activities, Co-operatives	14
Unit 3	The Problem of Housing, housing types, low cost houses, the housing schemes in rural area, Dimensions of Rural unemployment and under employment; rural – Urban migration issues.	10
Unit 4	Sustainable Rural Development programmes in India: Drought Prone Area Programmes, Hill Area Development Programme, PMGSY, DDU-GKY, MGNREGA, Jan Dhan Yojana, DAY-NRLM, NHM, Samagra Siksha Abhiyan	14
	<b>Total</b>	<b>48</b>

### **Text Book:**

1. Gilg A. W., 1985: An Introduction to Rural Geography, Edwin Arnold, London.
2. Krishnamurthy, J. 2000: Rural Development - Problems and Prospects, Rawat Publs., Jaipur
3. Lee D. A. and Chaudhri D. P. (eds.), 1983: Rural Development and State, Methuen, London.
4. Misra R. P. and Sundaram, K. V. (eds.), 1979: Rural Area Development: Perspectives and Approaches, Sterling, New Delhi.
5. Misra, R. P. (ed.), 1985: Rural Development: Capitalist and Socialist Paths, Vol. 1, Concept, New Delhi.
6. Palione M., 1984: Rural Geography, Harper and Row, London.
7. Ramachandran H. and Guimaraes J.P.C., 1991: Integrated Rural Development in Asia – Learning from Recent Experience, Concept Publishing, New Delhi.

### **References:**

1. Robb P. (ed.), 1983: Rural South Asia: Linkages, Change and Development, Curzon Press.
2. UNAPDI 1986: Local Level Planning and Rural Development: Alternative Strategies. (United Nations Asian & Pacific Development Institute, Bangkok), Concept Publs. Co., New Delhi.
3. Wanmali S., 1992: Rural Infrastructure Settlement Systems and Development of the Regional Economy in South India, International Food Policy Research Institute, Washington, D.C.
4. Yugandhar, B. N. and Mukherjee, Neela (eds.) 1991: Studies in Village India: Issues in Rural Development, Concept Publs. Co., New Delhi.

### **Course Outcomes:**

- The students will be able to understand the basic concepts of rural development and various issues associated with it.
- The paper will be very useful for students preparing for various competitive examinations.

<b>DSE PAPER - II</b>	<b>GEOGRAPHY OF HEALTH</b>		<b>Subject Code:</b>
	<b>L-T-P-C: 5-1-0-6</b>	<b>Credit Units: 6</b>	<b>Scheme of Evaluation: (T)</b>
			<b>GE0162D502</b>

### **Learning Objectives:**

- To develop understanding on concept of health and geography of health as a field of study.
- To seek understanding on factors determining human health and occurrence of various types of diseases in relation to ecology.
- To seek information about human health in relation to global climate change in general and disease pattern in relation to varying environmental contexts in India in particular.

### **Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Geography of Health: Definition and significance; approaches of study: ecological, social, and spatial; dualism between medical geography and geography of health. Classification of diseases: genetic, zoonotic, communicable, non-communicable, occupational, deficiency diseases and malnutrition.	10
Unit 2	Disease ecology: ecology and human health; geographical factors affecting human health; factors influencing disease transmission (pathological, physical, environmental, social, cultural, and economic); Diffusion of diseases and their causes in varied biotic, physical, and cultural environments.	14
Unit 3	Disease occurrence: emergence, re-emergence, and persistence; modes of transmission of major diseases (Malaria, Japanese encephalitis, tuberculosis, hepatitis, AIDS, and COVID-19) and their broad global distribution. Healthcare systems: Meaning and components; Universal government-funded health system; Role of WHO and UNICEF in global health care; SDG3 for good health and Well-being.	14
Unit 4	Environment, human habit, and health: Basic concept and ideas relating to food habit and health, occupation and health, environmental degradation and health, lifestyle, and human health.	10
	<b>Total</b>	<b>48</b>

### **Text Book:**

1. Akhtar Rais (Ed.), 1990: Environment and Health Themes in Medical Geography, Ashish Publishing House, New Delhi
2. Anthamatten P, (2011), Introduction to the Geography of Health, Rawat Publications, Jaipur
3. Brown, T., McLafferty, S., Moon, G. (2010): A Companion to Health and Medical Geography, Wiley Blackwell, UK
4. Mishra, R.P. (1970): Medical Geography of India, National Book Trust of India

