

# Gour Mohan Sachin Mandal Mahavidyalaya



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## *Department of Geography Evaluative Report*

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# GOUR MOHAN SACHIN MANDAL MAHAVIDYALAYA

BIRESWARPUR, 24 PARAGANAS (S), WEST BENGAL-743336



## DEPARTMENT OF GEOGRAPHY

### EVALUATIVE REPORT



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# INTRODUCTION

The word “Geography” is a combination of two Greek words – ‘Geo’ meaning the earth and ‘Grapho’ meaning to write or describe. A literal definition of geography could be to write about the earth including all that appears upon it.

The foundation of geography as a science was laid down by the works of the Indian, Greek, Roman and the Arab scholar- who tried to understand the universe around us and the place of our planet within it.

The subject matter of geography is largely shared with other disciplines such as Geology, Sociology, History, Economics, Biology, Meteorology etc. Geography itself is the science of synthesis and studying the interrelationship between man and environment.

Recent trends in geography: Recently geographers plan to analyze new communities, decide where new highways should be placed and establish evacuation plan. A new frontier in geography is computerised mapping and data analysis that is Geographic Information System (GIS).

There is always something new for research in geography: new nations-states are created, national disaster strike populated areas, the world’s climate changes and the internet brings millions of people close together. Geographers have the ability to scientifically analyse all the geographical incidences that occur around us.

New approach in Geography is the “Welfare Approach” and the discipline deals with welfare issues such as poverty, hunger, discrimination, causes and forecast of natural disaster, sustainable development, balanced regional growth etc.

Recently geographers try to meet the intellectual, educational, political and social needs of a dynamically evolving society.

# ABOUT THE DEPARTMENT

## HISTORY OF THE DEPARTMENT

The subject Geography was first introduced in the year 2000 as a General subject and in 2002 as an Honours subject in Gour Mohan Sachin Mandal Mahavidyalaya.

It has been observed that Geography is one of the most attractive and interesting subject for the students. On completion of course with geography, students acquire good knowledge and applies it in higher study. Most of the student are able to justify their education and also gets job in various fields. Most of the students are absorbed in this state in Secondary, Higher Secondary schools and college. So, the subject has a tremendous demand among the students and to create opportunities. The department has developed gradually for 24 years with the endorsement and cooperation of the college authority.

**Cross Cutting Issue in the Syllabus:** Geography is a discipline that encompasses a wide range of topics, from physical geography, which explores the Earth's natural systems, to human geography, which examines the ways in which people interact with the environment and with each other. Several cross-cutting issues have identified and mentioned in table.

## CROSS CUTTING ISSUE IN THE SYLLABUS OF GEOGRAPHY

| Semester | Paper Code          | Paper Name                       | Cross Cutting Issue with | Descriptions                                                                                                                                             |
|----------|---------------------|----------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| I        | GEO-A-CC-1          | Geotectonics and Geomorphology   | Geology                  | Folds and Faults—origin and types.                                                                                                                       |
| I        | GEO-A-CC-1          | Cartographic Techniques          | Cartography              | Coordinate systems: Polar and rectangular<br>Maps: Components and classification                                                                         |
| I        | GEOG-H-CC01/MD-CC01 | Physical Geography               | Environment              | Plant adaptation and distribution in relation to water availability                                                                                      |
| II       | GEO-A-CC-2          | Human Geography                  | Gender and environment   | Population growth and distribution and composition.<br>Human adaptation to environment: Case studies of Eskimo, Masai and Maori                          |
| III      | GEO-A-CC-3          | Climatology                      | Environment              | Nature, composition and layering of the atmosphere.<br>Overview of climate change: Greenhouse effect. Formation, depletion and significance of the ozone |
| III      | GEO-A-CC-3          | Hydrology and Oceanography       | Environment and Resource | Global hydrological cycle: Its physical and biological role.<br>Marine resources: Classification and sustainable utilisation.                            |
| III      | GEO-A-CC-3          | Statistical Methods in Geography | Statistics               | Central tendency: Mean, median, mode, partition values.<br>Hypothesis testing.                                                                           |
| IV       | GEO-A-CC-4          | Economic Geography               | Economic                 | Concepts in economic geography: Goods and services, production, exchange and                                                                             |

|    |               |                                                     |                                     |                                                                                                                                                                                 |
|----|---------------|-----------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |               |                                                     |                                     | consumption.<br>International trade and economic blocs.                                                                                                                         |
| IV | GEO-A-CC-4    | Soil and<br>Biogeography                            | Environment                         | Soil erosion and degradation: Factors, processes and mitigation measures.<br>Concepts of biosphere, ecosystem, biome, ecotone, community and ecology.                           |
| V  | GEO-A-CC-5    | Remote Sensing,<br>GIS and GNSS                     | Technology                          | Preparation of landuse and land cover map, GIS mapping, buffer, overlay analysis and navigation.                                                                                |
| VI | GEO-A-CC-6    | Evolution of<br>Geographical<br>Thought             | Philosophy                          | Contribution of philosophers and their approaches in Geography.                                                                                                                 |
| VI | GEO-A-CC-6    | Hazard<br>Management                                | Environment                         | Factors, vulnerability, consequences and management of tropical cyclone, flood, riverbank erosion, biohazard                                                                    |
| V  | GEO-A-DSE-A-6 | Climate Change:<br>Vulnerability and<br>Adaptations | Environment                         | Greenhouse gases and global warming, Impact of climate change: Agriculture and water; flora and fauna; human health and morbidity                                               |
| VI | GEO-A-DSE-A-6 | Environmental<br>Issues in<br>Geography             | Environment                         | Environmental Impact Assessment and Environmental Management Planning, Environmental policies – Club of Rome, earth summits (special reference to Stockholm, Rio, Johannesburg) |
| VI | GEO-A-DSE-B-6 | Geography of<br>India                               | Environment,<br>Gender,<br>Resource | Climate, soil and vegetation of India, Population: Distribution, growth, structure, Resources: Agriculture, mining, and industry                                                |

## FACULTY PROFILE

### DETAILS OF THE FACULTY MEMBERS:

| Sl. No. | Name of the Teachers      | Male/ Female | Designation         | Qualification                                     | Joining date |
|---------|---------------------------|--------------|---------------------|---------------------------------------------------|--------------|
| 1       | Dr. Mausumi Bandyopadhyay | Female       | Associate Professor | M.A, B.Ed., Ph.D.                                 | 22.07.2005   |
| 2.      | Kaushik Halder            | Male         | SACT-I              | M.A, B.Ed. M. Ed.                                 | 02.01.2014   |
| 3.      | Munmun Mondal             | Female       | SACT-I              | M.A, B.Ed.                                        | 21.02.2019   |
| 4.      | Mouli Banerjee            | Female       | SACT-II             | M.A, B.Ed.                                        | 21.02.2019   |
| 5.      | Sajal Ghosh               | Male         | Guest Lecturer      | M.A, B.Ed. pursuing Ph.D. from Tripura University | 02.01.2014   |



**Present Faculty Members**

## FACULTY PROFILE

**Dr. Mausumi Bandyopadhyay:** She joined the department on 22<sup>nd</sup> July, 2005 as Assistant Professor, possessing Graduation and Post Graduation degree in Geography from Burdwan University and Teacher's Training (B.Ed.) from Kalyani University. She has been working for self-development by participating in refresher courses, seminars and also engaged in research work. In view of students' all-round development and field work, she is conducting educational tours and excursions with the students every year. She acted as principal investigator in a UGC sponsored minor project titled "Physicochemical and Bacteriological Analysis of different spots of Drinking Water of Bireswarpur, South 24 Parganas, West Bengal" and submitted the complete report to the UGC. Presently, she is pursuing her Ph. D. From Calcutta University being registered for the programme in the year 2014 and working on Resource Potential and Constraints of Development in South 24 Parganas District.

She has participated in GEOMATICS, the remote sensing GIS course in Burdwan University in 2014. In 2015, she took part in an ISRO sponsored remote sensing and GIS course for two month duration in Indian Institute of Remote Sensing, Dehradun. She has participated in refresher course organised bgy Calcutta University in the 2015. She presented papers on various topics in different National and International Seminars in Annamali University, Benaras Hindu University, Calcutta University and Bardwan University.

