

**GOVERNMENT ARTS COLLEGE  
(AUTONOMOUS)  
COIMBATORE - 641 018**

**Learning outcomes-based Curriculum Framework (LOCF)  
and  
Choice Based Credit System (CBCS) for**

**B.Sc., GEOGRAPHY  
SYLLABUS  
(Effective from Academic year 2021-2022)**



**POSTGRADUATE AND RESEARCH  
DEPARTMENT OF GEOGRAPHY**

**MAY-2021**

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## **PREAMBLE**

The UGC committee constituted for preparing the Learning Outcomes Based Curriculum Framework for BSc. Geography. The Committee suggested the curriculum for the students considering the global, national, regional, local issues and programs for better learning outcomes. The LOCF is designed to emphasize the teaching-learning process at the undergraduate level 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.

Over the past decades the higher education system of our country has undergone substantial structural and functional changes resulting in both quantitative and qualitative development of the beneficiaries. Such changes have gained momentum with the introduction of Choice Based Credit System (CBCS) which further expects learning outcome-based curriculum in order to maximize the benefits of the newly designed curriculum. The learning outcome-based curriculum will definitely help the teachers of the discipline to visualize the curriculum more specifically in terms of the learning outcomes expected from the students at the end of the instructional process. It is pertinent to mention here that the purpose of education is to develop an integrated personality of the individual and the educational system provides all knowledge and skills to the learner for this.

Tamil Nadu State Council for Higher Education (TANSCHE) has formed the State Integrated Boards of Studies, which, with great diligence and expertise has devised the mandatory areas that have to be covered for three-year under graduation and two-year post graduation courses to realize the facilitation of the mobility of faculty and students from one university to another and to easily solve the problem of equivalence among courses. Great care has been taken so that these areas would take 75% of the course content and the remaining 25% can be decided by the individual institutions. The areas that must be covered by the student that are mandatory for earning the degree to have due value has been worked out so that the student will gain enough depth of knowledge in the subject concerned. 25% percent of the syllabus should be designed by the institutions, and the areas covered under this also must have a weightage of 25%. This gives the autonomous institution seamless liberty on every Board of Studies (BOS) to innovate and experiment, and more importantly, it is here that the institution devises appropriate strategies by which (i) to make creative and

critical applications of what has been learnt in the mandatory components, and (ii) to meaningfully connect the learners to the career demands and expectations. It is essential that the theoretical subject knowledge of the students must be translated into practical hands-on experience.

This Learning Outcome based Curriculum Framework is designed to emphasize the teaching and learning process at the undergraduate (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 and Geographical Information System.

# 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 trans-disciplinary 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.

## 1.1 Course Structure – Types of Courses.

**The following types of courses are offered under CBCS-LOCF:**

- a) Core Courses (CC).** A core course is a compulsory discipline specific course. A student of Geography has to take 14 such Geography courses over six semesters.
- b) Elective Courses (EC).** An elective course is a course that is to be chosen from a specified set of courses. These courses are of two types. Which may be very specific or specialized or advanced or supportive to the discipline/subject of study or which provides an extended scope or which enables an exposure to some other

discipline/subject/domain or nurtures the candidate's proficiency/skill is called an Elective Course.

- i. **Discipline Specific Electives (DSE).** These are elective courses that provide advanced undergraduate training in specialised areas of Geography. A set of six semester-specific, courses of this kind are offered in the First through fourth semester of the Undergraduate programme, Geography.
- ii. **Project.** An elective course designed to acquire special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher/faculty member is called dissertation/project. Such a course is compulsory in sixth semester.
- iii. **Generic Electives (GE).** These courses, in disciplines other than Geography, are intended to broaden the training of a student in the Geography Undergraduate programme. A student of Geography will take one such course, offered by another department, in each of Semester V and VI.
- iv.
- c) **Ability Enhancement Compulsory Course (AECC).** Two such courses are to be taken, one in Semester I (Environmental Studies) and one in Semester II (Value Education– Gandhian Thoughts).
- d) **Skill Enhancement Course (SEC).** A student is to take one such course each in Semester III through Semester VI.

## **2. LEARNING OUTCOMES BASED APPROACH TO CURRICULUM PLANNING AND DEVELOPMENT IN B.Sc., GEOGRAPHY**

### **2.1 Nature and Extent of the B.Sc., Studies**

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, GIS sustainable development and human security.

### **2.2 Bachelors Degree Programme in Geography**

Four distinct and new learning outcomes have been incorporated from each Coursesuch 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, IRNSS and GIS Technology.
- 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 B.Sc., GEOGRAPHY

- 1. Disciplinary Knowledge-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.
- 9. Applied Dimensions:** Identification of the critical problems and spatial issues form the core of the modern geography for various applications and decision making, including Resources, Environment & Disaster Management, Land Use Planning, and Urban and Regional Development together with Climate Change Mitigation and Adaptation, etc.
- 10. Case Study Based Analysis:** There is a need to understand the specificities of the problems in specific areas for their in depth comprehension and solution. The case studies are essential, especially to find out the solutions to the lagging regions for their solutions based on first hand information.



**11. Public Policy and Management:** Spatial aspects and dimensions are the integral parts in the policy making for sustainable regional development. Geographical knowledge needs to be inculcated for application and solutions of the various local, regional and national problems.

**12. Communication Skills:** Communication through models, maps, images and other geographical tools form the sound base for the dissemination of geographical information.

## **4. QUALIFICATION DESCRIPTORS FOR B.Sc., PROGRAMME IN GEOGRAPHY**

The qualification descriptors for the 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.Sc., 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 endeavours.

The students have to develop the ability through the theoretical and practical means for realising the Sustainable Development Goals (SDG) both in rural and urban spaces to minimize the differentials in developmental aspects.

## **5. THE PROGRAMME LEARNING OUTCOMES OF B.Sc., GEOGRAPHY PROGRAMME**

The programme learning outcomes relating to 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.
- Recognize the skill development in Geographical studies programme as part of career avenues in various fields like teaching, research and administration.

It is also suggested that after the completion of B.Sc.Programme, students should be able to demonstrate the knowledge obtained in such way so that they can explore the employability options and service to the society.

## 6. COURSE STRUCTURE OF B.Sc., GEOGRAPHY PROGRAMME

### UG - SCHEME OF EXAMINATIONS: CBCS PATTERN

(For the students admitted during the academic year 2021 - 2022 and Onwards)

Part	Sub Code	Title of the Paper	Hrs (week)	Internal (CA) Marks	External Marks	Total Marks	Ext- Min.	Total Pass Mark	Credits
<b>Semester - I</b>									
I	21TAM11L	Part - I: Tamil - I	6	50	50	100	20	40	3
II	21ENG12L	Part- II: English - I	6	50	50	100	20	40	3
III	21BGE13C	Core - I: Geomorphology	6	50	50	100	20	40	5
III	21BGE14A	Allied -1: Statistics – I	8	50	50	100	20	40	5
III	21BGE25P	Core – Practical – I: Map Scales and Landscape Analysis	2	-					
IV	21ENV1GE	Environmental Studies	2	50	50	100	20	40	2
<b>Semester – II</b>									
I	21TAM21L	Part – I: Tamil - II	6	50	50	100	20	40	3
II	21ENG22L	Part – II: English - II	6	50	50	100	20	40	3
III	21BGE23C	Core -II: Climatology	5	50	50	100	20	40	5
III	21BGE24A	Allied- 2: Statistics – II	8	50	50	100	20	40	5
III	21BGE25P	Core –Practical – I: Map Scales and Landscape Analysis	3	50	50	100	20	40	3
IV	21ENV2GE	Value Education- Gandhian Thoughts	2	50	50	100	20	40	2

Part	Sub Code	Title of the Paper	Hrs (week)	Internal (CA) Marks	External Marks	Total Marks	Ext- Min.	Total Pass Mark	Credits
<b>Semester – III</b>									
I	21TAM31L	Part–I: Language: Tamil - III	6	50	50	100	20	40	3
II	21ENG32L	Part–II: English - III	6	50	50	100	20	40	3
III	21BGE33C	Core – III: Hydrology and Oceanography	4	50	50	100	20	40	5
III	21BGE34A	Allied -3:Cartography	6	50	50	100	20	40	5
III	21BGE44P	Core –Practical – II: Map Interpretation and Climatic Diagrams	2	-					
III	21BGE45P	Core –Practical- III: Map Projections	2	-					
IV	21BGE35S	Skill Based Subject–I: Disaster Management	4	50	50	100	30	40	3
<b>Semester – IV</b>									
I	21TAM41L	Part–I: Tamil - IV	6	50	50	100	20	40	3
II	21ENG42L	Part–II: English - IV	6	50	50	100	20	40	3
III	21BGE43C	Core- IV: Human Geography	4	50	50	100	20	40	5
III	21BGE44P	Core –Practical – II: Map Interpretation and Climatic Diagrams	2	50	50	100	20	40	3
III	21BGE45P	Core –Practical- III: Map Projections	2	50	50	100	20	40	3
III	21BGE46A	Allied – 4: Settlement Geography	6	50	50	100	20	40	5
IV	21BGE47S	Skill Based Subject – II: Geography of Tourism	4	50	50	100	20	40	3
V	21EXA4GE	Extension Activities: NCC/NSS/SPORTS//YRC				100			1

Part	Sub Code	Title of the Paper	Hrs (week)	Internal (CA) Marks	External Marks	Total Marks	Ext- Min.	Total Pass Mark	Credits
<b>Semester - V</b>									
III	21BGE51C	Core – V: Geography of India	5	50	50	100	20	40	5
III	21BGE52C	Core – VI: Geography of World Resources	5	50	50	100	20	40	5
III	21BGE53C	Core – VII: Evolution of Geographical Thought	6	50	50	100	20	40	5
III	21 BGE64P	Core - Practical – IV: Surveying and Interpretation of Remote Sensing Data.	4	-					
IV	21BGE54S	Skill Based Subject - III: Fundamentals of Remote Sensing and GNSS	5	50	50	100	20	40	3
IV	21BGE5EL	Non-Major Elective Paper – I: Basics of Physical Geography	3	50	50	100	20	40	2
	21BGE65V	Project and Viva-Voce	2						
<b>Semester – VI</b>									
III	21BGE61C	Core – VIII: Geography of Tamil Nadu	5	50	50	100	20	40	5
III	21BGE62C	Core – IX: Political Geography	6	50	50	100	20	40	4
III	21BGE63C	Core – X: Natural Regions of the world	5	50	50	100	20	40	4
III	21 BGE64P	Core - Practical – IV: Surveying and Interpretation of Remote Sensing Data.	4	50	50	100	20	40	3
III	21BGE65V	Project & Viva – Voce	2	50	50	100	20	40	15
IV	21BGE66S	Skill Based Subject – IV: Fundamentals of GIS	5	50	50	100	20	40	3
IV	21BGE6EL	Non-Major Elective Paper – II: Basics of Human Geography	3	50	50	100	20	40	2
		<b>Total/Credits</b>				<b>3600</b>			<b>140</b>

\*Courses offered with four semester Language Papers

@ No External Examinations. Only Continuous Internal Assessment (CIA)

Includes 50/50 continuous internal assessment marks for theory and practical papers respectively

Project evaluation done by both Internal and External examiner for 100 Marks

<b>PART</b>	<b>SUBJECT</b>	<b>PAPERS</b>	<b>CREDIT</b>	<b>TOTAL CREDITS</b>	<b>TOTAL MARKS</b>
<b>PART I</b>	Language Tamil	4	3	12	400
<b>PART II</b>	English	4	3	12	400
<b>PART III</b>	Core	10	5/4	48	1000
	Core Practical	4	3	12	400
	Allied	4	5	20	400
	Project	1	15	15	100
<b>PART IV</b>	Special Language& Non-Major Elective, Environmental Studies and Value Education	4	2	8	400
	Skill Based Subject	4	3	12	400
	<b>PART V</b>	Extension Activities		1	1
<b>Total</b>				<b>140</b>	<b>3600</b>

Year	Sem.	Subject Code	Title of the paper	Hours/ Week
2021 -2022 onwards	I	21BGE13C	CORE - I: GEOMORPHOLOGY	6

### COURSE LEVEL OUTCOMES:

On the successful completion of the course, students will be able to:

1. Recall the basic premises of origin of solar system and the earth.
2. Describe the exogenic and endogenic processes, their importance in landform development.
3. Infer the origin of rocks, process of weathering and soil formation, in the knowledge of Geographical research.
4. Assess the roles of structure, stage and time in shaping the landforms interpret Geomorphologic maps and understand the landform creation.
5. Explain the functioning of Earth systems in real time and analyze how the natural and anthropogenic operating factors affect the development of landforms.
6. Discuss the features of Glacial, Aeolian and coastal land form creation for geomorphic processes.
7. Distinguish between the mechanisms that control these processes.
8. Prepare geomorphology maps and apply the knowledge in geographical research.