### **References:**

1. Cliff, A.D. and Peter, H., 1988 : Atlas of Disease Distributions, Blackwell Publishers, Oxford
2. Hardham T. and Tannav M.,(eds): Urban Health in Developing Countries; Progress, Projects, Earthgoan, London
3. Murray C. and A. Lopez, 1996: The Global Burden of Disease, Harvard University Press.
4. National Health Portal India <https://www.nhp.gov.in/healthprogramme/national-health-programmes>
5. Shaw, M., Dorling, D. and Mitchell, R, (2002) Health, Place and Society, Pearson, London

### **Learning outcomes:**

- Understanding of the concept of human health and healthcare from the perspective of geography.
- Acquiring knowledge about factors influencing human health and occurrence of diseases in varying ecological settings.
- Providing useful information about the impact of global climate change on human health and occurrence of various diseases in different ecological settings in India.

<b>DSE PAPER - III</b>	<b>REMOTE SENSING: PRINCIPLES AND APPLICATIONS</b>		<b>Subject Code:</b>
	<b>L-T-P-C: 5-1-0-6</b>	<b>Credit Units: 6</b>	<b>Scheme of Evaluation: (T)</b>
			<b>GE0162D503</b>

**Learning Objectives:**

- Understand the rationale behind use of remotely sensed data its advantages and disadvantages.
- Understand how GIS/GPS methodologies can be used to address spatial analysis from the theoretical perspective.

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Needs and applications of Aerial photography; Aerial photography platforms Aerial camera and film characteristics; Types of aerial photographs, Vertical air photographs – its geometry, scale and height measurements, stereoscopic measurements of aerial photographs; Image / photo interpretation keys / elements.	14
Unit 2	Earth observation satellites (EOS) and Remote Sensing (RS) satellites - orbital characteristics; Types and characteristics of sensors; Spatial, radiometric, spectral and temporal resolutions of RS data; Data products, characteristics and uses of selected Remote Sensing Satellites– LANDSAT, IRS, SPOT, Quickbird, GeoEye and Sentinel data	14
Unit 3	Electromagnetic radiation (EMR) principles, Major areas applications of remote sensing: Natural resource monitoring and management; Disaster management; Biomass estimation, Crop yield and acreage estimation.	10
Unit 4	Introduction to Digital Image Processing (DIP) tools and techniques: Data preparation processes and techniques; Image classification techniques (Supervised and Unsupervised)	10
	<b>Total</b>	<b>48</b>

**Text Book:**

1. Jensen, J. R., 2011: Remote Sensing of the Environment – An Earth Resource Perspective, 3rd Impression, Pearson, New Delhi
2. Joseph, George, 2005: Fundamentals of Remote Sensing, United Press India, Hyderabad.
3. Lilesand, T.M. and Kiefer, R.W., 2007: Remote Sensing and Image Interpretation, 6th Edition, John Wiley.
4. Rampal, K. K., 1999: Handbook of Aerial Photography and Interpretation, Concept Publishing Company, New Delhi-59.
5. Wolf, P. R., Dewitt, B. A., 2000: Elements of Photogrammetry With Applications in GIS, McGraw Hill, New York.

**Reference Books:**

1. American Society of Photogrammetry, 1960: Manual of Photographic Interpretation, Banta Publishing Co., Menasha, Wisconsin.
2. Barret, E. C. and Curtis, L.E., 1976: Introduction to Environmental Remote Sensing, Chapman Hill, London.
3. Chetry, N. (Editor), 2019: A Glimpse of Geospatial Technologies and Applications, EBH Publishers (India), Guwahati
4. Curran, Paul, J., 1985: Principles of Remote Sensing, Longman Group Ltd.
5. Sabins, Floyd F., 1987: Remote Sensing Principles and Interpretation, W.H. Freeman and Company, New York.