### Details of Research Papers

| Title of paper                                                                                                       | Name of journal                                                         | Year of publication | ISSN Number    | UGC Care list                     |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|---------------------|----------------|-----------------------------------|
| Urbanization in the District of South 24 Parganas, West Bengal: An Analytical Study                                  | Journal of Emerging Technologies and Innovative Research. Vol-9 Issue 6 | Jun 2022            | ISSN 2349-5162 | UGC old list of journal no. 63975 |
| Inequalities in South 24 Parganas District: Types, Causes and Consequences                                           | Journal of Emerging Technologies and Innovative Research. Vol-9 Issue 6 | Jun 2022            | ISSN 2349-5162 | UGC old list of journal no. 63975 |
| Hindrances to Sustainable Resource Management and Developemnt in Mandirbazar Block of South 24 Parganas District, WB | Journal of Emerging Technologies and Innovative Research. Vol-9 Issue 6 | Jun 2022            | ISSN 2349-5162 | UGC old list of journal no. 63975 |

**Kaushik Halder:** He joined the department on 02.01.2014. He completed his graduation, post-graduation, B. Ed. and M. Ed. from Calcutta University. He also qualified UGC NET in 2012. His area of interest is Geotectonic, Economic Geography and Geomorphology.

**Munmun Mondal:** She joined the department on 21.02.2019. She completed her graduation and post-graduation from Calcutta University and B. Ed. from West Bengal Teachers' Training Institute. She also qualified the UGC NET in 2020. Her area of interest is Climatology, Economic Geography and Geomorphology.

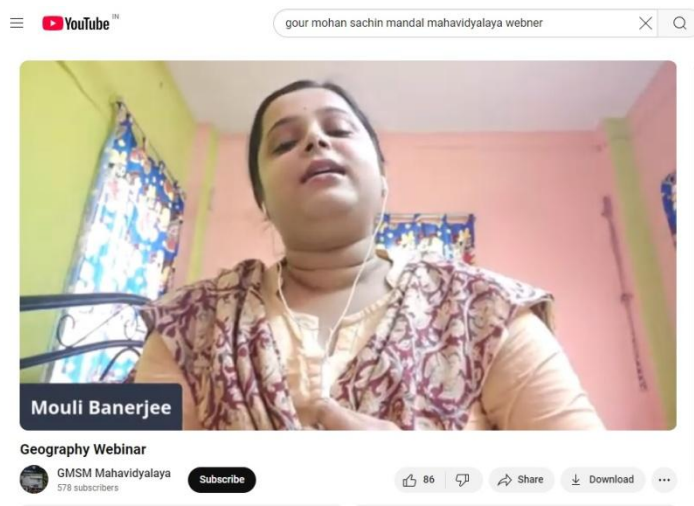
**Mouli Banerjee:** She joined the department on 21.02.2019. She completed her graduation from Calcutta University, post-graduation from Diamond Harbour Women's University and B. Ed. from West Bengal Teachers' Training Institute. Her area of interest is Climatology, Economic Geography and Hazard and Disaster Management.

**Sajal Ghosh:** He joined the department on 02.01.2014. He completed his graduation, post-graduation and B. Ed. from Calcutta University. He also qualified UGC NET in 2013. He has completed PG Diploma degree from CAD Center, Jadavpur University in 2019. Presently he is pursuing Ph. D in Tripura University (A Central University). His area of interest is Geotectonic, Remote Sensing and GIS, Urban and Transport Geography.

**Duties performed by the faculty:** Other than academic activities all the faculty members participate in the extension activities such as sports, social functions, election duties, admission duties, seminars, webinar, field study, cultural functions, health camp during covid pandemic, tours and excursions etc.



**Covid-19 Vaccination Camp**



**Webinar**



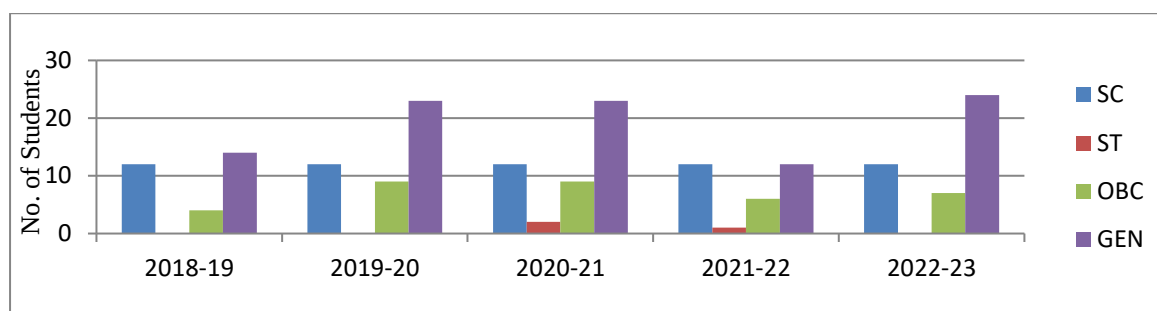
**Election duty**



**Cultural Events**

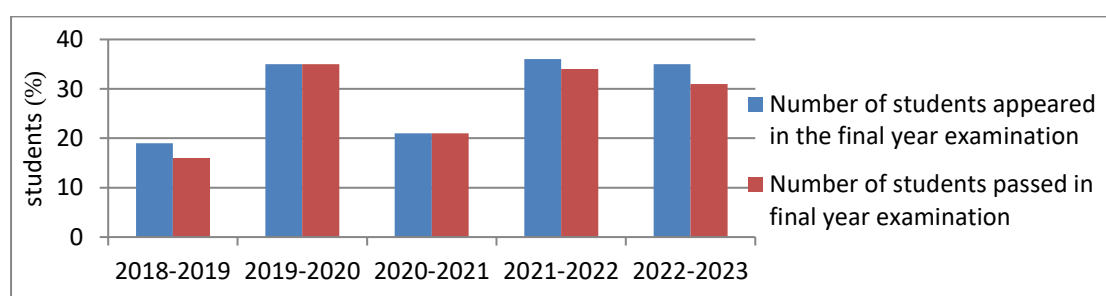
# STUDENTS' PROFILE

## STUDENT ENROLLMENT

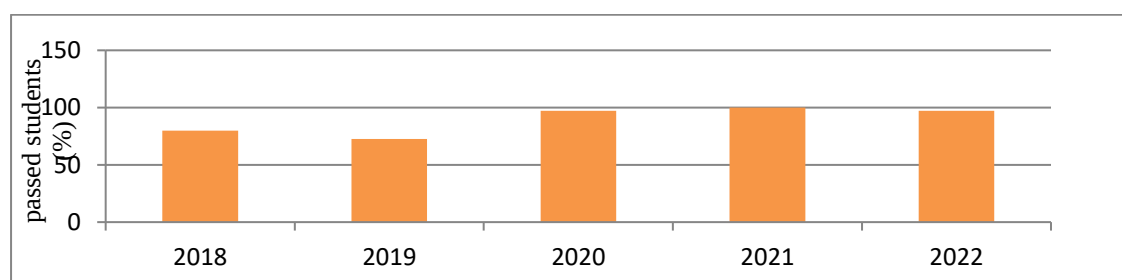


## Caste wise Distribution of Students

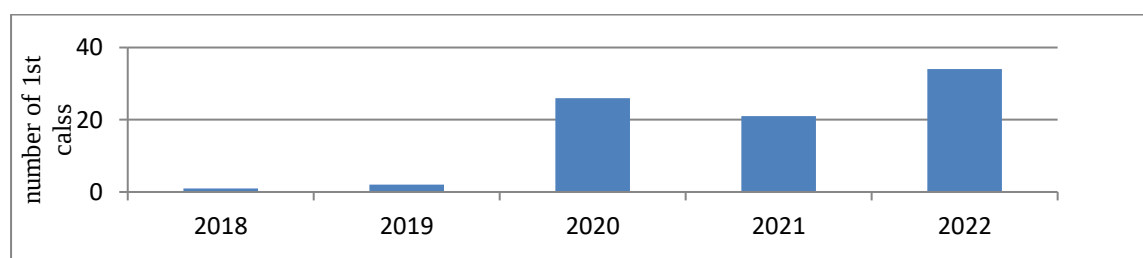
**Student result:** Students actively participate in every teaching-learning process, student's week, add on course and various competitions follows the guidance of the teachers to gather knowledge in out station field study. Success rate and performance of students have been increased gradually. The entire college is proud of them.