### UNIT- I

**Earth in the Solar System:** Meaning and Branches of Geography - Physical Geography: Definition and Components: Lithosphere, Atmosphere and Hydrosphere–Solar System- Earth in the Solar System - Origin and Evolution of Earth: Planetesimal, Gaseous and Nebular Hypothesis -Shape and Size of the Earth - Motions of the Earth: Rotation and Revolution and effects.

### UNIT- II

**Geomorphology:** Nature, Scope, and Development of Geomorphology - Interior structure of the Earth – Diastrophism – Earthquakes and Volcanoes: Distribution – Types of Folds and Faults.

### UNIT- III

**Origin of Continents and Oceans:** Distribution of Land and Water - Isostasy -Wegner’s theory of Continental Drift – Plate Tectonics -Rocks: Definition, Origin and Classification-Soils: Formation and Soil Profile.

### UNIT- IV

**Geomorphic Processes:** Weathering: Definition - Types: Mechanical, Chemical and Biological –Mass Wasting: Types and Classification – Concept of Normal Cycle of Erosion (Davis and Penck) - Drainage System and Patterns.



## **UNIT- V**

**Evolution of Landforms:** Gradation - Agents of Gradation- Erosional and Depositional landform features Fluvial, Aeolian, Karst and Coastal – Glacier: Types and Characteristics – Glacial Landforms.

### **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Power point slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizes
- Group discussion
- Simulation

### **REFERENCES:**

1. Dayal, P., (1995). Text Book of Geomorphology, Shukla Book Depot, Patna.
2. Savindra Singh, (2002). Geomorphology, PrayagPustak Bhawan, Allahabad.
3. Sharma, V.K., (1986). Earth Surface Process and forms, Tata McGraw Hill Publishing Company Ltd, New Delhi.
4. Strahler, A.N. and Strahler A.H., (1992). Modern Physical Geography, John and Wiley Sons, New York.

### **FURTHER READING:**

1. Bloom, Arthur L. (1998). Geomorphology, Pearson Education Pvt. Ltd. Singapore.
2. Kale, V.S., Gupta, A. (2001). Introduction to Geomorphology, Orient Longman.
3. Kearey, P., Klepeis, K.A., Vine, F.J. (2011). Global Tectonics, 3rd ed, Wiley-India.
4. Knighton, A.D. (1984). Fluvial Forms and Processes, Edward Arnold.
5. McCullagh, P. (1978). Modern Concepts in Geomorphology, Oxford University Press.
6. Philip Lake. (2006) Physical Geography. Cambridge University Press, UK
7. Thornbury, W.D., (1984). Principles of Geomorphology, John Wiley and Sons, New York.
8. Woolridge & Morgan. (1986). An outline of Geomorphology. Longman. London.

### **Website(s):**

- <https://www.britannica.com/geomorphology>
- <https://www.sciencedirect.com/geomorphology>
- [https://study.sagepub.com/sites/default/files/01\\_Gregory\\_Lewin\(web\)\\_Ch-01%20\\_1.pdf](https://study.sagepub.com/sites/default/files/01_Gregory_Lewin(web)_Ch-01%20_1.pdf)
- <https://en.wikipedia.org/wiki/Geomorphology>
- <https://www.elsevier.com/Geomorphology>

**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓		✓	✓	✓	✓		✓
	2	<b>Communication skills</b>	✓		✓		✓		✓	✓
	3	<b>Critical thinking</b>		✓		✓	✓		✓	
	4	<b>Research related skills</b>		✓	✓			✓	✓	✓
	5	<b>Analytical reasoning</b>	✓	✓		✓		✓	✓	✓
	6	<b>Problem solving</b>			✓	✓		✓		✓
	7	<b>Team work</b>			✓	✓		✓	✓	
	8	<b>Moral and ethical awareness</b>	✓	✓		✓		✓		✓

### AECC-1 @ SEMESTER I

Year	Sem.	Subject Code	Title of the paper	Hours/Week
2021 -2022 onwards	I	21ENV1GE	ENVIRONMENTAL STUDIES (For all UG courses)	2

#### COURSE LEVEL OUTCOMES:

On the successful completion of the course, students will be able to:

1. Recognize the role of the environment and the need to conserve it for sustaining life.
2. Enumerate the natural resources
3. Explores the adverse effects of deforestation and over exploitation of natural resources
4. Associate the components of the ecosystem and need for biodiversity conservation.
5. Evaluate the environmental pollution hazards and their effects on the living system.
6. Interpret the different disaster management procedures.
7. Analyse the climatic change and global effects
8. Infer the need for environmental laws in the constitution of India.
9. Relate the growth of the human population and its impact on the environment.

#### UNIT I:

Environment – Introduction – Nature - Scope – Content – Need for study. Natural resources- Forest and energy resources- Use and overexploitation - deforestation. Energy resources- renewable and non-renewable energy resources.

#### UNIT II:

Ecosystem – concept – types- Forest, Grassland, Desert and Aquatic (Pond)- Structure and function of an ecosystem – Producers- consumers and decomposers – Food chain – food web- ecological pyramids- energy flow. Biodiversity and its conservation- *in situ* and *ex situ* conservation- Mega biodiversity centres and hotspots.

#### UNIT III:

Environmental pollution- definition- causes-effects and control measures of air, water, soil, thermal and nuclear pollution. Waste management- Industrial and solid waste. Disaster management – earthquake, cyclone, flood and landslides.

#### UNIT IV:

Social Issues and the environment-Urbanization-Urban problems related to energy and watershed management. Environmental Ethics- Issues and possible solutions- Wasteland reclamation- Climate change - causes and effects. Global warming- Acid rain- Ozone layer depletion- Public awareness. Environmental laws- Environment Protection Act, Wildlife Protection Act, Forest Conservation Act.

#### UNIT V:

Human population and its impact on environment- Population growth- Resettlement and Rehabilitation of project affected persons- Case studies – Sardar Sarovar Project, Maharashtra and Bandipur National Park- Project Tiger, Karnataka, NTPC, India.

Role of Indian and Global religions and Cultures in environmental conservation-  
Case study: sacred groves in Western Ghats (kavu) & Chinese culture. Human and  
Wildlife Conflict.

#### PEDAGOGY STRATEGIES

- ❖ Board and Chalk lectures
- ❖ PowerPoint slide presentations
- ❖ Assignments

#### TEXT BOOKS:

1. Sharma, P. D. 2000. Ecology & Environment. Rastogi Publications, Meerut, India.
2. Bharucha, E. 2003. Text book of Environmental Studies. UGC, New Delhi & Bharati Vidyapeeth Institute of Environmental Education and Research, Pune.
3. Arumugam, M. and Kumaresan, V. 2016. Environmental Studies (Tamil version). Saras Publications, Nagercoil.

#### ONLINE/E-RESOURCES:

<https://www.edx.org/course/subject/environmental-studies>  
[https://www.coursera.org/courses?\\_facet\\_changed\\_=true&domains=life-sciences%2Cphysical-science-and-engineering%2Csocial-sciences&query=environmental%20science%20and%20sustainability&userQuery=environmental%20science%20and%20sustainability](https://www.coursera.org/courses?_facet_changed_=true&domains=life-sciences%2Cphysical-science-and-engineering%2Csocial-sciences&query=environmental%20science%20and%20sustainability&userQuery=environmental%20science%20and%20sustainability)  
<https://www.open.edu/openlearn/nature-environment/free-courses>

#### COURSE LEVEL MAPPING OF PROGRAMME LEVEL OUTCOME:

			Course Level Outcome (CLO)								
			1	2	3	4	5	6	7	8	9
Program Level Outcomes (PLO)	1	Disciplinary Knowledge		✓	✓		✓	✓			
	2	Communication Skills		✓		✓				✓	✓
	3	Critical Thinking	✓		✓		✓		✓		
	4	Research related skills	✓		✓			✓		✓	
	5	Analytical reasoning	✓			✓		✓		✓	
	6	Problem Solving		✓	✓			✓			✓
	7	Team Work				✓	✓		✓		✓
	8	Moral and ethical awareness		✓		✓		✓		✓	✓

Year	Sem.	Subject Code	Title of the paper	Hours/Week
2021 -2022 onwards	II	21BGE23C	CORE -II: CLIMATOLOGY	5

### COURSE LEVEL OUTCOMES:

On the successful completion of the course, students will be able to:

1. Discuss the elements of weather and climate and its impacts in the environment at different scales.
2. Explain the climatic aspects, its measuring instruments and its bearing on planet earth.
3. Develop the relationship between climate change and monsoon conditions of the world.
4. Evaluate the forms of precipitation and reasons pertaining to cyclonic aspects.
5. Analyze the dynamics of earth's atmosphere and global climate
6. Describe how the atmospheric elements works
7. Associate climate with other environmental issues
8. Assessing the role of man in global climate change

### UNIT- I

**Climatology:** Meaning, Scope, Content and Divisions – Meteorology and Climatology - Origin of Atmosphere - Composition and Structure–Weather and Climate: Definition – Weather elements and its significances.

### UNIT- II

**Temperature of the Atmosphere:** Insolation – Heat balance –Temperature of the Atmosphere: Heat and Temperature, Process of heat energy transfer, Controls of Temperature – Distribution of Temperature: Horizontal and Vertical.

### UNIT- III

**Atmospheric Pressure:** Vertical and Horizontal - Major Pressure Belts – Winds: Planetary, Seasonal and Local Winds – Monsoon - Origin and Mechanism –Jet stream- Atmospheric Moisture: Humidity: Types: Absolute, Specific and Relative – Condensation, Fog and Clouds - Types.

### UNIT- IV

**Precipitation:** Forms: Rainfall, Hail, Sleet, Snowfall and Drizzle - Rainfall: Types: Convective, Orographic and Frontal – Classification of Air masses –Fronts: Creation and its types - Cyclones: Tropical and Temperate – Anti-Cyclones.

### UNIT- V

**Climatic Classification:** Need and basis - Koeppen's Climatic Classification – Climate Change: El-Nino and La-Nino – Global Warming – Green House Effect - Ozone Depletion-Sea Level Rising - Weather Forecasting - Types.

### PEDAGOGY STRATEGIES:

- Board and Chalk lecture
- Power Point slide presentations
- Seminar

- Assignments
- Online and Offline Class Practical's
- Quizes
- Group discussion

#### **REFERENCES:**

1. Lal, D.S., (1990). Climatology, Chatianya Publishing House, Allahabad.
2. Richmond W. Longley (1970). Elements of Meteorology, John Willey & sons inc, New York
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2. Barry R. G. and Corley R. J., (1998). Atmosphere, Weather and Climate, Routledge, New York.
3. Bhutani, S., (2000). Our Atmosphere, Kalyani Publishers, Ludhina.
4. Craghan M, (2003). Physical Geography: A Self Teaching Guide, John Wiley & Sons, Canada.
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6. Lutgens F. K., Tarbuck E. J. and Tasa D., (2009). The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey.
7. Oliver J. E. and Hidore J. J., (2002). Climatology: An Atmospheric Science, Pearson Education, New Delhi.
8. Savindra Singh, (2002). Physical Geography, Prayag Pustak Bhawan, Allahabad.

#### **Website(s):**

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- <https://www.pmfias.com/climatology/>
- <https://imd pune.gov.in/training/training%20notes/Climatology-IMTC.pdf>
- <https://en.wikipedia.org/wiki/Climatology>

**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	<b>1</b>	<b>Disciplinary Knowledge</b>	✓		✓			✓		✓
	<b>2</b>	<b>Communications skills</b>	✓	✓	✓		✓		✓	
	<b>3</b>	<b>Critical thinking</b>			✓	✓	✓	✓	✓	✓
	<b>4</b>	<b>Research Related skills</b>	✓	✓	✓	✓	✓	✓		
	<b>5</b>	<b>Analytical reasoning</b>			✓	✓	✓	✓		✓
	<b>6</b>	<b>Teamwork</b>	✓	✓			✓	✓		
	<b>7</b>	<b>Problem solving</b>		✓	✓	✓	✓	✓	✓	
	<b>8</b>	<b>Moral and Ethical awareness</b>	✓	✓	✓	✓			✓	✓

Year	Sem.	Subject Code	Title of the paper	Hours/Week
2021 -2022 onwards	II	21BGE25P	CORE – PRACTICAL – I:MAP SCALES AND LANDSCAPE ANALYSIS	2/3

### COURSE LEVEL OUTCOMES:

On the successful completion of the course, students will be able to:

1. Outline the basic scales and mapping knowledge.
2. Identify the directions, bearings and finding true north.
3. Discuss the map enlargement and reduction and measurement.
4. Analyze the contour map and prepare interpolation map.
5. Infer the real-world physical features from the topographical sheets.
6. Evaluate the various types of profile drawing and slope analysis.
7. Illustrate the quantitative description and analysis of landforms.
8. Identify and understand the Density of Drainage Basin.