**Learning Outcomes:**

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

- Understand principles and applications of various remote sensing techniques including aerial photography
- Utilize remote sensing data products for minor and major projects on environmental / natural resource assessments and mapping, disaster and hazard management, urban planning, and many applications

**B.A./B. Sc. (Honours) Course in Geography: Semester-VI**

<b>Paper I Core Course</b>	<b>GEOGRAPHICAL THOUGHT</b>			<b>Subject Code:</b>
	<b>L-T-P-C: 5-1-0-6</b>	<b>Credit Units: 6</b>	<b>Scheme of Evaluation: (T)</b>	<b>GEO162C60 1</b>

**Learning Objectives:**

- To make the students understand the evolution and development of geography through ages
- To develop the basic ideas related to different schools and concept of geographical thought.

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Place of geography in the classification of knowledge: Defining the field of geography, relation of geography with other natural and social sciences, Dualism in Geography	10
Unit 2	Geography through the ages; general character of geographic knowledge during the ancient and mediaeval period; impact of discoveries and European renaissance on the emergence of modern geography, Foundations of modern geography: Contribution of German, French, British, and American geographers	12
Unit 3	Evolution of geographic thought (Determinism, Possibilism, Human Ecology, Morphology of Landscape, Areal differentiation), spatial organisation, locational analysis	12
Unit 4	Positivism and quantitative revolution, behaviouralism, radicalism, humanism and post-modernism , Models in geography and their applications; applied geography	14
	<b>Total</b>	<b>48</b>

**Text Book:**

1. Adhikari, S., 1992: *Geographical Thought*, Chaitanya Pub. House, Allahabad.
2. Berry, B. J. L., 1973: 'A Paradigm for Modern Geography', in R. J. Chorley (ed), *Directions in Geography*, London Methuen.
3. Bunge, W., 1962: *Theoretical Geography*, Lund Studies in Geography, Lund, C.W.K. Gleerup.
4. Buttmar, A., 1978: 'On People, Paradigms and Progress in Geography', in D.R. Stoddart (ed),
5. *Geography, Ideology and Social Concern*, Oxford, Blackwell.
6. Dickinson, R. E., 1969: *Makers of Modern Geography*, Routledge and Kegan Paul, London.

**References:**

1. Dikshit, R. D., 1997: *Geographical Thoughts: A Contextual History of Ideas*, Prentice Hall of India, New Delhi.
2. Gold, J. R., 1980: *An Introduction to Behavioural Geography*, Oxford University Press.
3. Hartshorne, R., 1939: *The Nature of Geography*, Association of American Geographers, Lancaster, Penn.
4. Hartshorne, R., 1959: *Perspective on the Nature of Geography*, Rand Mckully, Chicago.
5. Harvey, D., 1969: *Explanation in Geography*, St. Martin's Press, New York.
6. Harvey, Milton and Holly, Brian P.1989: *Themes in Geographic Thought*, Routledge, London.
7. James, P. E., 1972: *All Possible World: A History of Geographic Ideas*, The Odyssey Press, New York.

**Learning outcomes:**

- Understand the principles of geographical thoughts
- Understand various concepts related to human geography

<b>Paper II Core Course</b>	<b>REGIONAL GEOGRAPHY OF NORTH EAST INDIA AND ASSAM</b>	<b>Subject Code:</b>
	<b>L-T-P-C: 5-1-0-6      Credit Units: 6      Scheme of Evaluation: (T)</b>	<b>GEO162C60 2</b>

**Learning Objectives:**

- It seeks to develop new insights among students on significant geographical dimensions of Assam
- To make the students understand regional diversity of Assam with respect to its land, people and economy.

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Location and its significance; administrative divisions, Physical setting: Major Physiographic Regions and their Characteristics; Drainage System, Climate: Seasonal Weather Characteristics; Climatic Divisions; Impact of Indian Monsoon;	10
Unit 2	Socio-Cultural Background: Population (Distribution and Growth), ethno-religious composition, literacy and educational pattern, urbanisation level, occupational structure	14
Unit 3	Economic Geography: Resource potential, agriculture, place of handicraft industry, transport system, tourism development, problems and prospects of Industrial development in the region, Distribution and production patterns of handicraft (Brass metal, Weaving etc.) and tea,	14
Unit 4	Contemporary issues in Assam: Flood, Riverbank erosion, other natural hazards and their management, Problems of rapid urbanisation, Boundary problems with the neighbouring states, Impact of the developmental economy: wetland encroachment and forest cover loss	10
	<b>Total</b>	<b>48</b>