## Total Students and Passed Students



## Success Rate of Students



## Performance of Students

## **PROGRAM SPECIFIC OUTCOMES**

Geography is 'a mother discipline' from which other specialised disciplines like geodesy, meteorology, soil science, plant ecology and regional science have emerged. The present course program of geography develops the knowledge of students regarding the natural science and social science. Geography enhances the skill of students in the field of instrumental survey and laboratory-based test. One of the main objectives of this program is to empower the digital efficiency of students through introducing the GIS, remote sensing and GNSS techniques. Geography helps to develop the efficiency in analysis, interpretation and representation with the help of statistics, cartograms and thematic maps. This program provides the scope to express the empirical issues related with geography by preparing a project report which inspire them to engage in research work in future. Students are also satisfied with employment-oriented studies such as tourism management which has been included in geography. Another important program specific outcome is to correlate the theoretical knowledge of geography with practical by performing the field study.

### **Programme Specific Outcomes (PSO) for B.Sc. Geography**

PSO1. Acquiring knowledge of Physical Geography: Student will have a general understanding about the geomorphological and geotechnical process and formation. They will be able to correlate the knowledge of physical geography with the human geography.

PSO2. Acquiring knowledge of Human Geography: They will be able to acquire the knowledge of Human Geography and will correlate it with their practical life.

PSO3. Ability of Problem Analysis: Student will be able to analyse the problems of physical as well as cultural environments of both rural and urban areas. Moreover, they will try to find out the possible measures to solve those problems.

PSO4. Conduct Social Survey Project: They will be eligible for conducting social survey project which is needed for measuring the status of development of a particular group or section of the society.

PSO5. Application of GIS and modern Geographical Map Making Techniques: They will learn how to prepare map based on GIS by using the modern geographical map making techniques.

PSO6. Understand Environmental Ethics and Sustainability: Understand the impact of the acquired knowledge in societal and environmental contexts, and demonstrate the knowledge of need for sustainable development.

## COURSE OUTCOMES

**INTRODUCTION:** Geography is a subject that deals with the Earth and its environment. There are so many diversities in all aspect of Earth. Geography helps to understand the interrelationship of man and environment. Major objectives of geography are as follows.

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

### COURSE OUTCOMES (HONOURS)

| SEMESTER-I (HONOURS)  |                                |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------|--------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COURSE CODE           | COURSE TITLE                   | CREDIT | COURSE OBJECTIVES AND LEARNING OUTCOMES                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| GEO-A-CC-1-01-TH/P    | Geotectonics and Geomorphology | 4+2=6  | 1. Geotectonics helps to know about basic introduction about earth's interior, tectonic movements and endogenetic forces and resulting landforms<br>2. Geomorphology deals with exogenetic processes of landform formation and evolution along with different models<br>3. Practical works help to measure dip and strike, identify rocks and minerals, extract information from Survey of India Topographical maps.                                                                                         |
| GEO-A-CC-1-02-TH/P    | Cartographic Techniques        | 4+2=6  | 1. Cartographic knowledge are useful to prepare maps which shows spatial distribution of aspects in Geography.<br>2. Knowledge of representing data using cartographic techniques are taught here.<br>3. Construction of scale and projection helps to prepare thematic maps using geographical data.                                                                                                                                                                                                        |
| SEMESTER-II (HONOURS) |                                |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| COURSE CODE           | COURSE TITLE                   | CREDIT | COURSE OBJECTIVES AND LEARNING OUTCOMES                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| GEO-A-CC-2-03-TH/P    | Human Geography                | 4+2=6  | 1. Acquiring knowledge regarding evolution of human being on earth, ethnicity, race, society and cultural regions.<br>2. Develop the knowledge regarding the rural house type and morphology of urban settlement.<br>3. Analysis the growth and distribution of population, population composition and demographic characteristics with reference to India and as well as world.<br>4. Assess the demographic characteristics from population pyramid.<br>5. Analysis the arithmetic growth rate population. |
| GEO-A-CC-2-04-TH/P    | Thematic Mapping and Surveying | 4+2=6  | 1. Thematic Mapping and Surveying understand that concept of rounding, scientific notation, Logarithm and anti-logarithm. Natural and log scales.<br>2. Acquiring knowledge on Thematic Mapping and Surveying provide the concept of preparation and interpretation of weather maps, land use land cover maps and socio-economic maps.                                                                                                                                                                       |

|  |  |  |                                                                                                                                                                                                                                                                                                            |
|--|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  | <p>3. Thematic Mapping and Surveying understand that concept on NATMO, GSI, NBSSLUP, NHO, NRSC / Bhuvan, etc.</p> <p>4. Practical knowledge on Thematic Mapping and Surveying understand the Basic concepts of surveying and survey equipment such as Dumpy level, Theodolite , Prismatic compass etc.</p> |
|--|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### SEMESTER-III (HONOURS)

| COURSE CODE         | COURSE TITLE                     | CREDIT | COURSE OBJECTIVES AND LEARNING OUTCOMES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|----------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GEO-A-CC-3-05-TH/P  | Climatology                      | 4+2=6  | <p>1.Acquiring knowledge regarding elements of the atmosphere</p> <p>2. Imparting knowledge of atmospheric phenomena and climatic classification</p> <p>3. Gathering practical knowledge of weather elements using analogue instruments, interpretation of daily weather map of India construction and interpretation of hythergraph, climograph and windrose.</p>                                                                                                                                                                                                                      |
| GEO-A-CC-3-06-TH/P  | Hydrology and Oceanography       | 4+2=6  | <p>1.Develop knowledge of Hydrology</p> <p>2. Learn about Oceanography</p> <p>3.Practical knowledge related with construction and interpretation of rating curves, hydrographs and unit hydrographs</p>                                                                                                                                                                                                                                                                                                                                                                                 |
| GEO-A-CC-3-07-TH/P  | Statistical Methods in Geography | 4+2=6  | <p>1.Learn importance and significance of statistics in Geography, and scales of measurement</p> <p>2. Acquire knowledge regarding different types of data, source of data and different methods of collection of data</p> <p>3. Develop knowledge regarding sampling, and theoretical knowledge regarding frequency, cumulative frequency, normal and probability.</p> <p>4. Knowledge of numerical data analysis are learned by the students.</p> <p>5. Students can develop Practical idea regarding different statistical methods in geography</p>                                  |
| GEO-A-SEC-A-3-02-TH | Tourism Management               | 2      | <p>1. Understanding the concept of tourism management.</p> <p>2. Acquiring knowledge regarding ecotourism, cultural tourism, adventure tourism, medical tourism, sustainable tourism, pilgrimage, national and international tourism.</p> <p>3. To know the importance of information technology and tour operations planning.</p> <p>4. Understanding the necessities and importance of tourism impact assessment.</p> <p>5. To identify the trend of global tourism.</p> <p>6. To understand the outline of Indian tourism and planning for beautiful tourism spots across India.</p> |

### SEMESTER-IV (HONOURS)

| COURSE CODE        | COURSE TITLE       | CREDIT | COURSE OBJECTIVES AND LEARNING OUTCOMES                                                                                                                                                                                                                |
|--------------------|--------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GEO-A-CC-4-08-TH/P | Economic Geography | 4+2=6  | <p>1. Develop knowledge regarding Economic Geography,</p> <p>2. Learn about concept and classification of economic activities and factors affecting economic activities</p> <p>3. Develop the knowledge on international trade and economic blocs.</p> |