### UNIT –I

**Map Scale:** Maps & Scales- Meaning & Significance - Types of Scales: – Statement, Graphical & Representative Fraction - Construction of Simple / Linear Scale, Comparative Scale, Diagonal Scale, Time and Pace Scale - Directions and Bearings - Conversion – Methods of finding True North.

### UNIT – II

**Enlargement and Reduction of Maps:** Square and Triangle Methods - Measurement of Distance: Thread, Divider and Roto meter - Measurement of Area: Square and Strip Method.

### UNIT – III:

**Representation of Relief:** Contours –Interpolation - Method of representation: Pictorial: Hachures and Hill Shading – Mathematical Method: Spot Heights, Bench Marks, Trigonometric Stations and Contours - Drawing Contour Diagrams:Uniform Slope, Concave Slope, Convex Slope, Undulating Slope, Hill, Knoll, Ridge, Saddle, V-Shaped Valley, Gorge, U-Shaped Valley, Cliff, Over Hanging Cliff, Cirque, Hanging Valley, Escarpment, Spur, Waterfall, Meander, Incised Meander, Flood Plain, Plateau, Dissected Plateau, Volcanic Cone, Sand Dunes, Ria Coast and Fiord Coast.

### UNIT – IV

**Profile Drawing:** Simple, Serial, Super-imposed, Projected and Composite Profiles- Exaggeration in the Vertical Scale - Slope Analysis: Calculation of gradient and average slope by Wentworth’s Method.

### UNIT – IV

**Morphometric Analysis:** Stream Orders and Stream Numbers – Stream Length, Bifurcation Ratio- Density of Drainage Basin – Altimetric Frequency Curve.



## **PRACTICALS:**

- Map scales
- Map enlargement and reduction of maps
- Slope analysis
- Area measurement
- Profile drawing
- Stream analysis

## **PEDAGOGY STRATEGIES:**

- Board and Chalklecture
- Assignments
- Online and Offline Class Practicals
- Quizes
- Groupdiscussion

## **REFERENCES:**

1. Gopal Singh (1998). Map Work and Practical Geography (4th Edition), Vikas Publishing House, Ahmedabad.
2. Khullar, (1997). Practical Geography, Educational Publishers, New Delhi.
3. Monkhouse, F.J. and Wilkinson, H.R., (1989). Maps and Diagrams, B.I.Publications, New Delhi.
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## **FURTHER READING:**

1. Buch T.W. (1952). Maps – Topographical and Statistical Maps, Oxford Lavender Press – London.
2. Bygott. J. (1955). Map work and Practical Geography, University Tutorial Press-London.
3. Kulkarni, S.V. and Kanetkar, T.R. (1965). Surveying and Levelling (Volumes I & II), A.V.G. Prakashan, New Delhi.
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5. Sarkar, A. (2008). Practical Geography: A Systematic Approach, Orient BlackSwan, Kolkata.
6. SethuRakkayi, S., (2014). PuvippadaviyaloorArimugam, Sree Meenakshi Offsets, Madurai.
7. Singh, R.L. & Singh, R. P. B. (2009). Elements of Practical Geography, Kalyani Publishers, New Delhi.
8. Zulfequar Ahmad Khan, M. D., (1998). Text Book of Practical Geography, Concept Publishing Company, New Delhi.

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- [https://en.wikipedia.org/wiki/Topographic\\_profile](https://en.wikipedia.org/wiki/Topographic_profile)
- [https://www.e-education.psu.edu/natureofgeoinfo/c7\\_p6.html](https://www.e-education.psu.edu/natureofgeoinfo/c7_p6.html)
- <https://www.britannica.com/science/morphometric-analysis>
- <http://studymaterial.unipune.ac.in:8080/jspui/bitstream/123456789/5516/1/Morphometric%20Analysis.pdf>

**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓	✓	✓		✓	✓	✓	✓
	2	<b>Communication skills</b>			✓		✓		✓	✓
	3	<b>Critical thinking</b>		✓	✓	✓		✓		✓
	4	<b>Research related skills</b>		✓		✓	✓	✓		✓
	5	<b>Analytical reasoning</b>		✓	✓	✓		✓	✓	
	6	<b>Problem solving</b>	✓		✓	✓		✓		✓
	7	<b>Team work</b>		✓	✓			✓	✓	
	8	<b>Moral and ethical awareness</b>	✓		✓		✓		✓	✓

## AECC-2 @ SEMESTER II

Year	Sem.	Sub Code	Subject Title	Hours/ Weeks
2021 -22 Onwards	II	21VAL2G E	VALUE EDUCATION – GANDHIAN THOUGHTS  (For all UG courses)	2

### COURSE LEVEL OUTCOMES:

**On successful completion of the course, the student will be able to:**

1. Interpret Gandhiji's experiments to his spiritual pursuits and search for purity, political activities through fasting protests, and even his role as an educator using diet and meals as teaching exercises.
2. Lead a life marked with humility and truthfulness and subsequent realization of the Truth as the purpose of human life.
3. Infer lessons that are fundamental to living in harmony and social progress such as respect, empathy, equality, solidarity and critical thinking.
4. Promote tolerance and understanding above and beyond our political, cultural and religious differences.
5. Create special emphasis on the defense of human rights, the protection of ethnic minorities
6. Emerge as responsible citizens with clear conviction to practice values and ethics in life.
7. Transform themselves to become good leaders.
8. Realize their role and contribution to the nation building.

**UNIT I:** Birth and Parentage - Childhood - At the High school - Stealing and Atonement - Glimpses of Religion - Gandhi's choice - Experiments in Dietetics - Acquaintance with Religions - The Great Exhibition.

**UNIT II:** The first case - Preparing for South Africa - same experiences - on the way to Pretoria – Coolie - Natal Indian Congress - Education of Children - Brahmacharya.

**UNIT III:** Simple life - The Boer war - Sanitary Reform and Famine Relief - Lord Curzon's Darbar - A month with Gokhale - Experiments in Earth and water treatment - Indian opinion - Coolie Locations or Ghettoes - The Black plague.

**UNIT IV:** The Magic spell of a Book - The Zulu Rebellion - The Birth of Satyagraha - More experiments in Dietetics - Kasturbai's Courage - Domestic Satyagraha- Fasting - Shanti Niketan - Woes of Third-Class passengers.

**UNIT V:** Kumbha mela - Lakshman Jhula - Founding of the Ashram - Abolition of Indentured Emigration - The Kheda Satyagraha - The Rowlatt Bills - Navajivan and young India - Congress Initiation - The Birth of Khadi.

**TEXT BOOKS**

1. M.K. GANDHI, “The Story of My Experiments with Truth”, An Autobiography Apple publishing International (P) Ltd, Chennai.

2.

- மகாத்மா காந்தியின் சுயசரிதை - சத்தியஸோதனை தமிழாக்கம் -  
-ரா.வேங்கடராஜ்\*லு, நவஜீவன் பரசுராலயம், அகமதாபாத

**PEDAGOGY STRATEGIES**

- Board and Chalk lecture
- Powerpoint slide presentations
- Seminar
- Assignments
- Quizes
- Group discussion

**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			CourseLevel Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>ProgramLevel Outcomes (PLO)</b>	1	<b>Reflective thinking</b>	✓	✓	✓	✓	✓		✓	✓
	2	<b>Communication skills</b>		✓		✓	✓	✓	✓	✓
	3	<b>Critical thinking</b>	✓	✓	✓	✓		✓	✓	✓
	4	<b>Multicultural competence</b>				✓	✓	✓	✓	✓
	5	<b>Analytical reasoning</b>		✓	✓	✓		✓		
	6	<b>Problem solving</b>		✓	✓	✓		✓	✓	✓
	7	<b>Team work</b>	✓		✓		✓	✓	✓	
	8	<b>Leadership readiness/ qualities</b>			✓		✓	✓		✓
	1	<b>Moral and ethical awareness</b>	✓		✓		✓	✓		✓

Year	Sem.	Subject Code	Title of the paper	Hours/Week
2021 -2022 onwards	III	21BGE33C	CORE – III: HYDROLOGY AND OCEANOGRAPHY	4

### COURSE LEVEL OUTCOMES:

On the successful completion of the course, students will be able to:

1. Discuss the basic concepts of Hydrology and system approach.
2. Outline the variations of global hydrological cycle
3. Illustrate the ground water occurrence and storage aspects.
4. Recall configuration of ocean floor and bottom relief features of the oceans.
5. Explain the oceans temperature and salinity distribution level.
6. Summarize the different types oceans currents and their importance
7. Discuss the coral reefs formations, types, and their significance
8. Classify the ocean deposits and availability of resources.

### UNIT- I

**Hydrology:** Introduction to Hydrology - Basic Concept of Hydrology - Systems Approach in Hydrology and Hydrological Cycle: Precipitation, Interception, Evaporation, Evapo-Transpiration, Infiltration, Ground-Water, Run Off and Over land flow; Hydrological Input and Output.

### UNIT- II

**Catchment Hydrology:** Classification of Streams, Stream pattern and Stream order - Runoff-estimation - Principles of Water Harvesting and Watershed Management- Groundwater: Occurrence and Storage - Factors Controlling Recharge, Discharge and Movement.

### UNIT- III

**Oceanography:** Definition, scope and content – Oceans and Seas: Extent and Distribution – Surface Configuration of Ocean Floor – Continental Shelf – Continental Slope – Abyssal Plain - Deeps and Trenches.

### UNIT- IV

**Bottom Relief Features:** Pacific, Atlantic and Indian Oceans - Ocean Temperature: Ocean Temperature: Factors –Distribution - Horizontal and Vertical – Salinity: Factors affecting Salinity Distribution.

### UNIT- V

**Ocean Water Movements:** Waves – Tides: Types – Ocean Currents: Origin- Factors Controlling Currents - Types - Currents of Pacific, Atlantic and Indian Oceans. Oceans Deposits: Types – Coral reefs: Formation and Types – Oceans Resources -National Institute of Technology (NIOT).

### PEDAGOGY STRATEGIES:

- Board and Chalk lecture
- Power point slide presentations

- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizes
- Group discussion

#### **REFERENCES:**

1. Allan.P.Trujillo and Harold.V.Thurman, (2015). Essentials of Oceanography, Pearson education India.
2. John A. Knauss & Newell Garfield (2016). Introduction to Physical Oceanography, Waveland PrInc; 3rd edition.
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3. Garrison Tom, (2011). Essentials of Oceanography. Brooks/ Cole, C.A., USA., (International Ed.).
4. Geoffery.K.Vallis, (2019). Essentials of Atmospheric and Oceanic Dynamic, University of Exeter. Cambridge University Press.
5. Karanth, K.R., (1988). Ground Water: Exploration, Assessment and Development, Tata-McGraw Hill, New Delhi.
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- [https://static1.squarespace.com/static/6021ba7719b886404b0f6c34/t/6022716cd9e549149204b27d/1612869998004/a\\_level\\_geography\\_hydrology\\_notes.pdf](https://static1.squarespace.com/static/6021ba7719b886404b0f6c34/t/6022716cd9e549149204b27d/1612869998004/a_level_geography_hydrology_notes.pdf)
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**COURSE LEVE MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>			✓	✓	✓	✓		✓
	2	<b>Communication skills</b>	✓			✓	✓	✓		
	3	<b>Problem solving</b>				✓	✓		✓	✓
	4	<b>Analytical thinking</b>		✓	✓	✓			✓	
	5	<b>Research related skills</b>			✓	✓			✓	✓
	6	<b>Reflective thinking</b>	✓	✓		✓	✓			
	7	<b>Problem solving</b>			✓	✓	✓	✓		
	8	<b>Team work</b>	✓	✓		✓	✓			

Year	Sem.	Subject Code	Title of the paper	Hours/Week
2021 -2022 onwards	III	21BGE34A	Allied – 3: CARTOGRAPHY	6

### COURSE LEVEL OUTCOMES:

On the successful completion of the course, students will be able to:

1. Read and prepare the maps.
2. Comprehend location and spatial aspects of the earth surface.
3. Discuss the use and importance of maps for regional development and decision-making.
4. Illustrate the lettering styles, methods and uses.
5. Examine recent trends of the cartography knowledge from the yearly period.
6. Analyse the basic of Direction and Bearings.
7. Appreciate the Modern Printing technology helps the reproduction of maps.
8. Explain the usage of Drawing Materials, Instruments and Equipment's in the Map Construction.

#### UNIT- I

**Cartography:** Definition, Nature and Scope - Branches of Cartography - Map – Definition, Types and Uses - History and development of Cartography.

#### UNIT- II

**Earth and system of Coordinates:** Map Scale: Methods of representation of Scale - Coordinate Systems: Latitudes and Longitudes -Grid System - Map Projections and their uses - Reduction and Enlargement of Maps – Direction and Bearings -True North, Magnetic North and Grid North.