**Text Book:**

1. Bhagabati, A.K., Bora, A. K. and Kar, B.K.: Geography of Assam, Rajesh Publications, New Delhi.
2. Taher, M and Ahmed, P.: Geography of North East India, Mani Manik Prakash Guwahati.
3. Das, M..M.: Peasant Agriculture in Assam, Inter-India Publications, New Delhi.
4. Gopal Krishnan, R : Geography of North East India
5. Bhattacharya, P. 2006 : Trend in Tourism Potentiality, Bani Mandir, Guwahati
6. Bhagabati, A.K. (ed): Biodiversity of Assam, Eastern Book House, Guwahati
7. Bhattacharyya, N.N. : North East India, Rajesh Publication, New Delhi  
Srivastava, S.C. Demographic Profile of N.E. India, Mittal Publications.

**References:**

1. Johnson, B.L.C., ed. 2001. Geographical Dictionary of India. Vision Books, New Delhi.
2. Mandal R. B. (ed.), 1990: Patterns of Regional Geography – An International Perspective. Vol. 3 – Indian Perspective.
3. Sdyasuk Galina and P Sengupta (1967): Economic Regionalisation of India, Census of India
4. Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.
5. Singh R. L., 1971: India: A Regional Geography, National Geographical Society of India.
6. Singh, Jagdish 2003: India - A Comprehensive & Systematic Geography, Gyanodaya Prakashan, Gorakhpur

**Learning outcomes:**

1. The paper will be useful for students in developing understanding on geography of Assam and its various dimensions.
2. It will also be useful for students preparing for various competitive examinations including civil services.

<b>DSE PAPER - I</b>	<b>DISASTER MANAGEMENT</b>		<b>Subject Code:</b>
	<b>L-T-P-C: 5-1-0-6</b>	<b>Credit Units: 6</b>	<b>Scheme of Evaluation: (T)</b>
			<b>GEO162D602</b>

**Learning Objectives:**

- To provide students an exposure to disasters, their significance, and types on Spatio temporal dimensions.
- To develop basic ability to respond to their surroundings with potential disaster response in areas where they live, with due sensitivity
- To provide information and knowledge about how disasters can be checked and managed.

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Disasters: Definition and Concepts: Hazards, Disasters; Risk and Vulnerability; Classification	10
Unit 2	Disasters in India: (a) Flood: Causes, Impact, Distribution and Mapping; Landslide: Causes, Impact, Distribution and Mapping; Drought: Causes, Impact, Distribution and Mapping	12
Unit 3	Disasters in India: (b) Earthquake and Tsunami: Causes, Impact, Distribution and Mapping; Cyclone: Causes, Impact, Distribution and Mapping. Manmade disasters: Causes, Impact, Distribution and Mapping	14
Unit 4	Response and Mitigation to Disasters: Mitigation and Preparedness, NDMA and NIDM; Indigenous Knowledge and Community-Based Disaster Management; Do's and Don'ts During and Post Disasters	12
	<b>Total</b>	<b>48</b>

**Text Book:**

1. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
2. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
3. Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
4. Singh Jagbir (2007) "Disaster Management Future Challenges and Opportunities", 2007. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

**References:**

1. Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
2. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
3. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
4. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi.

<b>DSE PAPER - II</b>	<b>BIOGEOGRAPHY</b>			<b>Subject Code:</b>
	<b>L-T-P-C: 5-1-0-6</b>	<b>Credit Units: 6</b>	<b>Scheme of Evaluation: (T)</b>	<b>GE0162D602</b>

**Learning Objectives:**

- Introduce students to the rationale underlying the studies related to flora, fauna and their association with the biosphere in geography
- Develop an understanding in the physical and human factors responsible for the distribution, conservation, and restriction of living organisms on the earth surface.