|                             |                                    |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------|------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             |                                    |               | <p>4. Transport network analysis determines the shortest path which helps to solve traffic related problems.</p> <p>5. Analyse the trend of industrial production.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| CC-4-09<br>Th+P             | Regional Planning and Development. | 4+2=6         | <p>1. The regional planning makes the ecology and environment sustainable.</p> <p>2. Regional Planning is an attempt at discovering the plans of the nature and development.</p> <p>3. These topics increase our knowledge about growth and development; indicate economic, demographic, and environmental approaches.</p> <p>4. This topic increase our practical skills how to delineate of formal and functional regions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                              |
| GEO-A-CC-4-10-TH/P          | Soil and Biogeography              | 4+2=6         | <p>1. Understand the factors of soil formation and properties of soil.</p> <p>2. Recognize different type of soil profile and its characteristics.</p> <p>3. Understand different factors of soil erosion and its management processes.</p> <p>4. Recognize land capability and its classification.</p> <p>5. to understand ecosystem and its functions</p> <p>6. Understand world biome and biodiversity</p> <p>7. Importance of biogeochemical cycle and devastating impact of deforestation</p> <p>8. Identification of soil type and derive its pH and salinity</p> <p>9. Measurement of plant species diversity of an area.</p>                                                                                                                                                                                                                          |
| GEO-A-SEC-B-4-03-TH         | Rural Development                  | 2             | <p>1. to know about rural development and its different measures</p> <p>2. Understand the concept of paradigm and different theories of rural development.</p> <p>3. acquiring knowledge about area based approaches of rural development</p> <p>4. learn importance of rural governance and policies in rural development</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>SEMESTER-V (HONOURS)</b> |                                    |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>COURSE CODE</b>          | <b>COURSE TITLE</b>                | <b>CREDIT</b> | <b>COURSE OBJECTIVES AND LEARNING OUTCOMES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| GEO-A-CC-5-11-TH/P          | Research Methodology and Fieldwork | 4+2=6         | <p>1. To understand the concept of research and its importance.</p> <p>2. Understanding the method of literature review and formulation of research design</p> <p>3. Acquiring knowledge about research problem, hypothesis, research materials and methods</p> <p>4. Understanding the concept of plagiarism and its prevention.</p> <p>5. To know the importance of fieldwork in geographical studies</p> <p>6. To make a clear concept on field techniques and tools</p> <p>7. Acquiring knowledge regarding sample collection and inventory preparation from field data</p> <p>8. To develop knowledge on post-field tabulation, processing and data analysis</p> <p>9. Practical works help to apply the theoretical knowledge of research methodology through field survey. It also helps to establish the relationship between physical and socio-</p> |

|                         |                                               |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|-----------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         |                                               |       | economic environment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| CC-5-12 Th + P          | Remote Sensing, GIS and GNSS                  | 4+2   | <ol style="list-style-type: none"> <li>1. Understand the basic principles of remote sensing.</li> <li>2. Learn the type of satellite and sensors.</li> <li>3. Study the sensor resolutions and their applications.</li> <li>4. Knowing the image referencing schemes and acquisition procedure of geospatial data freely available in NRSC/Bhuvan and USGS</li> <li>5. Understanding the preparation of false colour composites and true colour composites.</li> <li>6. Knowing the principles of visual and digital image interpretation for the preparation of inventories of landuse and land cover features.</li> <li>7. Developing the knowledge regarding the GIS data structure.</li> <li>8. Understand the principles and significance of buffer preparation and overlay analysis.</li> <li>9. To know the principles of GNSS positioning and learn the technique of way point collection through GPS.</li> <li>10. To learn the technique of image referencing and enhancement.</li> <li>11. Knowing the technique of preparation of land use and land cover map by supervised image classification using QGIS software.</li> <li>12. Learn about the process of preparation of thematic map through software.</li> <li>13. Knowing the procedure of transfer the collected waypoints data to GIS software.</li> </ol> |
| GEO-A-DSE-A-5-02-TH/P   | Climate Change: Vulnerability and Adaptations | 4+2=6 | <ol style="list-style-type: none"> <li>1. Acquaring knowledge on climate change with geological time scale and its evidences</li> <li>2. Making knowledge about sources of greenhouse gasses and global warming.</li> <li>3. Importance of IPCC reports on global climate.</li> <li>4.to understand the severe impact of climate change and global initiatives of its mitigation</li> <li>5. Importance of National action plan and social organizations in climate change mitigation and awareness programmes.</li> <li>6. Analysis the trend of temperature and seasonal variability of rainfall.</li> <li>7. Gathering the knowledge of inventory preparation of extreme climatic events and mitigation measure.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| GEO-A-DSE-B-6-05-TH/P – | Cultural and Settlement Geography             | 4+2=6 | <ol style="list-style-type: none"> <li>1.understanding the concept of cultural geography</li> <li>2. Acquaring knowledge regarding cultural hearth, cultural realm, cultural diffusion cultural segregation, cultural diversity and cultural regions.</li> <li>3. Cultural geography helps to know racial groups and races of the world.</li> <li>4. Understanding the nature and types of rural and urban settlements.</li> <li>5. Develop the knowledge on social segregation and Indian rural house type.</li> <li>6. To understand the models of urban morphology and functional classification of cities.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

|                              |                                   |               | <p>7. Learn the technique of preparation of maps which shows spatial distribution of aspects in Geography.</p> <p>8. Identification of rural settlement is useful to understand the nature of settlements.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------|-----------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SEMESTER-VI (HONOURS)</b> |                                   |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>COURSE CODE</b>           | <b>COURSE TITLE</b>               | <b>CREDIT</b> | <b>COURSE OBJECTIVES AND LEARNING OUTCOMES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| GEO-A-CC-6-13-TH + P         | Evolution of Geographical Thought | 4 +2          | <ol style="list-style-type: none"> <li>1) Analysis the Contributions of Greek, Chinese, and Indian geographers in the development of pre-modern Geography.</li> <li>2) Analysis of affect of 'Dark Age' in Geography.</li> <li>3) Analysis the development of Geography during the age of 'Discovery' and 'Exploration'.</li> <li>4) Assess the nature of Geography during the transitional period from cosmography to scientific Geography.</li> <li>5) Analysis the contribution of Germany, France, Britain and United States of America in Geographical thoughts.</li> <li>6) Analysis the Trends of geography after the World War-II.</li> <li>7) Analysis the nature and trend of Critical Geography.</li> <li>8) Understanding the maps of the world in the perspective of changing perception.</li> <li>9) To improve the perception of students regarding the school of geographical thought by group presentation.</li> </ol> |
| CC-6-14 Th+P                 | Hazard and Disaster Management    | 4+2=6         | <ol style="list-style-type: none"> <li>1. The hazard management study construct basic knowledge about Risk perception and vulnerability assessment .</li> <li>2. Knowledge of Hazard Management are usefully learn how man can survive, manage, and overcome the trauma at disaster time.</li> <li>3. Acquiring knowledge of Hazard Management increases our awareness on Land slide, Tsunami, Super Cyclone, Flood, Drought, Bio-hazards, Riverbank / Coastal erosion, Industrial accident, Road / Railway accident, Structural collapse, Environmental pollution etc.</li> </ol>                                                                                                                                                                                                                                                                                                                                                      |
| DSE-A-3                      | Environmental Issues in Geography | 4+2=6         | <ol style="list-style-type: none"> <li>1. Environmental Issues in Geography know about basic introduction of Geographers' approach to environmental studies, concept of holistic environment and systems approach.</li> <li>2. Environmental Issues in Geography deals with Ecosystems and their relationship with habitats.</li> <li>3. Acquiring knowledge of Environmental Issues in Geography know about rural environmental issues with special reference to sanitation and public health.</li> <li>4. Acquire knowledge on environmental policies and global initiatives for environmental management</li> <li>5. Practical Knowledge are related with preparation of questionnaire for perception survey on environmental problems and preparation of check-</li> </ol>                                                                                                                                                          |

|         |                    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------|--------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         |                    |       | list for environmental Impact assessment for urban / industrial development projects.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| DSE-B-8 | Geography of India | 4+2=6 | <ol style="list-style-type: none"> <li>1. Geography of India know about basic information of Physiographic divisions, Climate, soil, vegetation, Culture and heritage of India.</li> <li>2. Acquiring knowledge of Geography of India know about Industrial development, development of Automobile and information technology sectors in India</li> <li>3. This topic to understand that the Population: Growth, distribution, migration, and human development of India.</li> <li>4. Practical Knowledge are related with Graphical representation of annual trends of production and Comparison of developed and less developed states of India</li> </ol> |