#### UNIT- III

**Data-** Sources and Types - Methods of Collection – Base Map – Compilation and Generalization of Maps.

#### UNIT- IV

**Map Making:** Components of Map Design – Constraints in Map Design – Map Format - Map Symbolization: Point, Line and Area Symbols– Lettering Styles, Methods and Standardization of Names – Mechanics of Map Construction: Drawing Materials, Instruments and Equipment's.

#### UNIT- V

**Recent Trends in Cartography:** Thematic and Complex Mapping – Topographic Mapping - Atlas Mapping – Mapping Organizations of India: GSI, SOI- NATMO - Map Reproduction: Processes -Modern Printing; Laser Print, Inkjet Print and 3D Printing- Recent Trends: Computer Applications in Cartography.



### **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Power point slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizes
- Group discussion

### **REFERENCES:**

1. Misra, R.P. and Ramesh, A., (2002). Fundamentals of Cartography, Concept Publication Company, New Delhi.
2. Monkhouse, F.J. and Wilkinson, H.R., (1989). Maps and Diagrams, B.I. Publications, New Delhi.
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4. Keates, J. S., (1982). Understanding Maps, Longman, London and New York.
5. Lawrence G.R.P (1979).Cartographic methods, Methuen, London.
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8. Steers J. A., (1965). An Introduction to the Study of Map Projections, University of London.

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- <https://www.britannica.com/science/cartography>
- <https://www.yourarticlelibrary.com/geography/notes-on-maps-types-and-uses-of-map-and-scale/12835>
- <https://byjus.com/free-ias-prep/geography-notes-on-maps/>
- <https://www.slideshare.net/pramodgpramod/cartography-76693418>

**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary knowledge</b>		✓			✓	✓		✓
	2	<b>Communication skills</b>	✓	✓		✓		✓		
	3	<b>Critical thinking</b>	✓		✓	✓	✓			
	4	<b>Analytical reasoning</b>		✓		✓		✓	✓	
	5	<b>Research-related skills</b>	✓		✓		✓		✓	✓
	6	<b>Problem solving</b>		✓		✓		✓		
	7	<b>Application of learning</b>	✓		✓		✓			✓
	8	<b>Social commitment</b>		✓		✓		✓	✓	

Year	Sem.	Subject Code	Title of the paper	Hours/Week
2021 -2022 onwards	III	21BGE35S	Skill Based Subject 1: DIASTER MANAGEMENT	4

### **COURSE LEVEL OUTCOMES:**

On the successful completion of the course, students will be able to:

1. Distinguish the dynamic interactive relationship between Natural Disasters how to affect in the environment problems.
2. Outline Geological Hazards understanding on distribution Scale of measurement, utilization and management of natural Hazards at global level.
3. Assess of different aspects of Climatic Disasters provinces.
4. Infer the dynamics of Human Induced and Health hazard, Global warming – Ground water depletion and deforestation.
5. Summarize the disaster cycle includes several phases are mitigation, disaster preparedness disaster response and disaster recovery.
6. Discuss the disaster mitigation work involves directly preventing future emergencies and minimizing their negative effects.
7. Illustrate the different regions of the rehabilitation and reconstruction process.
8. Evaluate Disaster management organization.

### **UNIT- I**

**Disaster:** Meaning and Classification – Concepts of Disaster – Hazard – Catastrophe – Risk and Vulnerability.

### **UNIT- II**

**Geological Hazards:** Disasters in India: Earthquakes - Scale of Measurement - Intensity and Magnitude - Earthquake Prone Zones - Volcanic Hazards – Landslides, Avalanche and Tsunami.

### **UNIT- III**

**Climatic Disasters:** Disasters in India: Cyclones – Flood – Drought and Frost - Forest Fire - Causes, Impact and Distribution.

### **UNIT- IV**

**Human Induced:** Thermal, Nuclear and Chemical Disaster – Health Hazard, Global Warming – Ground Water Depletion and Deforestation - Causes, Impact and Distribution.

### **UNIT- V**

**Response and Mitigation to Disasters:** Mitigation and Preparedness- Disaster Cycle: Preparatory phase – Emergency phase, Rehabilitation and Reconstruction process -NROM – NIDM - Indigenous Knowledge and Community-Based Disaster Management; Do's and Don'ts During and Post-Disasters.

### **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Power point slide presentations
- Seminar
- Assignments
- Online and Offline Class Practical
- Quizes
- Group discussion

### **REFERENCES:**

1. Agarwal, S.K. (2004). Global Warming and Climate Change, A.P.H. Publications, New Delhi.
2. Ghosh G.K. (2008). Disaster Management, A.P.H. Publishing Corporation, New Delhi.
3. Singh, R. B. (2008). Disaster Management, Rawat Publications, New Delhi.
4. Singh, R.B. (2005). Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi.

### **FURTHER READING:**

1. Abbott, P. L., (1999). Natural disasters. McGraw-Hill, Boston.
2. Barucha, Arach. (2016), Textbook of Environmental Studies, University Press India, Hyderabad.
3. Kumaraswamy. K, (2009). GIS for Natural Resources and Disaster Management, Union offset printers, Tiruchirappalli.
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**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓		✓		✓		✓	
	2	<b>Analytical reasoning</b>	✓	✓		✓		✓	✓	
	3	<b>Research-related skills</b>	✓	✓		✓	✓			✓
	4	<b>Scientific reasoning</b>		✓	✓			✓		✓
	5	<b>Information/digital</b>	✓		✓		✓		✓	✓
	6	<b>Problem solving</b>			✓	✓			✓	
	7	<b>Cooperation/Team work</b>		✓	✓			✓		✓
	8	<b>Moral and ethical awareness</b>	✓		✓		✓		✓	

Year	Sem.	Subject Code	Title of the paper	Hours/Week
2021 -2022 onwards	IV	21BGE43C	Core- IV: HUMAN GEOGRAPHY	4

### COURSE LEVEL OUTCOMES:

On the successful completion of the course, students will be able to:

1. Explain the basic concepts and various themes of human geography.
2. Identify the evolution and distribution of Indigenous people.
3. Infer the evolution of races and Indian tribes.
4. Enumerate theories related to human race with the current trend.
5. Interpret the approaches and process of human geography as well as diverse patterns and adaptations.
6. Correlate the importance of space and society
7. Evaluate the growth, distribution and composition of population in different parts of the world.
8. Analyze the types and patterns of rural and urban settlements, urbanization and related issues in India and other regions of the world.

### UNIT- I

**Human Geography** – Meaning, Nature, Scope and Content, Branches. Basic Concepts (Space, Place and Landscape)- Understanding of Man-Nature Relationship: Determinism, Possibilism and Neo-determinism.

### UNIT- II

**The Indigenous People:** The Pygmies of Congo Basin – The Badawins of Arabian Desert – Eskimos of Arctic Region – The Kirghiz of Central Asia – The Bushmen of Kalahari Desert – Aborigines of Australia.

### UNIT- III

**Race and Racial Groups:** Griffith Taylor's Theory of Human Race - Ethnic Groups in India and World - Indian Tribes: Gonds - Bhill - Naga – Santhal- Religion and Language.

### UNIT- IV

**Population Dynamics:** World Distribution Pattern - Factors Influencing Spatial Distribution -Physical, Economic and Social Factors - Concepts of Over Population, Under Population and Optimum Population - Zero Population Growth - Population Theory: Malthusian Theory - Demographic Transition Model - Population Problems- Population Policies.

### UNIT- V

**Migration:** Types, Causes and Consequences, Current Trends, Regenstein and Lee theory of Migration -Settlements: Types of Rural Settlements; Classification of Urban Settlements; Trends and Patterns of World Urbanization.

## **PEDAGOGY STRATEGIES**

- Board and Chalk lecture
- Power point slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizes
- Group discussion

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**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary knowledge</b>	✓		✓		✓		✓	
	2	<b>Analytical reasoning</b>			✓	✓	✓		✓	✓
	3	<b>Scientific reasoning</b>		✓		✓		✓	✓	
	4	<b>Research related skills</b>		✓		✓	✓	✓		
	5	<b>Multicultural competence</b>	✓	✓	✓		✓	✓		
	6	<b>Teamwork</b>		✓			✓		✓	✓
	7	<b>Problem solving</b>			✓	✓		✓	✓	✓
	8	<b>Self directed learning</b>	✓	✓		✓	✓	✓		



Year	Sem.	Subject Code	Title of the paper	Hours/ Week
2021 -2022 onwards	IV	21BGE44P	CORE – PRACTICAL – II: MAP INTERPRETATION AND CLIMATIC DIAGRAMS	2/2

### COURSE LEVEL OUTCOMES:

On the successful completion of the course, students will be able to:

1. Recall the basics of Survey of India toposheets.
2. Identify physical and cultural features from toposheets.
3. Interpret weather elements from weather maps.
4. Students forecast climatic conditions by using weather maps.
5. Draw climatic diagrams.
6. Evaluate climatic graphs.
7. Infer Isopleth maps.
8. Recommend climatic data for analysis purposes by using graphs and diagrams.

### UNIT- I

**Survey of India Toposheets:** Numbering and Grid References of Toposheets – New Methods of Toposheet Indexing- Conventional Signs and Symbols - Cartographic Appreciation of SOI and OS sheets - Study and Interpretation of SOI maps.

### UNIT- II

**Indian daily weather reports:** Use of weather instruments and Signs and Symbols (Indian) – Interpretation of Weather Reports (at least one of Summer, Winter and Monsoon Seasons) – Pressure Gradient, Departure of Temperature from Maximum & Minimum - Station Model – Cyclone Cross Section and Tracking.

### UNIT- III

**Climatic diagrams:** Graph: - Line and Bar graph- Simple - Wind Rose Diagram: Star, Superimposed, Octagonal and Compound - Rainfall Dispersion Diagram.

### UNIT- IV

**Climographs:** Taylor’s Climograph – Hythergraph and Ergograph - Climatograph.

### UNIT- V

**Isopleth Maps:** Uses, Merits and Demerits- Drawing of Isopleth Maps: Isobars - Isotherms- Isohytes.

### PRACTICALS:

- Cartographic appreciation and comparison of SOI, OS and US sheets
- Interpretation of Indian daily weather reports
- Climatic diagrams
- Wind rose

### **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Assignments
- Online and Offline Class Practicals
- Quizes
- Group discussion

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**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓	✓			✓		✓	
	2	<b>Communication skills</b>	✓		✓	✓				✓
	3	<b>Critical thinking</b>			✓	✓	✓		✓	
	4	<b>Research related skills</b>	✓	✓		✓	✓	✓	✓	✓
	5	<b>Analytical reasoning</b>	✓	✓	✓		✓	✓	✓	✓
	6	<b>Problem solving</b>	✓		✓	✓				✓
	7	<b>Team work</b>			✓	✓		✓	✓	
	8	<b>Application of learning</b>	✓	✓	✓	✓	✓	✓	✓	✓

Year	Sem.	Subject Code	Title of the paper	Hours/Week
2021 -2022 onwards	IV	21BGE45P	CORE – PRACTICAL – III: MAP PROJECTIONS	2/2

### **COURSE LEVEL OUTCOMES:**

On the successful completion of the course, students will be able to:

1. Explain maps and co-ordinates
2. Draw the different directions and calculate the distances
3. Interpret types of map projection
4. Draw the Zenithal projection according to its uses.
5. Construct Conical projection.
6. Analyze the UTM projection and its uses.
7. Design the International projection
8. Plan conventional projections

### **UNIT- I**

**Map Projections:** Introduction - Basic Concepts: Parallels and Meridians, Datum, Geoid and Spheroid - Ideal Map Projection – Directions – Distances - Types of Map Projection.

### **UNIT- II**

**Zenithal Projection:** Construction, Properties and Uses of Zenithal Projection- Equal Area – Gnomonic – Stereographic – Orthographic.

### **UNIT- III**

**Conical Projection:** Construction, Properties and Uses of Conical Projection - One Standard and Two Standard Parallel – Bonne’s Projection – Polyconic Projection.

### **UNIT- IV**

**Cylindrical Projection:** Construction, Properties and Uses of Cylindrical Projection - Equi-Distant - Equal Area – Mercator’s (UTM).

### **UNIT-V**

**International Projection and Conventional Projection:** Construction, Properties and Uses of International Projection – Mollweide’s – Sinusoidal.