**Detailed Syllabus:**

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Biogeography : meaning, development and significance; Approaches in biogeography: evolutionary and ecological	10
Unit 2	Forms of ecosystem: Forest, grassland, marine and mountain, Bio- energy cycles in the terrestrial ecosystem, energy flux in the ecosystem, concept of food chain, food web and ecological pyramid	14
Unit 3	Concept of biodiversity, biodiversity measures, conservation of biodiversity, ecological succession, Biodiversity hotspots of the world, environmental ethics and deep ecology	14
Unit 4	Global distribution of major plants and animals, Biomes of the world, Soil characteristics and their biogeographical significance	10
	<b>Total</b>	<b>48</b>

**Text Book:**

1. Bradshaw, M.J., 1979: Earth and Living Planet, ELBS, London.
2. Hussain, M. (ed), 1994: Biogeography (Part I&II), Anmol Publications Pvt. Ltd. New Delhi.
3. Newbiggin: Plant and Animal Geography.
4. Odum, E.P., 1977: Ecology.
5. Robinson, H., 1982: Biogeography, E.L.B.S., Mc Donald & Evans, London.
6. Simmons, I.G., 1974: Biogeography: Natural and Cultural, London.
7. Tiby, 1982: Biogeography, Longman

**References:**

1. Cox, C.B., Moore, P.D. and Ladle, R., 2016: Biogeography: an ecological and evolutionary approach. John Wiley & Sons
2. Smith, R.L., 1977: Ecology of Man- An Ecosystem Approach.

**Learning outcomes:**

- Develop ideas on biogeography related aspects of geographical analyses.
- Develop theoretical insights and perspectives to students if they wish to pursue a research programme in future.
- Students will develop a basic understanding of the introductory concepts in biogeography

<b>DSE PAPER - III</b>	<b>URBAN GEOGRAPHY</b>		<b>Subject Code:</b>
	<b>L-T-P-C: 5-1-0-6</b>	<b>Credit Units: 6</b>	<b>Scheme of Evaluation: (T)</b>
			<b>GEO162D603</b>

### Learning Objectives:

- This paper introduces the students to the field of urban geography and its major aspects
- It seeks to develop new insights among students on the relevance of an urban geography and associated problems in a rapidly urbanizing world.

### Detailed Syllabus:

<b>Modules</b>	<b>Topics and Course Content</b>	<b>Periods</b>
Unit 1	Urban Geography: Meaning, subject matter and scope; approaches and trends in urban geography. Towns: Types, characteristics, origin and growth in global and national contexts, Functional classification of towns; Schemes of city classification	10
Unit 2	Patterns of Urbanization in developed and developing countries; Components of urbanization and urban population growth, Urban morphology and land use structure; Theories on the internal structure of town: the Sector Theory of Homer and Hoyt, and the Multiple Nuclei Theory of Harris and Ullman	14
Unit 3	Concept of city-region, urban agglomeration, urban sprawl, Umland and periphery, rural-urban dichotomy and continuum, urban fringe, satellite town, new town, smart city. Urban Systems: Concept of urban system and hierarchy; Christaller's Central Place Theory; the rank-size distribution of cities; concept of primate city.	14
Unit 4	Urban issues and problems: Housing, slums, civic amenities (transportation and drinking water), traffic congestion, pollution (air, noise, water), and crime. Urbanization and urban development planning in India: Trend and regional patterns of urbanization; national urban development policies and programmes; emerging urban issues of selected cities (Delhi NCR, Mumbai, Guwahati).	10
	<b>Total</b>	<b>48</b>

### Text Book:

1. Bansal, S.C. (2010): Urban Geography, Meenakshi Prakashan, Meerut.
2. Hall T., 2006: Urban Geography, Taylor and Francis.
3. Kaplan D. H., Wheeler J. O. and Holloway S. R., 2008: Urban Geography, John Wiley.
4. Knox P. L. and McCarthy L., 2005: Urbanization: An Introduction to Urban Geography, Pearson Prentice Hall New York.
5. Pacione M., 2009: Urban Geography: A Global Perspective, Taylor and Francis.

### References:

1. Bala, R. (1986): Urbanisation in India, Rawat, Jaipur.
2. Fyfe N. R. and Kenny J. T., 2005: The Urban Geography Reader, Routledge.
3. Graham S. and Marvin S., 2001: Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition, Routledge
4. Knox P. L. and Pinch S., 2006: Urban Social Geography: An Introduction, Prentice Hall
5. Kundu, A. (1992): Urban Development and Urban Research in India, Khanna Publication, New Delhi.
6. Ramachandran R (1989): Urbanisation and Urban Systems of India, Oxford University Press, New Delhi

### Learning outcomes:

- The paper will be useful for students in developing ideas on how geographical factors organize urban spaces and how geographers seek to address various urban problems and issues.
- It will help build skills among students seeking advanced studies on urban development and planning.