### **COURSE OUTCOMES (GENERAL)**

| <b>SEMESTER-I (GENERAL)</b>  |                         |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------|-------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>COURSE CODE</b>           | <b>COURSE TITLE</b>     | <b>CREDIT</b> | <b>COURSE OBJECTIVES AND LEARNING OUTCOMES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| GEO-G-CC-1Th+P               | Physical Geography      | 4+2=6         | <ol style="list-style-type: none"> <li>1. Physical Geography understands that Earth's interior with special reference to seismology.</li> <li>2. Acquiring knowledge of physical Geography knows about Plate Tectonics as a unified theory of global tectonics. Formation of major relief features of the ocean floor and continents according to Plate Tectonics</li> <li>3. Acquiring knowledge on Physical Geography know about Degradational processes, Principal geomorphic agents, and Global hydrological cycle.</li> <li>4. Practical Knowledge are related with identification of Rocks, minerals and physiographic information from Survey of India</li> </ol> |
| <b>SEMESTER-II (GENERAL)</b> |                         |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>COURSE CODE</b>           | <b>COURSE TITLE</b>     | <b>CREDIT</b> | <b>COURSE OBJECTIVES AND LEARNING OUTCOMES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| GEO-G-CC-2-02-TH/P           | Environmental Geography | 4+2=6         | <ol style="list-style-type: none"> <li>1. Acquiring knowledge regarding elements of the atmosphere</li> <li>2. Imparting knowledge of atmospheric phenomena and climatic classification</li> <li>3. Gathering practical knowledge of weather elements using analogue instruments, interpretation of daily weather map of India construction and interpretation of hythergraph, climograph and windrose.</li> <li>4. Understand the factors of soil formation and properties of soil.</li> </ol>                                                                                                                                                                          |

|  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  | 5. Recognize different type of soil profile and its characteristics.<br>6. Understand different factors of soil erosion and its management processes.<br>7. Recognize land capability and its classification.<br>8.to understand ecosystem and its functions<br>9. Understand world biome and biodiversity<br>10. Importance of biogeochemical cycle and devastating impact of deforestation<br>11. Identification of soil type and derive its pH and salinity<br>12. Measurement of plant species diversity of an area. |
|--|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### SEMESTER-III(GENERAL)

| COURSE CODE       | COURSE TITLE                   | CREDIT   | COURSE OBJECTIVES AND LEARNING OUTCOMES                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------|--------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GEO-G-CC-3-03-H/P | Human Geography                | 4 +2 = 6 | 1. Acquiring knowledge regarding evolution of human being on earth, ethnicity, race, society and cultural regions.<br>2. Develop the knowledge regarding the rural house type and morphology of urban settlement.<br>3. Knowing the economic actives and related models.<br>3. Analysis the growth and distribution of population, population composition and demographic characteristics with reference to India and as well as world.<br>5. Analysis the arithmetic growth rate population. |
| GEO-G-SEC-A-6-Th  | Forest and Wildlife Management | 2        | 1. Forest and Wildlife Management Understand that the importance of Forest, Wildlife, and its management.<br>2. The knowledge of Forest and Wildlife Management provide the concept of forest conservation, and wildlife protection<br>3. Forest and Wildlife Management idea improve the awareness regarding wildlife management and Resource Conservation.                                                                                                                                  |

#### SEMESTER-IV (GENERAL)

| COURSE CODE             | COURSE TITLE      | CREDIT   | COURSE OBJECTIVES AND LEARNING OUTCOMES                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------|-------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GEO-G-CC-4-04-H/P       | Cartography       | 4 +2 = 6 | 1. Cartographic knowledge are useful to prepare maps which shows spatial distribution of aspects in Geography.<br>2. Knowledge of representing data using cartographic techniques are taught here.<br>3. Construction of scale and projection helps to prepare thematic maps using geographical data.<br>4. The knowledge of GIS and remote sensing helps to prepare the land use and land cover map. |
| 2 GEO-G-SKC-B-5/6-02-TH | Rural Development | 2        | 1.to know about rural development and its different measures<br>2. Understand the concept of paradigm and different theories of rural development.<br>3.acquaring knowledge about area based approaches                                                                                                                                                                                               |

|  |  |  |                                                                                                  |
|--|--|--|--------------------------------------------------------------------------------------------------|
|  |  |  | of rural development<br>4.learn importance of rural governance and policies in rural development |
|--|--|--|--------------------------------------------------------------------------------------------------|

**SEMESTER-V (GENERAL)**

| <b>COURSE CODE</b>   | <b>COURSE TITLE</b>  | <b>CREDIT</b> | <b>COURSE OBJECTIVES AND LEARNING OUTCOMES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------|----------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GEO-G-DSE-A-5-02-H/P | Geography of Tourism | 4+3=7         | 1. Understanding the concept of tourism management.<br>2. Acquiring knowledge regarding ecotourism, cultural tourism, adventure tourism, medical tourism, sustainable tourism, pilgrimage, national and international tourism.<br>3. To know the importance of information technology and tour operations planning.<br>4. Understanding the necessities and importance of tourism impact assessment.<br>5. To identify the trend of global tourism.<br>6. To understand the outline of Indian tourism and planning for beautiful tourism spots across India. |

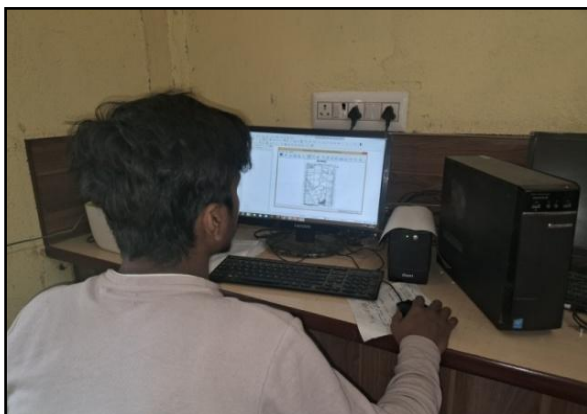
**SEMESTER-VI (GENERAL)**

| <b>COURSE CODE</b> | <b>COURSE TITLE</b>  | <b>CREDIT</b> | <b>COURSE OBJECTIVES AND LEARNING OUTCOMES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------|----------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GEO-G-DSE-B-6-Th+P | Population Geography | 4+2=6         | 1. Population Geography understand that the concept of Development of Population as a field of specialization and relation between population geography and demography. Sources of population data, their level of reliability and problems of mapping<br><br>2. Acquiring knowledge on Population Geography know about World wise population growth and distribution and its changing scenario.<br><br>3. Practical Knowledge are related with Population projection, Population density mapping, and analysis of occupation structure by dominant and distinctive functions etc. |

## DEPARTMENTAL RESOURCES

**Departmental Resources:** The sole aim and objective of the department is to introduce and provide quality education. To achieve this goal, department is utilizing several modern learning resources and aids. Being a practical oriented subject, the department has a well-equipped laboratory. The Laboratory processes:

1. **Computer:** The college authority provided four computers and a laptop for the students.  
GIS Software: As per syllabus of the University of Calcutta, the QGIS 3.10 version software has already been installed in the computer.
2. **Aerial Photograph:** for resource mapping it is an important tool. Department has sufficient aerial photographs.
3. **Instruments:** The department is well equipped with instruments such as Prismatic Compass, Dumpy Level, Stereoscope, Theodolite, Clinometer, GPS, Brunton compass, Barometer etc.
4. **Other Equipment:** These include topographical sheets, maps, charts, model, projector, rocks and minerals etc.
5. **Books:** In Central Library, sufficient subject books are available for the students and added to that, the department has its own library with over hundred numbers of subject and related books and some journals that are made available for the students as and when needed.



GIS LABORATORY



DUMPY LEVEL SURVEY



IDENTIFICATION OF ROCKS AND MINERALS



**SIX'S MAXIMUM AND MINIMUM THERMOMETER**



**FORTIN'S BAROMETER**



**WET & DRY BULB HYGROMETER**

## DEPARTMENTAL ACTIVITIES

The department always tries to introduce modern and effective teaching methods. To fulfil this purpose the department has followed several activities which are mentioned below.

1. **Field Study:** A very interesting and effective way to acquire knowledge directly from the field. So, every year the department organizes educational tour for students.

Year wise name of the places where field study was conducted are as follows:

### Study Area of Different Years

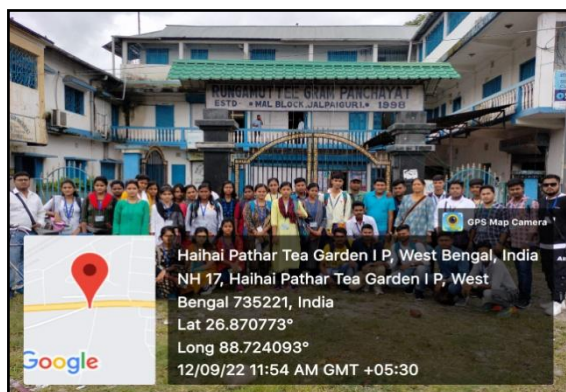
| Year | Place                              |
|------|------------------------------------|
| 2016 | Shimla, Himachal Pradesh           |
| 2017 | Sundarban, West Bengal             |
| 2018 | Bankura, West Bengal               |
| 2019 | Bankura, West Bengal               |
| 2020 | No excursion due to Covid pandemic |
| 2021 | No excursion due to Covid pandemic |
| 2022 | Malbazar, Jalpaiguri               |
| 2023 | Pelling, Sikkim                    |
| 2024 | Lingtham, Sikkim                   |