### **PRACTICALS:**

- Map Projections
- Zenithal, Conical and Cylindrical projection
- Mercator’s projection
- UTM
- International, Mollweid’s and Sinusoidal projection

## **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Power point slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Group discussion

## **REFERENCES:**

1. Khullar (1997). Practical Geography, Educational Publishers, New Delhi.
2. Phyllis Dink (1967). Map Work, Atnaram & sons, New Delhi.
3. SethuRakkayi, S., (2014). Puvippadaviyaloorarimugam, Sree Meenakshi Offsets, Madurai.
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**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓	✓	✓		✓	✓		✓
	2	<b>Communication skills</b>			✓	✓	✓	✓	✓	✓
	3	<b>Critical thinking</b>	✓	✓		✓				✓
	4	<b>Research-related skills</b>		✓			✓	✓	✓	
	5	<b>Analytical reasoning</b>	✓	✓	✓					✓
	6	<b>Problem solving</b>	✓	✓		✓	✓	✓	✓	
	7	<b>Team work</b>						✓		
	8	<b>Moral and ethical awareness</b>	✓		✓	✓			✓	✓

Year	Sem.	Subject Code	Title of the paper	Hours/ Week
2021 -2022 onwards	IV	21BGE46A	Allied – 4: SETTLEMENT GEOGRAPHY	6

### **COURSE LEVEL OUTCOMES:**

On the successful completion of the course, students will be able to:

1. Discuss the Settlement, Types and Fundamental concept in Settlement Geography.
2. Identify the Concept, Characteristics and Factors, Types and Patterns. Regional Characteristics – Rural problem and planning.
3. Illustrate the importance of the rural morphology of rural settlements.
4. Examine urbanization in India and World - Functional Classification of urban centers.
5. Infer urban Functions and characteristics, Urban Morphology Classical models.
6. Interpret various types of the rural-urban migration
7. Infer the trends of Hierarchy of urban centres, Urban Problems, Slums and Urban Planning
8. Discuss the environmental effects of transport.

### **UNIT- I**

**Settlement Geography:** Meaning, Nature, Scope and Development – Settlement: Origin and Site of Settlements – Types - Fundamental Concepts in Settlement Geography.

### **UNIT- II**

**Rural Settlements:** Meaning – Factor Affecting Origin and Evolution of Rural Settlements-Types – Size and Spacing of Settlements – Rural Morphology; Patterns – House Types - Contemporary Problems of Rural Settlements (Rural-Urban Migration; Land Use Changes; Land Acquisition and Transactions) - Rural Planning.

### **UNIT- III**

**Urban Settlements:** Definition – Factor Affecting Site and Situation of Towns - Functional Classification of Towns by H.J. Nelson - Urbanization: Factors - urbanization in India and World- Central Business District: Functions and characteristics.

### **UNIT- IV**

**Urban Morphology** - Models of Urban Land Use - Concentric, Sector and Multiple Nuclei Model - Rural–Urban Fringe – Urban Hierarchy – Primate City - Rank-Size Rule – Christallers Central Place Theory.

### **UNIT- V**

**Urban Issues**– Problems of Housing, Health, Water Supply, Transport and Environment - Urban Slums - Urban Planning: Types – Master Plan - Smart Cities.

## **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Power point slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizzes
- Group discussion

## **REFERENCES:**

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**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary knowledge</b>	✓		✓			✓	✓	
	2	<b>Communication skills</b>	✓		✓					✓
	3	<b>Critical thinking</b>		✓	✓		✓	✓		✓
	4	<b>Research – Related Skills</b>	✓		✓	✓		✓	✓	
	5	<b>Analytical reasoning</b>	✓	✓		✓			✓	
	6	<b>Problem solving</b>		✓		✓	✓	✓	✓	✓
	7	<b>Moral and ethical awareness</b>	✓		✓	✓	✓			
	8	<b>Multicultural competence</b>		✓	✓		✓	✓		✓

Year	Sem.	Subject Code	Title of the paper	Hours/ Week
2021 -2022 onwards	IV	21BGE47S	Skill Based Subject – II : GEOGRAPHY OF TOURISM	4

### COURSE LEVEL OUTCOMES:

On the successful completion of the course, students will be able to:

1. Outline the interactive relationship between Tourism development and growth in economic level.
2. Illustrate knowledge on geographical and socio-cultural aspects of tourism of the world.
3. Discuss the tourism potential, organization and management in world wide.
4. Identify the different spot of the geographical recreational places in India.
5. Discuss importance of the principles of Geo-tourism and analyse.
6. Assess the travel agency and tourism management in India.
7. Evaluate the dynamics of Tourism organization in India
8. Discuss the tourist potential spots, facility and management in Tamil Nadu.

### UNIT- I

**Tourism:** Meaning and Definition of Tourism-Nature & Scope-Importance of Tourism-Tourism as an Interdisciplinary Subject- Growth and Development of Modern Tourism-Factors Affecting Tourism Development - Recent Trends in Tourism Geography.

### UNIT- II

**Types of Tourism:** Geographical Parameters of Tourism by Robinson – Types: Nature Tourism – Religious Tourism, Recreation Tourism– Pilgrimage Tourism – Medical tourism - Geo-tourism in the world.

### UNIT- III

**Tourism Management:** Accommodation - Transport Facility - Travel Agencies - Publicity and Marketing –Tourism Visa - Passport and Tourist guides.

### UNIT- IV

**Tourism Organizations:** WTO – PATA and Tourism Organizations in India – ITDC: Functions –TTDC: Functions - Impact of Tourism: Economy; Environment; Society.

### UNIT- V

**Recent Trends of Tourism:** International and Regional; Domestic (India); Eco-Tourism, Sustainable Tourism, Meetings, Incentives, Conventions and Exhibitions (MICE) - Tourism in India and Tamil Nadu: Major tourist centres and its significance.

## **PEDAGOGY STRATEGIES:**

- Field trip
- Board and Chalk lecture
- Power point slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizes
- Group discussion

## **REFERENCES:**

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**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓	✓	✓		✓		✓	
	2	<b>Analytical thinking</b>		✓	✓		✓			✓
	3	<b>Research related skills</b>		✓	✓	✓				✓
	4	<b>Scientific reasoning</b>			✓	✓		✓	✓	
	5	<b>Information /digital literacy</b>	✓	✓	✓			✓		✓
	6	<b>Cooperation/ Team work</b>			✓	✓		✓	✓	
	7	<b>Problem solving</b>				✓	✓	✓	✓	
	8	<b>Moral ethical awareness</b>	✓	✓		✓				✓

Year	Sem.	Subject Code	Title of the paper	Hours/ Week
2021 -2022 onwards	V	21BGE51C	Core – V: GEOGRAPHY OF INDIA	5

### COURSE LEVEL OUTCOMES:

On the successful completion of the course, students will be able to:

1. Recall the Physical features of India.
2. Illustrate major physiographic units and geological structure.
3. Analyze agricultural activities of India.
4. Summarize the different types of plantation crops.
5. Analyze the different types of mineral Resources of India.
6. Evaluate the Industries and industrial regions of India.
7. Discuss about the national population policy and mode of transport in India.
8. Examine the population and Trade of India.

### UNIT- I

**Physical Features:** Location and Extent – Political Divisions- Physical Features: Major Physiographic Units – Geological Structure and Drainage System – Climate - Soils and Natural Vegetation.

### UNIT- II

**Agriculture:** Distribution and Cultivation of Major Crops: Rice, Wheat, Sugarcane, Cotton, Groundnut - Plantation Crops: Tea and Coffee – Irrigation: Types and Distribution - Agricultural Regions of India – Green Revolution – Problems and prospects of Indian Agriculture.

### UNIT- III

**Minerals Wealth:** Iron, Copper, Mica, Manganese, Bauxite, and Atomic minerals - Power Resources: Coal, Petroleum, Natural Gas, Hydal, Nuclear, Tidal, Solar, Wind and Geothermal Energy - Multipurpose River Projects.

### UNIT- IV

**Industries:** Distribution and Production of Major Industries: Cotton Textiles, Iron and Steel, Sugar, Cement, Chemical, Engineering and IT Industry–Industrial Regions in India.

### UNIT- V

**Population:** Growth, Distribution and Density - Problems of over population - National Population Policy - Transport: National Highways - Railways - Inland Waterways – Airways - Major ports of India - Trade: Direction - Volume - Pattern of Foreign Trade of India.

## **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Power point slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizes
- Group discussion

## **REFERENCES:**

1. Gopal Singh, (1970). A Geography of India, Atnaram& sons, New Delhi.
2. Khullar, D. R., (2010). India – A Comprehensive Geography, Kalyani Publishers, New Delhi.
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3. Nag, P. and Sengupta, S., (1992). Geography of India, Concept Publishing, New Delhi.
4. Pal, Saroj K. (2003). Physical Geography of India – A study in Regional Earth Sciences, Orient Longman Pvt. Ltd. Kolkata.
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7. Singh R. L., (1971). India: A Regional Geography, National Geographical Society of India.
8. Singh, Jagdish.,(2003). India - A Comprehensive & Systematic Geography, GyanodayaPrakashan, Gorakhpur.
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- [http://www.gov.pe.ca/photos/original/wi\\_India.pdf](http://www.gov.pe.ca/photos/original/wi_India.pdf)
- <https://www.3dgeography.co.uk/geography-of-india>
- <https://www.visionias.net/2020/05/indian-geography-short-notes-pdf.html>

**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓		✓		✓	✓	✓	
	2	<b>Communication skills</b>	✓	✓			✓			✓
	3	<b>Critical thinking</b>		✓	✓	✓		✓		✓
	4	<b>Research related skills</b>	✓		✓	✓			✓	
	5	<b>Analytical reasoning</b>		✓			✓	✓		✓
	6	<b>Problem solving</b>	✓	✓		✓		✓		
	7	<b>Moral and ethical awareness</b>	✓	✓		✓			✓	
	8	<b>Multicultural competence</b>			✓		✓	✓	✓	✓

Year	Sem.	Subject Code	Title of the paper	Hours/ Week
2021 -2022 onwards	V	21BGE52C	Core – VI : GEOGRAPHY OF WORLD RESOURCES	5

### **COURSE LEVEL OUTCOMES:**

On the successful completion of the course, students will be able to:

1. Explain natural resources.
2. Examine the significance agricultural resources in economic activities.
3. Analyze the fishing and major fishing grounds in the world.
4. Distinguish the different type of power resources and distribution.
5. Evaluate the distribution of mineral resources in the world.
6. Interpret the industrial resources around the world.
7. Analyze the different modes of transportation system of the world.
8. Discuss the trade organizations.

### **UNIT I**

**Natural Resources:** Resources- Definition, Nature, Scope and Significance –Need for Conservation and Sustainable Development - Classification and types – Sectors of Economy: Primary, Secondary, Tertiary and Quaternary -Soil Resources: Classification and Distribution and Soil Conservation - Forest Resources: Types, Distribution and Forest Products.

### **UNIT II**

**Agricultural Resources:** Types, Geographical Distribution of Rice, Wheat, Tea, Coffee, Cotton and Sugarcane - Animal Resources: Dairy Farming - Fishing and Major Fishing Grounds.

### **UNIT III**

**Mineral Resources:** Types, Significance and Distribution of Iron ore, Bauxite, Copper, Gold and Manganese - Power Resources: Distribution and Production of Coal, Petroleum, and Natural Gas, Hydal, Nuclear, Solar, Wind and Tidal Energy.

### **UNIT IV**

**Industries:** Locational Factors and Distribution of Industries – Iron and Steel, Ship Building, Automobile, Textiles, Sugar, Chemical, Paper and Pulp -Major Industrial Regions of the World.

### **UNIT V**

**Transport System:** Road, Rail, Air and Waterways –Inland Waterways and Ocean Routes - Trade: Composition of International Trade, Pattern, Balance of Trade, Agreements of trade – WTO – GATT.