Field Study 2018



Field Study 2019



Field Study 2022

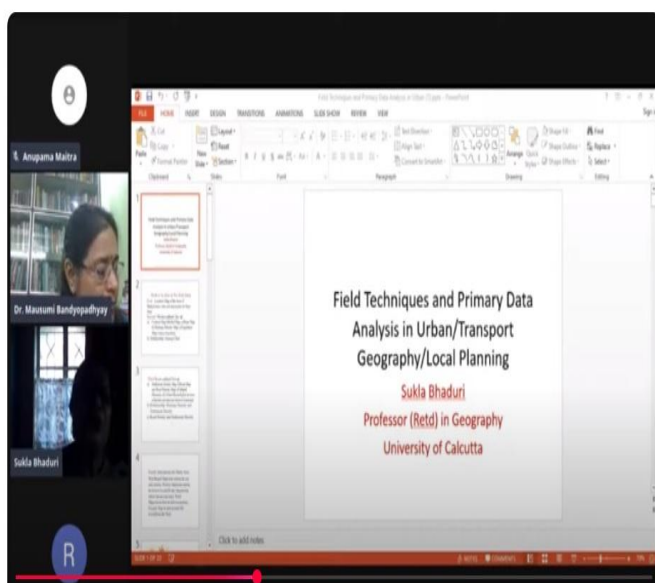


Field Study 2023



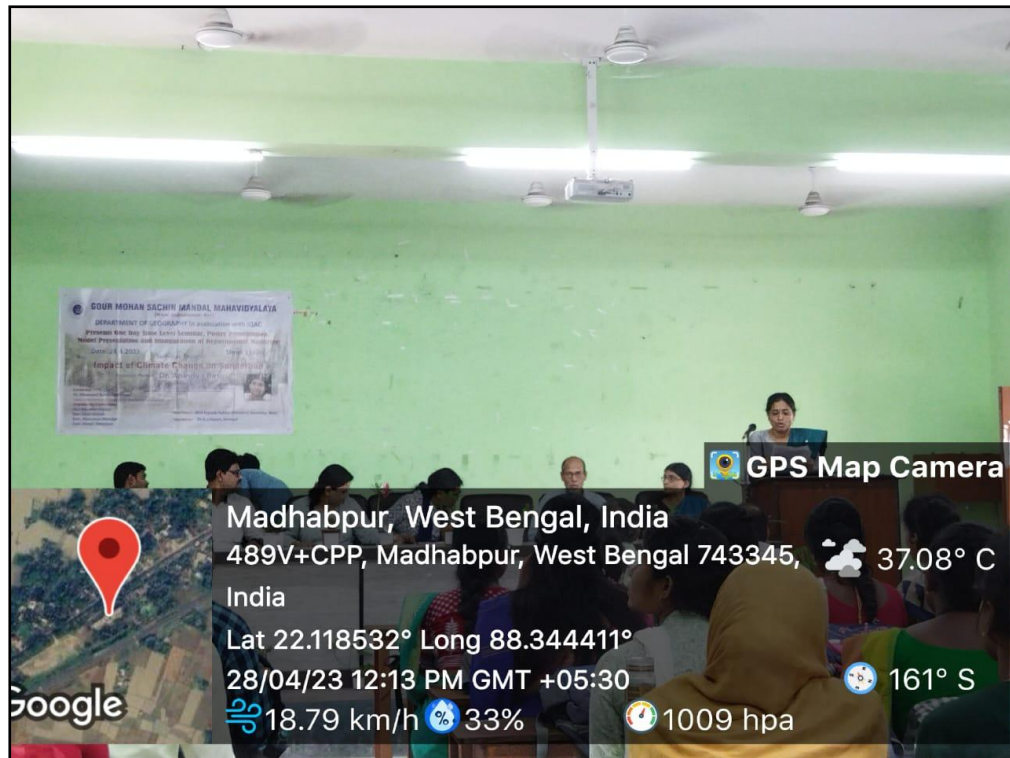
## Field Study 2024

2. **Webinar:** 16<sup>th</sup> September, 2020 the department organised a webinar during the covid pandemic on the topic “Techniques of Field Investigation and Primary Data Analysis in Geography”. Dr. Ranjan Basu, Professor (Retd.), University of Calcutta, Dr. Sukal Bhaduri Professor (Retd.), University of Calcutta, Dr. Guruprasad Chattopadhyay, Professor (Retd.), Visva-Bharati University, and Dr. Giasuddin Siddique, Professor, University of Burdwan have delivered lecture on the above topic. Students benefited a lot from this webinar.



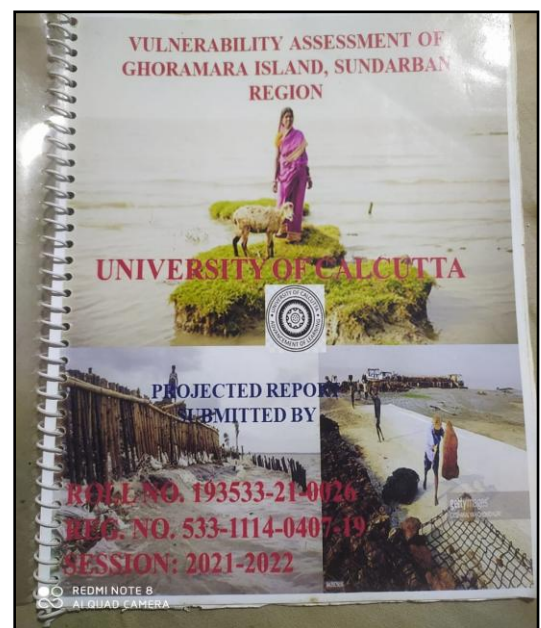
## PICTURES OF THE WEBINAR

3. **Seminar:** On 28<sup>th</sup> April, 2023 the department organised a seminar in the college campus on the topic “Impact of Climate Change on Sunderban”. Dr. Aninda Basu, Assistant Professor, Diamond Harbour Womens’ University delivered lecture on the above topic. Students benefited a lot from this seminar.



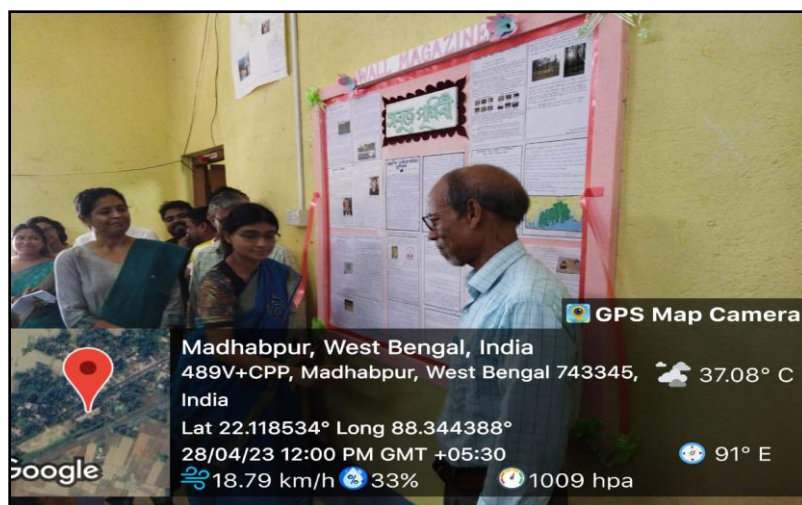
### Seminar 2023

4. **Case Study:** To improve the awareness about the hazard and disaster of West Bengal, our students have done different case studies. They have investigated cases, consequences and management strategies of hazards and disasters.



### An Example of Case Study

5. **Wall Magazine:** “Sobuj Prithibi”- Canvas to express thoughts, emotions and artistic creativity. The Earth has already been displayed with some substance to manifest the potentiality of the students.



### INAUGURATION OF WALL MAGAZINE, 2023

6. **Use of Computer, Projector, Maps, Charts and Models etc:** faculty members use the modern tools for effective teaching as and when required.



### ICT CLASSROOMS

7. **Cultural Programme:** Every year different cultural programmes and social functions are organized in the college premises where the students of geography department participate.