## **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- PowerPoint slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizzes
- Group discussion

## **REFERENCES:**

1. AlkaGoutham (2013). Geography of Resources, Exploration, Conservation and Management, SharadaPusthakBhavan, New Delhi.
2. Khanna, K.K. and Gupta, V.K., (2004). Economic and Commercial geography, Sultan Chand and sons, New Delhi.
3. Roy Prithwish, (2001). Economic Geography: A Study of Resources, New Central Book Agency Pvt. Ltd. New Delhi.
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## **FURTHER READING:**

1. Alexander, J. W., (1963). Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
2. Alexander, J.W., (2006). Economic Geography –Prentice Hall of India Pvt. Ltd. New Delhi.
3. Bagchi-Sen, S. and Smith, H. L., (2006). Economic Geography: Past, Present and Future, Taylor and Francis, London.
4. Coe, N. M., Kelly P. F. and Yeung H. W., (2007). Economic Geography: A Contemporary Introduction, Wiley-Blackwell, New Jersey.
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## **Website(s):**

- <http://geog.ufl.edu/files/Economic-Geography-3.pdf>
- <https://freeupscmaterials.org/pmfias-economic-geography-pdf/>
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- <https://www.clearias.com/geography/>
- <https://library.oapen.org/bitstream/id/ecf6e3e2-91ba-4cf4-952d-c04d4bbe4704/1005865.pdf>
- <https://london.ac.uk/sites/default/files/uploads/gy2164-economic-geography-study-guide.pdf>

**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓		✓		✓			✓
	2	<b>Communication skills</b>	✓			✓			✓	
	3	<b>Critical thinking</b>		✓	✓				✓	
	4	<b>Research related skills</b>		✓		✓	✓	✓		✓
	5	<b>Analytical reasoning</b>	✓		✓				✓	✓
	6	<b>Problem solving</b>		✓		✓	✓	✓		✓
	7	<b>Moral and ethical awareness</b>	✓	✓	✓			✓		
	8	<b>Multicultural competence</b>		✓	✓			✓		

Year	Sem.	Subject Code	Title of the paper	Hours/Week
2021 -2022 onwards	V	21BGE53C	Core – VII : EVOLUTION OF GEOGRAPHICAL THOUGHT	6

### COURSE LEVEL OUTCOMES:

On the successful completion of the course, students will be able to:

1. Summarize the evolution of geographical thought from ancient to modern.
2. Distinguish the major place of Geography in all other sciences.
3. Interpret geographical thought in different regions of the world
4. Analyze the Explorations and Discoveries in all over the world.
5. Discuss the past and future trends in geographical thought.
6. Illustrate the Dark Age in Europe and Arab contribution to Geography.
7. Examine the Contribution of German School of knowledge in geographical studies.
8. Evaluate the contribution and development of British, American and Indian schools in geographical study.

### UNIT I

**The Field Geography:** Definition, Nature, Content and Scope – Development and Branching of Geography – Approaches: Regional Geography and Systematic Geography - Four Traditions in Geography: Man-Land, Area Studies, Spatial and Earth Science.

### UNIT II

**Ancient Period:** Contribution of Greeks: Homer, Thales, Anaximander, Eratosthenes, Hecataeus, Herodotus and Plato - Romans: Strabo and Ptolemy - Indians: Varahmihira, Aryabhata and Bhaskaracharya.

### UNIT III

**Medieval Period:** Dark Age in Europe - Arab: Ibn-Hawqal, Al-Masudi, Al-Biruni, Al- Idrisi, Ibn- Buttuta and Ibn-Khaldun - Contribution and Explorations and Discoveries: Marco Polo, Christopher Columbus, Vasco Da Gama and Ferdinand Magellan.

### UNIT IV

**Modern Period:** Contributions of German and French Schools of Geographical Thoughts - German: Alexander Von Humboldt, Carl Ritter and Fredrick Ratzel - French: Vidal de la Blache, Jean Brunhes and Albert Demangeon.

### UNIT V

**Modern Period:** Contributions of British, American and Indian Schools of Geographical Thoughts: British: Halford J. Mackinder, Herberston and Dudley Stamp - American: W.M. Davis, Isaiah Bowman, Ellen Churchill Semple and Ellsworth Huntington- Indian – R.L. Singh, R.P. Mishra and A. Ramesh.

## **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Powerpoint slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizzes
- Group discussion

## **REFERENCES:**

1. Adhikari .S (1992). Geographical Thought, Chiatanya Publishing House, Allahabad.
2. Dikshit .R .D (2006). Geographical Thought – A contextual History of Ideas, Prentice Hall of India.
3. Hussain.M (2007). Evolution of Geographical Thought, Rawat Publications, Jaipur.
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## **FURTHER READING:**

1. Dickinson .R .E (1969). The Makers of Modern Geography, Routeldge and Kegal Paul, London.
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3. George Henderson ed. (2009). Geographic Thought, A Praxis Perspective, Routledge.
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- <https://lakshyageography.blogspot.com/2018/02/geographical-thought-after-jews-and.html>
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- <https://web.csulb.edu/~rodrigue/geog140/lectures/4tradgeo.html>
- <http://www.lcwu.edu.pk/ocd/cfiles/Geography/Maj/Geo-301/TraditionsofGeography.pdf>
- <https://www.directionias.com/wp-content/uploads/2019/04/Geographical-Thought-by-Neetu-Singh-Class-Notes-with-video-lecture.pdf>

**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓			✓	✓		✓	✓
	2	<b>Communication skills</b>		✓	✓	✓		✓		
	3	<b>Critical thinking</b>	✓			✓		✓		✓
	4	<b>Research related skills</b>	✓		✓				✓	✓
	5	<b>Analytical reasoning</b>	✓	✓		✓				
	6	<b>Problem solving</b>		✓	✓		✓			
	7	<b>Moral and ethical awareness</b>	✓			✓		✓	✓	✓
	8	<b>Multicultural competence</b>		✓		✓	✓			

Year	Sem.	Subject Code	Title of the paper	Hours/Week
2021 -2022 onwards	V	21BGE54S	Skill Based Subject – III: FUNDAMENTALS OF REMOTE SENSING AND GNSS	5

### COURSE LEVEL OUTCOMES:

On the successful completion of the course, students will be able to:

1. Explain the basics of EMR and energy interaction in atmosphere and on earth surface features.
2. Infer the basis of Remote sensing sensors and image resolution schemes
3. Interpret satellite imagery using interpretation keys and understand the false colour composite.
4. Analyze and interpret the remotely sensed satellite images and aerial photographs in order to understand topographical and cultural variations on the earth surface
5. Apply the knowledge to carry out field studies and projects.
6. Create maps
7. Examine the constellation of GNSS and its wide range of application.
8. Estimate the importance of GNSS in locating a place on the earth and apply the same to pinpoint exact position.

### UNIT I

**Remote Sensing:** Definition – Content - Development - Types – Basic Principles - EMR and EMS - Energy Interactions – Atmospheric Windows - Ideal Remote Sensing System.

### UNIT II

**Aerial Remote Sensing:** Aerial photo – Types of Aerial Photographs: Wide Angle, Narrow Angle, Horizontal, and Vertical and Oblique - Camera - Film – Scale Stereoscopic Vision Elements of Air Photo Interpretation.

### UNIT III

**Satellite Remote Sensing:** Satellites - Types – Orbit – Resolution – Sensors – Resolution Characteristics of LANDSAT, SPOT and IKONOS - Thermal Remote Sensing and Microwave Remote Sensing.

### UNIT IV

**Application of Remote Sensing:** Geomorphology, Agriculture, Natural Resource Management, Coastal and Oceanographic Studies, Urban Planning and Disaster Management.

### UNIT V

**GNSS:** Concept of Satellite based Navigation - History-Segments: Control - Space and User.GPS Systems: NAVSTAR - GLONASS – GALILEO – IRNSS-Advantages and Limitations of GNSS.

### **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Power point slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizes
- Group discussion

### **REFERENCES:**

1. Joseph, George (2003). Fundamental of Remote Sensing, University's Press (India) Pvt.
2. Kumar, S., (2003). Basics of Remote Sensing and GIS, Laxmi Publications, New Delhi.
3. Lillesand, T.M. and Ralph W. Keifer (2002). Remote Sensing and Image Interpretation, John Wiley & Sons, Inc., New York.Ltd., Hyderabad.
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**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓		✓				✓	✓
	2	<b>Analytical reasoning</b>			✓	✓			✓	✓
	3	<b>Scientific reasoning</b>	✓	✓		✓	✓		✓	
	4	<b>Research Related skills</b>		✓	✓	✓	✓	✓		✓
	5	<b>Information/ Digital literacy</b>		✓		✓	✓	✓		✓
	6	<b>Teamwork</b>		✓	✓		✓			✓
	7	<b>Problem solving</b>			✓	✓	✓	✓		✓
	8	<b>Self directed learning</b>	✓	✓	✓		✓	✓	✓	



Year	Sem.	Subject Code	Title of the paper	Hours/ Week
2021 -2022 onwards	V	21BGE5EL	<b>Non- Major Elective Paper – I: BASICS OF PHYSICAL GEOGRAPHY</b>	<b>3</b>

### **COURSE LEVEL OUTCOMES:**

On the successful completion of the course, students will be able to:

1. Explain the evolution and origin of the Earth.
2. Distinguish the branches of geography and components of earth.
3. Infer the major relief features in different orders
4. Illustrate the interior of the earth, earthquake and types of Volcanoes.
5. Discuss the origin, composition and structure of atmosphere.
6. Record temperature, pressure, humidity and rainfall
7. Explain the bottom relief features of the different ocean.
8. Interpret the ocean temperature and salinity level from the world.

### **UNIT I**

**Introduction of Geography:** Meaning and Branches of Geography - Physical Geography: Definition, Scope and Development - Components of the Earth: Lithosphere, Atmosphere, Hydrosphere and Biosphere - Latitudes: Climatic Zones – Longitudes: Basis of Time Calculation – International Date Line.

### **UNIT II**

**Origin of the Earth:** Universe – Galaxy - Solar System – Earth: Origin and Evolution of Earth: Gaseous and Nebular Hypothesis- Shape and Size of the Earth – Movements of the Earth: Rotation and Revolution and effects.

### **UNIT III**

**Lithosphere:** Relief Features of Different Orders: First, Second and Third Order - Major Relief features: Mountains – Plateau – Plains – Deserts and Islands- Interior of the Earth– Distribution of Earthquake and Volcano- Fold and Fault.

### **UNIT IV**

**Atmosphere** – Origin, Structure and Composition – Temperature - Pressure belts – Winds – Clouds – Precipitation – Types.

### **UNIT V**

**Hydrosphere:** Major Oceans: Pacific, Atlantic and Indian - Ocean Bottom Relief Features – Salinity – Ocean Currents – Wave and Tides.

## **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Powerpoint slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizes
- Group discussion

## **REFERENCES:**

1. Leong, G.C. (1994). Certificate Physical and Human Geography. India: Oxford Publication, New Delhi.
2. Savindrasingh., (2014). Oceanography, Pravalikapublicationa, Allahabad.
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## **FURTHER READING:**

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## **Website(s):**

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- <https://www.sciencedirect.com/geomorphology>
- <https://www.uv.es/hegigui/Kasper/por%20Robert%20H%20Stewart.pdf>

**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓	✓		✓		✓		✓
	2	<b>Analytical reasoning</b>		✓	✓		✓	✓	✓	✓
	3	<b>Self –directed learning</b>	✓	✓		✓			✓	
	4	<b>Reflective thinking</b>	✓	✓		✓			✓	
	5	<b>Information /digital literacy</b>	✓		✓	✓		✓		✓
	6	<b>Problem solving</b>				✓	✓		✓	✓
	7	<b>Cooperation/ Team work</b>			✓	✓	✓	✓		
	8	<b>Lifelong learning</b>	✓		✓	✓	✓			✓

Year	Sem.	Subject Code	Title of the paper	Hours/ Week
2021 -2022 onwards	VI	21BGE61C	Core – VIII : GEOGRAPHY OF TAMIL NADU	5

### **COURSE LEVEL OUTCOMES:**

On the successful completion of the course, students will be able to:

1. Explain the Physiographic and Drainage of the Tamil Nadu.
2. Summarize different types of the soils in Tamil Nadu.
3. Synthesize and develop the idea of Agriculture and Irrigation.
4. Infer the plantation crops of Tamil Nadu.
5. Examine the mineral resources distribution in Tamil Nadu.
6. Discuss the different types of power sources
7. Infer the industries and its spatial distribution and development.
8. Interpret spatial distribution of population and urbanization.

### **UNIT – I**

**Geographical Setting**–Administrative units – Major relief features – Climate: Temperature, Seasonal and Annual Rainfall Distribution – Major Rivers - Soil: Types and Their Distribution and Natural Vegetation.

### **UNIT – II**

**Agriculture and Irrigation:** Distribution and Cultivation of Major Crops: Paddy, Sugarcane, Cotton and Groundnut - Impact of Green Revolution - Irrigation: Types and distribution – Problems – Plantation crops: Tea, Coffee and Rubber -Fisheries (Inland and Marine).

### **UNIT – III**

**Mineral Wealth of Tamil Nadu:** Coal, Iron ore, Petroleum, Atomic and Thermal power - Major Hydal Projects – Non-conventional Energy Sources: Solar and Wind energy.

### **UNIT – IV**

**Industries:** Cotton Textiles – Cement – Sugar – Chemical - Paper Industry, Automobiles and IT -Industry - Industrial Development in Tamil Nadu.

### **UNIT – V**

**Human Resources:** Population Growth, Distribution and Density – Rural and Urban Population – Urbanization: Trend - Million Cities of Tamil Nadu - Transport: Major Road and Railways, Air and Sea Transportation - Trade.

## **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Power point slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizes
- Group discussion

## **REFERENCES:**

1. Kumarasamy K. (2019).Geography of Tamil Nadu (Third edition), VarthamananPathippagam, Coimbatore.
2. Ramesh, A and Tiwari, P.S., (1983). Basic Resources Atlas of Tamil Nadu, Dept. of Geography, University of Madras, Chennai.
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## **FURTHER READING:**

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3. Singh R. L., (1971). India: A Regional Geography, National Geographical Society of India.
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5. Tirtha, Ranjit (2002). Geography of India, Rawat Publs., Jaipur & New Delhi.
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- <https://civilserviceaspirants.in/TNPSC/Development-Administration/Geography-of-TamilNadu-1.php>

**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓		✓				✓	
	2	<b>Communication skills</b>				✓	✓			✓
	3	<b>Critical thinking</b>	✓	✓						✓
	4	<b>Research related skills</b>		✓	✓		✓		✓	
	5	<b>Analytical reasoning</b>	✓			✓		✓		✓
	6	<b>Problem solving</b>		✓			✓	✓		
	7	<b>Moral and ethical awareness</b>	✓		✓		✓		✓	
	8	<b>Multicultural competence</b>				✓		✓	✓	✓

Year	Sem.	Subject Code	Title of the paper	Hours/ Week
2021 -2022 onwards	VI	21BGE62C	Core – IX: POLITICAL GEOGRAPHY	6

### COURSE LEVEL OUTCOMES:

On the successful completion of the course, students will be able to:

1. Outline the concept of nation and state and geo-political theories.
2. Summarize the various morphological classification boundaries.
3. Illustrate the capitals in post -1945 federations in geographical aspects in India.
4. Examine the significance of core areas and capitals in the world.
5. Interpret the different dimensions of electoral geography and Importance of political study.
6. Discuss the India's Foreign Policy.
7. Examine politics geography and integration of Indian states, India bilateral-relationship with SAARC countries.
8. Assess the resource conflicts and politics of displacement.

### UNIT I

**Political Geography:** Definition, Scope, Content and Development – Geopolitics: Theories - Heartland and Rim land - State: POWERS and Functions of the State – Categories of the State - Nations and Nationalism.

### UNIT II

**Core Areas and Boundaries:** Types, Capitals – Types, Morphological Classification, Factors of Development, Federal Capitals – New and Neutral capitals – Capitals in Post - 1945 Federations. Boundaries and Frontiers: Definition, Boundary Classification, Genetic and Functional, Morphological Classification (Buffer Zone – Land Locked Countries) – Border Disputes.

### UNIT III

**Electoral Geography:** Geography of Elections – Geography of Campaigning, Voting Pattern, Voters Participation – Opinion Poll – Gerry Mandering – Election Commission.

### UNIT IV

**Political Geography of India:** Integration of Indian states – India's Bilateral Relationship with China, Pakistan and Sri Lanka – SAARC Countries - India's Foreign Policy.

### UNIT V

**Political Geography of Resource Conflicts:** Water Sharing Disputes, Disputes and Conflicts Related to Forest Rights and Minerals - Politics of Displacement: Issues of relief, compensation and rehabilitation: with reference to Dams, Highways and Special Economic Zones.

## **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Powerpoint slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizzes
- Group discussion

## **REFERENCES:**

1. Adhikari, S. (2013). Political Geography of India –Sharda PustakBhawan, Allahabad.
2. Dikshit, R.D. (1982). Political Geography: A contemporary perspective, McGraw Hill Publishing co., New Delhi.
3. Muir, R., (1981). Modern Political Geography, Macmillan, London.
4. Sudeeptha Adhikari, (2004). Political Geography, Rawat publications, New Delhi.

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2. Cohen Sayl, B., (1973). Geography and Politics in a divided world, OUP, New York.
3. Cox, K. R., Low M. and Robinson J., (2008). The Sage Handbook of Political Geography, Sage Publications.
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- [https://en.wikipedia.org/wiki/Political\\_geography](https://en.wikipedia.org/wiki/Political_geography)
- <https://www.sciencedirect.com/topics/social-sciences/political-geography>
- <https://www.journals.elsevier.com/political-geography>



**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓		✓		✓		✓	✓
	2	<b>Communication skills</b>				✓		✓	✓	
	3	<b>Critical thinking</b>	✓	✓			✓			✓
	4	<b>Research – Related Skills</b>	✓	✓	✓				✓	✓
	5	<b>Analytical reasoning</b>			✓	✓	✓	✓		
	6	<b>Problem solving</b>	✓	✓		✓	✓	✓		
	7	<b>Moral and ethical awareness</b>	✓	✓	✓				✓	✓
	8	<b>Multicultural competence</b>			✓	✓		✓	✓	

Year	Sem.	Subject Code	Title of the paper	Hours/Week
2021 -2022 onwards	VI	21BGE63C	Core – X : NATURAL REGIONS OF THE WORLD	5

### **COURSE LEVEL OUTCOMES:**

On the successful completion of the course, students will be able to:

1. Interpret the different geographical natural region form the world.
2. Summarize the equatorial region human life and economic development.
3. Identify tropical region natural life and economic level.
4. Illustrate the tropical region climate and vegetations.
5. Assess Warm temperate region natural life and economic level.
6. Rate Cool temperate region variation of natural resource and climatic conditions.
7. Categorize the vegetation and animal life of cool temperate region.
8. Classify thePolar Regions to understand the climate and animal life.

### **UNIT I**

**Equatorial Regions:**Natural Region: Meaning and Major Types - Equatorial Regions: Amazon type and Equator type;Situation and Extent, Climate, Vegetation, Animal Life, Human Life and Economic Development.

### **UNIT II**

**Tropical Regions:** Monsoon, Sudan, Sahara and Caribbean - Situation and Extent, Climate, Vegetation, Animal Life, Human Life and Economic Development.

### **UNIT III**

**Warm temperate Regions:** Mediterranean, China and Temperate Desert - Situation and Extent, Climate, Vegetation, Animal Life, Human Life and Economic Development.

### **UNIT IV**

**Cool temperate Regions:** West European, Lawrence, Prairie - Situation and Extent, Climate, Vegetation, Animal Life, Human Life and Economic Development.

### **UNIT V**

**Polar Regions:** Taiga and Tundra - Situation and Extent, Climate, Vegetation, Animal Life, Human Life and Economic Development.

### **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Power point slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizes
- Group discussion

## REFERENCES:

1. Ahmad, K. S. (1950). Major Natural Regions: (a treatment of the world on the basis of natural regions). S. Chand & Co, New Delhi.
2. Dudley Stamp, (1979). The World Regional Geography, Orient Longman Limited, New Delhi.
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- <https://www.examrace.com/Study-Material/Geography/Regional-Geography/Geography-Natural-Regions.html>
- [https://en.wikipedia.org/wiki/Natural\\_region](https://en.wikipedia.org/wiki/Natural_region)

**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓		✓			✓		✓
	2	<b>Communication skills</b>		✓		✓	✓		✓	
	3	<b>Critical thinking</b>			✓	✓	✓			
	4	<b>Research related skills</b>	✓	✓				✓	✓	✓
	5	<b>Analytical reasoning</b>	✓		✓		✓		✓	
	6	<b>Problem solving</b>	✓			✓	✓	✓		✓
	7	<b>Moral and ethical awareness</b>	✓	✓		✓		✓		
	8	<b>Multicultural competence</b>	✓		✓		✓			

Year	Sem.	Subject Code	Title of the paper	Hours/Week
2021 -2022 onwards	VI	21BGE64P	<b>CORE – PRACTICAL – IV: SURVEYING AND INTERPRETATION OF REMOTE SENSING DATA</b>	4

### **COURSE LEVEL OUTCOMES:**

On the successful completion of the course, students will be able to:

1. Collect primary data to bring out grassroots realities.
2. Apply the GNSS survey for the future research and developments
3. Design proper tools and surveying methods for bearing and elevation measurement.
4. Interpret the levelling methods and procedures.
5. Examine the aerial photograph interpretation and ground features detection for Feature plan.
6. Apply the stereoscope for 3D vision in future analysis
7. Interpret satellite imagery and marginal information.
8. Conduct field trip in geographical areas and realize the ground realities

### **UNIT I**

**Surveying:** Introduction – Types of Surveying - Chain Surveying: Open and Closed Traverse, Plane table surveying - Radiation and Intersection Method (Open and Closed Traverse)- GNSS Survey: Observation, Co-Ordinate Measurements – Point, Line and Area.

### **UNIT II**

**Bearings and Elevation Measurement:** Prismatic Compass: Radiation and Intersection Methods (Open and Closed Traverse) - Error Correction in Closed Traverse - Elevation Measurement in Degrees Using Indian Clinometer and Abney Level.

### **UNIT III**

**Levelling:** Dumpy Level – Level Difference and Elevation Measurement- Theodolite: Centering – Levelling - Horizontal and Vertical measurements – Triangulation Method.

### **UNIT IV**

**Aerial Photos:** Elements of Visual Interpretation (Location, Size, Shape, Shadow, Tone/Colour, Texture, Pattern, Height/Depth and Site/Situation/Association) - Marginal Information - Stereoscopic Vision Test - Visual Interpretation of Aerial Photographic Features -Satellite Images: Marginal Information - Visual Interpretation of Imagery: Observing the Difference Between Targets and Their Backgrounds -Visual Elements of Tone, Shape, Size, Pattern Texture, Shadow and Association.

### **UNIT V**

**Field Study:** Field trip / Field Excursions for Maximum of One Week (7 days) are Mandatory and Report of the Field Trip with Geo Tagged Photos and Route Map to be submitted.

## **PRACTICALS:**

- Chain survey – Chain , Plain table and GNSS
- Bearings and Elevation measurement –Prismatic Compass, Indian clinometer and Abney level
- Levelling- Dumpy level and Theodolite
- Aerial Photos
- Satellite Images

## **PEDAGOGY STRATEGIES:**

- Board and Chalklecture
- Assignments
- Field works
- Online and Offline Class Practicals
- Quizes
- Groupdiscussion

## **REFERENCES:**

1. Misra, R.P. and Ramesh, A., (2002). Fundamentals of Cartography, Concept Publication Company, New Delhi.
2. Sarkar, A. (2015) Practical Geography. A Systematic Approach. Orient Black Swan Private Ltd., New Delhi
3. Sethu Rakkayi, S., (2014). Puvippadaviyaloorarimugam, Sree Meenakshi Offsets, Madurai.
4. Singh, R. L., (2005). Elements of Practical Geography, Kalyani Publishers, New Delhi.

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1. Lillesand, T.M. and Kiefer, R.W., (1979). Remote Sensing and Image Interpretation, John Wiley.
2. Monkhouse, F.J. and Wilkinson, H.R., (1989). Maps and Diagrams, B.I.Publications, New Delhi.
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9. Sabins, Jr. (1978). Remote Sensing: Principles and Interpretation, Freeman and Co, San Francisco.

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- <https://theconstructor.org/surveying/types-of-chains-surveying/13889>
- <https://theconstructor.org/surveying/chain-survey/29812>
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- [https://en.wikipedia.org/wiki/GNSS\\_applications](https://en.wikipedia.org/wiki/GNSS_applications)

**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓	✓	✓	✓		✓	✓	
	2	<b>Communication skills</b>	✓				✓		✓	✓
	3	<b>Critical thinking</b>		✓	✓			✓	✓	
	4	<b>Research-related skills</b>		✓		✓	✓	✓	✓	
	5	<b>Analytical reasoning</b>	✓		✓	✓			✓	✓
	6	<b>Problem solving</b>	✓	✓	✓		✓	✓		
	7	<b>Team work</b>	✓			✓	✓			✓
	8	<b>Moral and ethical awareness</b>			✓		✓		✓	✓

Year	Sem.	SubjectCode	Title of the paper	Hours/ Week
2021 -2022 onwards	VI	21BGE65V	Core – XI PROJECT AND VIVA-VOCE	2

### **COURSE LEVEL OUTCOMES:**

On the successful completion of the course, students will be able to:

1. To understand about the various research methods and its applications.
2. To familiarize about data collection, types, analysis, interpretation and report with suggestion.

### **WRITE –UP: GENERAL GUIDELINES:**

S. No.	Title
1	Introduction
2	Statement of the Problem
3	Relevance of the Study
4	Review of Literature
5	Aim and Objectives
6	Data and Tools
7	Methodology
8	Data arrangements, Analysis and Interpretation
9	Results and Discussions
10	Summary and Conclusions
11	References
12	Appendices

- The total number of pages should be minimum of 40, including text, figures, tables, photographs, references and appendices.
- The viva-voce presentation is with the help of equipment which are available in the department.



Year	Sem.	Subject Code	Title of the paper	Hours/ Week
2021 -2022 onwards	VI	21BGE66S	Skill Based Subject – IV: FUNDAMENTALS OF GIS	5

### **COURSE LEVEL OUTCOMES:**

On the successful completion of the course, students will be able to:

1. Explain various components and principles of GIS.
2. Discuss the comprehensive of GIS data structure.
3. Infer basics of DBMS and uses of GIS software.
4. Analyze buffering measuring distance of the object.
5. Illustrate of the recent trends in GIS.
6. Create various maps using different digital layers.
7. Apply GIS in various modules geographical studies.
8. Analyze the application of GIS.