### CULTURAL PROGRAMME

8. **Poster Presentation:** Department of Geography organised a Poster Presentation on 28.04.2023 where students have given the presentation on the topic named 'Impact of Climate Change on Sundarban Region'. Total 11 students have given the presentation on the said topic. The participants' number was 95. The major outcomes of this programme are

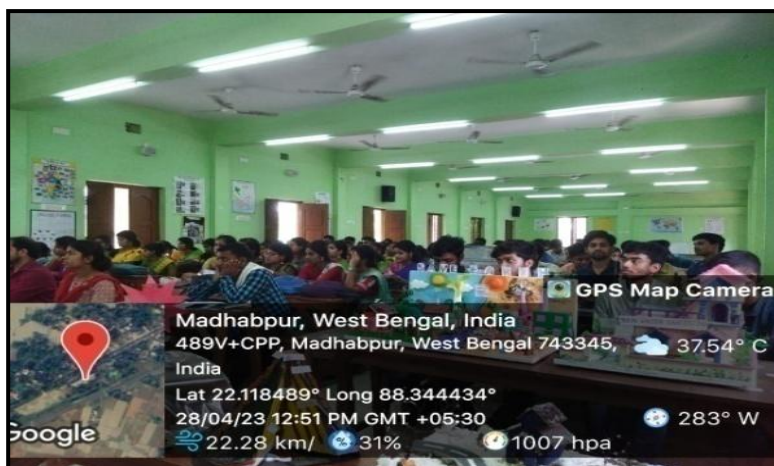
- Students aware about the cause and consequence of climate change and also highlighted their role to control the emission of greenhouse gasses.
- Students promised to celebrate the forestation programme in college and the surrounding of their localities.
- Geography department decorated by indoor plants after the Poster Presentation as an outcome of the programme.



## 9. Models and Charts Preparation and Presentation:

Students prepared the charts and model on basis of particular topic related to Geography during April to May, 2023. They present their charts and model in front of Principal, students and faculties of different department of college. The details of programme are given the table below. The major outcomes of the programme are

- Enhance the creativity of students.
- Express their theoretical knowledge through the models and charts on a platform.
- Accelerate the long-term memorisation of subject matter of Geography.



PRESENTATION OF MODELS

10. **Drawing:** A co-curriculum activity was conducted on 25.02.2023 at the department of Geography. Students expressed their concept related with height and distance by drawing.

11. **Celebration of Days:** Department of Geography Celebrated the “Students Week, 2023”. Students participate in different competitions and performed different activities. Major outcome of the programme are

- Involvement of the students in co-curriculum activities.
- Unfold the potentiality of students.
- Provide the platform to express their self.



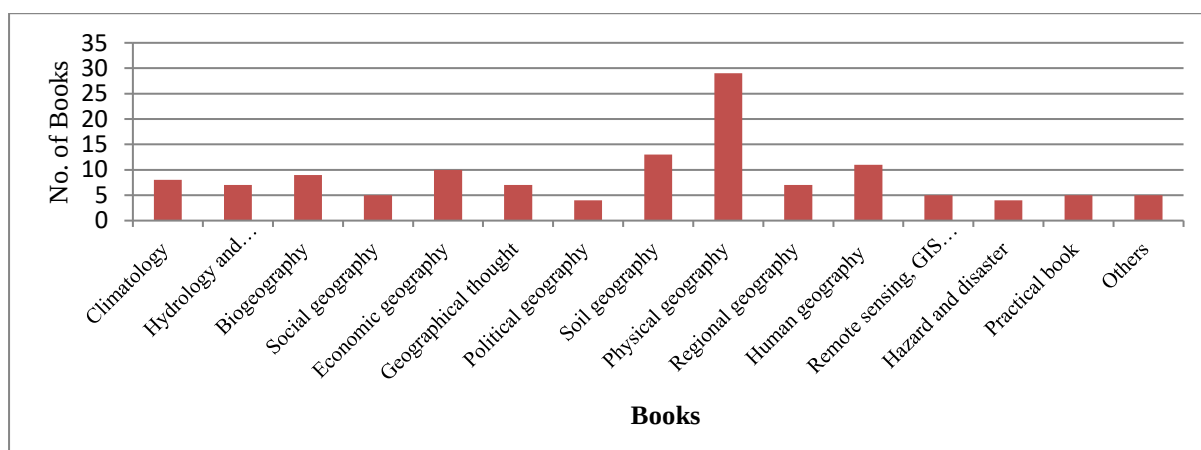
STUDENT'S WEEK, 2023

## DEPARTMENTAL LIBRARY

The library of Geography department in Gour Mohan Sachin Mahan Mahavidyalaya is the most productive resource. Our departmental library has adequate books of both honours and general papers. These books help the students to be wealthy in interdisciplinary knowledge.

Now, let's explain about the departmental library maintenance- we maintain a special register book to lend the books to the students. At the time of borrowing books, the students have to put their signature on the particular column in our register book. A student can take maximum two books for one week at a time. After one week, students have to return the particular books with their signature on register book. Our departmental library has several books shown in bar graph.

Departmental library is highly valued for the student's convenience, readily accessible subject specific collections, and ability to provide focused support for students' field of study and a positive impact on academic performance.



**DETAILS OF BOOKS AVAILABLE IN DEPARTMENTAL LIBRARY**

# DEPARTMENTAL FUNCTIONING

## MEASURES FOR SLOW LEARNERS

**Identification of slow learners:** One of the most difficult tasks of a teacher is to determine if their student is a slow learner. But it is very important step to treat the slow learners. The following are the signs of a slow learner.

1. Problems reading and/or writing.
2. Problems with math.
3. Poor memory.
4. Problems paying attention.
5. Trouble following directions.

**Strategies for Slow Learners:** The following strategies are used to treat the slow learners:

- 1) Remedial class
- 2) Special mock test
- 3) Instruction for meditation

## LESSON PLAN FOR B. SC. HONOURS

### DEPARTMENT OF GEOGRAPHY

| Sem | Course Code      | Paper                              | Topic Name                                                                                                                                                                                                                                                                                                                                               | No. of classes | Teacher                                       |
|-----|------------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------------------------------|
| I   | GEO-A-CC-1-01-TH | Geotectonics and Geomorphology     | 1. Earth's tectonic and structural evolution with reference to geological time scale                                                                                                                                                                                                                                                                     | 3              | Dr. Mausumi Bandyopadhyay                     |
|     |                  |                                    | 2. Earth's interior with special reference to seismology. Isostasy: Models of Airy, Pratt and their applicability                                                                                                                                                                                                                                        | 3              | Shri Sajal Ghosh                              |
|     |                  |                                    | 3. Plate Tectonics as a unified theory of global tectonics: Processes and landforms at plate margins and hotspots                                                                                                                                                                                                                                        | 10             | Shri Sajal Ghosh                              |
|     |                  |                                    | 4. Folds and Faults—origin and types.                                                                                                                                                                                                                                                                                                                    | 4              | Dr. Mausumi Bandyopadhyay                     |
|     |                  |                                    | 5. Degradational processes: Weathering, mass wasting and resultant landforms.                                                                                                                                                                                                                                                                            | 5              | Smt. Mouli Banerjee                           |
|     |                  |                                    | 6. Processes of entrainment, transportation and deposition by different geomorphic agents. Role of humans in landform development                                                                                                                                                                                                                        | 4              | Smt. Mouli Banerjee                           |
|     |                  |                                    | 7. Development of river network and landforms on uniclinal and folded structures. Surface expression of faults.                                                                                                                                                                                                                                          | 6              | Smt. Munmun Mondal                            |
|     |                  |                                    | 8. Development of river network and landforms on granites, basalts and limestones.                                                                                                                                                                                                                                                                       | 5              | Smt. Munmun Mondal                            |
|     |                  |                                    | 9. Coastal processes and landforms.                                                                                                                                                                                                                                                                                                                      | 4              | Smt. Munmun Mondal                            |
|     |                  |                                    | 10. Glacial and glacio-fluvial processes and landforms                                                                                                                                                                                                                                                                                                   | 4              | Shri Kaushik Halder                           |
|     |                  |                                    | 11. Aeolian and fluvio-aeolian processes and landforms                                                                                                                                                                                                                                                                                                   | 4              | Shri Kaushik Halder                           |
|     |                  |                                    | 12. Role of time and systems approach in geomorphology. Models on landscape evolution: Views of Davis, Penck, King and Hack.                                                                                                                                                                                                                             | 8              | Shri Kaushik Halder                           |
|     | GEO-A-CC-1-01-P  | Geotectonics and Geomorphology Lab | 1. Measurement of dip and strike using clinometer                                                                                                                                                                                                                                                                                                        | 6              | Shri Kaushik Halder                           |
|     |                  |                                    | 2. Megascopic identification of (a) mineral samples: Bauxite, calcite, chalcopryrite, feldspar, galena, gypsum, hematite, magnetite, mica, quartz, talc, tourmaline; and (b) rock samples: Granite, basalt, dolerite, laterite, limestone, shale, sandstone, conglomerate, slate, phyllite, schist, gneiss, quartzite, marble                            | 14             | Dr. Mausumi Bandyopadhyay                     |
|     |                  |                                    | 3. Extraction and interpretation of geomorphic information from Survey of India 1:50k topographical maps of plateau region: Delineation of drainage basins, construction of relief profiles (superimposed, projected and composite), relative relief map, slope map (Wentworth's method), stream ordering (Strahler) and bifurcation ratio on a drainage | 30             | Smt. Mouli Banerjee<br><br>Smt. Munmun Mondal |