#### **UNIT I**

**GIS:** Definition - Components – Origin and Development -GIS and Geography – Digital Cartography – GIS components and Functions.

#### **UNIT II**

**GIS Data Structure:** Spatial and Non-Spatial - Characteristics of Spatial Data- Co-Ordinates, Projection, Datum; Sources: Field Survey, Aerial Photos, Satellite Imageries, GPS – Data Structure: Raster and Vector.

#### **UNIT III**

**Database Management System:** Structure, Functions and Organizational aspects – RDBMS -GIS Data Analysis: Data Input, Geo-Referencing, Editing, Data Storage, Analysis and Output - Buffering –Overlay- GIS software: Advantages and Uses.

#### **UNIT IV**

**GIS Modules:** Network, TIN, DTM, DEM and Recent Trends in GIS.

#### **UNIT V**

**Application of GIS** – Land Use/ Land Cover, Agriculture –Environment- Urban Sprawl - Disaster – Marine - Water Resources.

### **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Power point slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizes
- Group discussion

## REFERENCES:

1. Anji Reddy, M., (2004). Geoinformatics for Environmental Management, BS Publications, Hyderabad.
2. Chang Kang-tsung, (2008). Introduction to Geographic Information Systems, 4th edition, Tata McGraw-Hill Publishing Company Ltd. New Delhi.
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4. Lo C P and Yeung Albert K W. (2004). Concepts and Techniques of Geographic Information Systems, Prentice Hall of India Pvt.ltd, New Delhi.
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8. Star J andEstesJ. (1994). Geographic information system: An introduction. New Jersey: .Prentice Hall Englewood Cliff, New Jersey.

## Website(s):

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- <http://dst-iget.in/>
- <https://gis.e-education.psu.edu/>
- [http://planet.botany.uwc.ac.za/nisl/gis/gis\\_primer/page\\_27.html](http://planet.botany.uwc.ac.za/nisl/gis/gis_primer/page_27.html)
- [https://nptel.ac.in/courses/105104100/lectureE\\_36/E\\_36\\_5.html](https://nptel.ac.in/courses/105104100/lectureE_36/E_36_5.html)

**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓			✓	✓		✓	✓
	2	<b>Analytical reasoning</b>	✓	✓	✓			✓		
	3	<b>Research-related skills</b>		✓	✓	✓			✓	✓
	4	<b>Scientific reasoning</b>	✓		✓	✓		✓	✓	
	5	<b>Information/digital</b>	✓	✓	✓		✓	✓	✓	
	6	<b>Problem solving</b>				✓	✓	✓	✓	
	7	<b>Cooperation/Team work</b>		✓				✓		✓
	8	<b>Moral and ethical awareness</b>	✓		✓	✓	✓			✓

Year	Sem.	Subject Code	Title of the paper	Hours/ Week
2021 -2022 onwards	VI	21BGE6EL	<b>Non- Major Elective Paper – II: BASICS OF HUMAN GEOGRAPHY</b>	<b>3</b>

### **COURSE LEVEL OUTCOMES:**

On the successful completion of the course, students will be able to:

1. Explain the human geography and man–environment relationship.
2. Examine the different human races and tribes.
3. Assess the approaches and process of human geography as well as the diverse pattern of adaptation.
4. Interpret the types and distribution of natural resources and its importance.
5. agricultural types, geographical conditions for different cropping pattern.
6. Recommend various crops and its climatic condition of growth and adaptation to aggressive climates
7. Design patterns and processes of population growth and its implications.
8. Examine distribution of important minerals and related industries.

### **UNIT I**

**Human Geography:** Meaning, Nature and Scope –Sub-divisions of Human Geography - Man and Environment Relationship –Determinism and Possibilism.

### **UNIT II**

**Human Races and Religion:** Human Races: Types and Distribution – Important Tribes: Eskimo, Pygmy, Bushman, Gond and Irula - Their Adaptation to the Environment - Social and Economic Activities- Religion and Language.

### **UNIT III**

**Economic Geography:** Definition, Nature and Scope - Natural Resources: Water, Forests, Soil – Distribution and Conservation - Energy Resources: Coal, Petroleum, Atomic and Hydal Power.

### **UNIT IV**

**Agriculture and Mineral resources:** Types - Geographical condition and Distribution of Wheat, Rice, Sugarcane, Cotton, Tea, Coffee- Minerals: Distribution - Iron ore, Copper, Manganese and Mica – Distribution of Industries: Iron and Steel and Cotton Textiles.

### **UNIT V**

**Settlement and Population Geography:** Settlements: Types of Rural Settlements; Classification of Urban Settlements; Trends of World Urbanization- World Population: Factors - Distribution, Density and Growth.

## **PEDAGOGY STRATEGIES:**

- Board and Chalk lecture
- Powerpoint slide presentations
- Seminar
- Assignments
- Online and Offline Class Practicals
- Quizes
- Group discussion

## **REFERENCES:**

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2. Ghosh,S. (2008). Introduction to Settlement Geography, Orient Blackswan Pvt. Ltd, Hyderabad.
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2. Daniel, P.A. and Hopkinson, M.F. (1989). The Geography of Settlement, Oliver & Boyd, London.
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- <https://www.thoughtco.com/overview-of-urban-geography-1435803>
- <https://freeupscmaterials.org/pmfiias-human-geography-pdf/>
- [https://geography.uoregon.edu/files/2014/01/S16\\_syllabus-2kbpy0m.pdf](https://geography.uoregon.edu/files/2014/01/S16_syllabus-2kbpy0m.pdf)
- <http://studymaterial.unipune.ac.in:8080/jspui/bitstream/123456789/5897/1/Unit%201%20Int.%20population%20Geography%2C%20Sem%20II%2C%20Paper%20V.pdf>

**COURSE LEVEL MAPPING OF PROGRAM LEVEL OUTCOMES.**

			Course Level Outcomes (CLO)							
			1	2	3	4	5	6	7	8
<b>Program Level Outcomes (PLO)</b>	1	<b>Disciplinary Knowledge</b>	✓	✓		✓			✓	✓
	2	<b>Scientific reasoning</b>		✓	✓			✓	✓	
	3	<b>Critical thinking</b>			✓		✓	✓		✓
	4	<b>Research Related skills</b>		✓		✓			✓	✓
	5	<b>Analytical reasoning</b>			✓	✓	✓	✓		
	6	<b>Cooperation /Teamwork</b>			✓		✓	✓		✓
	7	<b>Problem solving</b>	✓		✓			✓	✓	✓
	8	<b>Moral and ethical awareness</b>	✓	✓			✓	✓	✓	

## **7. TEACHING LEARNING METHODOLOGIES**

Learning is a challenging, engaging, and enjoyable activity. Learners should be encouraged to engage in a rigorous process of learning and self-discovery by adopting a highly focused and yet flexible approach to education. Each day learners should be encouraged to focus on key areas of the course and spend time on learning the course fundamentals and their application in life and society. In teaching and learning pedagogy, there should be a shift from domain or conclusions based approach to the experiential or process based approach. Geography curriculum inculcates knowledge of essential concepts of physical and human geography together with appropriate techniques using lectures, tutorials, group discussion, presentation, assignment evaluation, lab. The faculty should promote learning on a proportionate scale of 20:30:50 principle, where lectures (listening/hearing) constitute 20 per cent of the delivery; visuals (seeing) 30 per cent of the learning methods; and experience (doing/participating) 50 per cent. This ratio is subject to change as per institutional needs. In order to achieve its objective of focused process based learning and holistic development, the Institution/University may use a variety of knowledge delivery methods:

### **1. Lectures**

Lectures should be designed to provide the learners with interesting and fresh perspectives on the subject matter. Lectures should be interactive in a way that students work with their teachers to get new insights in the subject area, on which they can build their own bridges to higher learning.

### **2. Discussions**

Discussions are critical components of learning, and can be used as a platform for students to be creative and critical with old and new ideas. Besides developing critiquing skills, arriving at consensus on various real life issues and discussion groups lead to innovative problem solving and, ultimately to success

### **3. Life Skills:**

Life skills provide students opportunities to understand real life situations and scenarios (i.e. coping with disaster), and solve challenges in a controlled environment or make use of them in simulating cultural experiences by locating/transposing them in new (local, regional, national and international) situations.

#### **4. Case Studies:**

Case studies, wherever possible, should be encouraged in order to challenge students to find creative solutions to complex problems of individual, community, society and various aspects of knowledge domain concerned.

#### **5. Role Playing**

Assuming various roles, as in real life, is the key to understanding and learning. Students are challenged to make strategic decisions through role-plays, and to analyze the impact of these decisions. For this purpose, incidents from literary texts may also be used.

#### **6. Team Work**

Positive collaboration in the form of teamwork is critical in the classroom environment, for which it is necessary to transcend one's prejudices and predilections so as to achieve the desired outcomes. In the process of teamwork, learners will acquire the skills of managing knowledge acquisition and other collaborative learners, thereby understanding how to incorporate and balance personalities.

#### **7. Study Tours/Field Visits:**

Study Tours/ Field trips provide opportunities to the learners to test their in-class learning in real life situations as well as to understand the functional diversity in the learning spaces. These may include visits to sites of knowledge creation, preservation, dissemination and application. Institutions may devise their own methods to substitute/modify this aspect.

#### **8. Academics-Industries Interface:**

The course curriculum of BSc.should encourage students for closer interaction with industries/corporate/research institutes, etc. for at least one week internship and training.



## **8. ASSESSMENT AND OUTCOME MEASUREMENT**

The assessment of students' achievement in geography will be aligned with course/program learning outcomes and the academic and geographical skills that the program is designed to be developed. Different assessment methods that are appropriate within the discipline of geography will be used. Learning outcomes will be assessed through continuous evaluation using the oral and written examinations, cartographic and computer-based exercises (GIS), practical assignments, observations of practical skills, project and field work reports, seminar presentations, viva voce, output from collaborative work activities and attendances, etc

**GOVERNMENT ARTS COLLEGE (Autonomous)**  
**(Reaccredited "A" Grade by NAAC)**  
**Affiliated to Bharathiar University,**  
**Coimbatore - 641 018**

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**21BGE13C**

**REG No.....**

**MODEL QUESTION PAPER**  
**B.Sc., GEOGRAPHY**

**SEMESTER-I**  
**Maximum Marks: 50**

**TIME: 2 Hrs.**

**TITLE: GEOMORPHOLOGY**  
**PART- A**

**I Choose the Best Answers**

**(5 x 1 = 5 marks)**

**I choose the best answers**

1. "Present is the key to the past" is said by  
(a) Alaxender Von Humbolt (b) Karl Ritter  
(c) Herodotous (d) James Hutton
  
2. An example for the relief features of second order  
(a) Plateaus (b) Delta  
(c) Canyons (d) Inselbergs
  
- 3., Granites is an example for  
(a) Sedimentary rock (b) Igneous rock  
(c) Metamorphic rock (d) Aqueous rocks
  
4. William Moris Davis put forth the theory called  
(a) Glacial cycle of erosion (b) Normal cycle of erosion  
(c) Karst topography (d) Periglacial cycle
  
5. When a bar connects the mainland with an island is called  
(a) Lagoons (b) Bay head bars  
(c) Tombolo (d) Offshore bar

**II Answer any three questions**

**( 3 x 2 = 6 marks)**

6. Write a short note on Earth as blue planet.
7. What do you mean by Darkage in Geomorrphology
8. Bring out the measuring instruments used to measure earthquakes.
9. Give the notes on plate movements.
10. Write a short note the physical weathering

**PART- B**

**(5X3=15 Marks)**

**III. ANSWER ALL THE QUESTIONS**

- 11 (a) Give a detailed account on Nebular Hypothesis regarding the origin of the Earth (OR)  
(b) Illustrate the importance of atmosphere in human life.
12. (a) Discuss the various layers present in the interior of the earth. (OR)  
(b) Illustrate the circum pacific belt of volcano.
13. (a) Discuss in detail the criticism of Wegner theory of continental drift. (OR)  
(b) Bring out the agents of Metamorphism.
14. (a) What is mass wasting? List out the different types of mass movement. (OR)  
(b) Explain major drainage systems.
15. (a) Illustrate the depositional landforms created by glacier. (OR)  
(b) Bring out the erosional features created by karst topography.

**PART- C**

**(3x8=24marks)**

**IV. ANSWER ANY THREE QUESTIONS**

16. Discuss in detail about how the Rotation and Revolution of the Earth plays a major role in seasons
17. List out the types of folds with a neat sketch
18. Discuss soil profile with neat diagram.
19. Discuss in detail the Normal cycle of erosion by W.M.Davis
20. Bring out the major erosional and depositional landforms of wind.

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