|    |                  |                             |                                                                                                                                                        |    |                                           |
|----|------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------------------------------------|
|    |                  |                             | basin                                                                                                                                                  |    |                                           |
|    |                  |                             | 4. Construction of hypsometric curve and derivation of hypsometric integer from Survey of India 1:50k topographical maps of plateau region             | 10 | Smt. Mouli Banerjee                       |
|    | GEO-A-CC-1-02-TH | Cartographic Techniques     | 1. Maps: Components and classification                                                                                                                 | 4  | Smt. Munmun Mondal                        |
|    |                  |                             | 2. Concept and application of scales: Plain, comparative, diagonal and Vernier                                                                         | 8  | Smt. Munmun Mondal                        |
|    |                  |                             | 3. Coordinate systems: Polar and rectangular                                                                                                           | 6  | Smt. Munmun Mondal                        |
|    |                  |                             | 4. Concept of generating globe                                                                                                                         | 2  | Shri Sajal Ghosh                          |
|    |                  |                             | 5. Grids: Angular and linear systems of measurement                                                                                                    | 5  | Shri Sajal Ghosh                          |
|    |                  |                             | 6. Bearing: Magnetic and true, whole-circle and reduced                                                                                                | 5  | Dr. Mausumi Bandyopadhyay                 |
|    |                  |                             | 7. Concept of geoid and spheroid with special reference to Everest and WGS-84                                                                          | 4  | Shri Kaushik Halder                       |
|    |                  |                             | 8. Map projections: Classification, properties and uses                                                                                                | 8  | Shri Kaushik Halder                       |
|    |                  |                             | 9. Concept and significance of UTM projection                                                                                                          | 2  | Shri Kaushik Halder                       |
|    |                  |                             | 10. Representation of data using dots and proportional circle                                                                                          | 5  | Smt. Mouli Banerjee                       |
|    |                  |                             | 11. Representation of data using isopleth and choropleth                                                                                               | 5  | Smt. Mouli Banerjee                       |
|    |                  |                             | 12. Survey of India topographical maps: Reference scheme of old and open series. Information on the margin of maps                                     | 6  | Dr. Mausumi Bandyopadhyay                 |
|    | GEO-A-CC-1-02-P  | Cartographic Techniques Lab | 1. Graphical construction of scales: Plain, comparative, diagonal and Vernier                                                                          | 16 | Shri Sajal Ghosh                          |
|    |                  |                             | 2. Construction of projections: Polar Zenithal Stereographic, Simple Conic with one standard parallel, Bonne's, Cylindrical Equal Area, and Mercator's | 20 | Shri Kaushik Halder                       |
|    |                  |                             | 3. Thematic maps: Proportional squares, pie diagrams with proportional circles, dots and spheres                                                       | 12 | Smt. Munmun Mondal<br>Smt. Mouli Banerjee |
|    |                  |                             | 4. Thematic maps: Choropleth, isopleth, and chorochromatic maps                                                                                        |    | Dr. Mausumi Bandyopadhyay                 |
| II | GEO-A-CC-2-03-TH | Human Geography             | 1. Nature, scope and recent trends. Elements of human geography                                                                                        | 4  | Dr. Mausumi Bandyopadhyay                 |
|    |                  |                             | 2. Approaches to Human Geography: Resource, locational, landscape, environment                                                                         | 6  | Dr. Mausumi Bandyopadhyay                 |
|    |                  |                             | 3. Concept and classification of race. Ethnicity                                                                                                       | 5  | Dr. Mausumi Bandyopadhyay                 |
|    |                  |                             | 4. Space, society and cultural regions (language and religion)                                                                                         | 5  | Smt. Munmun Mondal                        |
|    |                  |                             | 5. Evolution of human societies: Hunting and food gathering, pastoral nomadism, subsistence farming and industrial society                             | 6  | Shri Kaushik Halder                       |
|    |                  |                             | 6. Human adaptation to environment: Case studies of Eskimo, Masai and Maori                                                                            | 4  | Shri Kaushik Halder                       |

|  |                  |                                    |                                                                                                                            |    |                           |
|--|------------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----|---------------------------|
|  |                  |                                    | 7. Population growth and distribution, composition; demographic transition                                                 | 5  | Shri Sajal Ghosh          |
|  |                  |                                    | 8. Population–resource regions (Ackerman)                                                                                  | 5  | Shri Sajal Ghosh          |
|  |                  |                                    | 9. Development–environment conflict                                                                                        | 5  | Smt. Mouli Banerjee       |
|  |                  |                                    | 10. Types and patterns of rural settlements                                                                                | 5  | Smt. Mouli Banerjee       |
|  |                  |                                    | 11. Rural house types in India                                                                                             | 5  | Smt. Munmun Mondal        |
|  |                  |                                    | 12. Morphology and hierarchy of urban settlements                                                                          | 5  | Smt. Munmun Mondal        |
|  | GEO-A-CC-2-03-P  | Human Geography Lab                | 1. Spatial variation in continent- or country-level religious composition by divided proportional circles                  | 12 | Smt. Mouli Banerjee       |
|  |                  |                                    | 2. Measuring arithmetic growth rate of population comparing two decadal datasets                                           | 15 | Shri Kaushik Halder       |
|  |                  |                                    | 3. Types of Age-Sex pyramids (progressive, regressive, intermediate and stationary): Graphical representation and analysis | 20 | Dr. Mausumi Bandyopadhyay |
|  |                  |                                    | 4. Nearest neighbour analysis from Survey of India 1:50k topographical maps (5' x 5')                                      | 13 | Smt. Munmun Mondal        |
|  | GEO-A-CC-2-04-TH | Thematic Mapping and Surveying     | 1. Concepts of rounding, scientific notation. Logarithm and anti-logarithm. Natural and log scales                         | 4  | Shri Kaushik Halder       |
|  |                  |                                    | 2. Concept of diagrammatic representation of data                                                                          | 2  | Smt. Munmun Mondal        |
|  |                  |                                    | 3. Preparation and interpretation of geological maps                                                                       | 5  | Shri Kaushik Halder       |
|  |                  |                                    | 4. Preparation and interpretation of weather maps                                                                          | 5  | Shri Kaushik Halder       |
|  |                  |                                    | 5. Preparation and interpretation land use land cover maps                                                                 | 5  | Smt. Mouli Banerjee       |
|  |                  |                                    | 6. Preparation and interpretation of socio-economic maps                                                                   | 5  | Smt. Mouli Banerjee       |
|  |                  |                                    | 7. Principal national agencies producing thematic maps in India: NATMO, GSI, NBSSLUP, NHO, NRSC / Bhuvan, etc              | 5  | Smt. Mouli Banerjee       |
|  |                  |                                    | 8. Basic concepts of surveying and survey equipment: Prismatic compass                                                     | 5  | Smt. Munmun Mondal        |
|  |                  |                                    | 9. Basic concepts of surveying and survey equipment: Dumpy level                                                           | 7  | Smt. Munmun Mondal        |
|  |                  |                                    | 10. Basic concepts of surveying and survey equipment: Theodolite                                                           | 7  | Shri Sajal Ghosh          |
|  |                  |                                    | 11. Basic concepts of surveying and survey equipment: Abney level                                                          | 5  | Dr. Mausumi Bandyopadhyay |
|  |                  |                                    | 12. Basic concepts of surveying and survey equipment: Laser distance measurer                                              | 5  | Dr. Mausumi Bandyopadhyay |
|  | GEO-A-CC-2-04-P  | Thematic Mapping and Surveying Lab | 1. Traverse survey using prismatic compass                                                                                 | 10 | Smt. Mouli Banerjee       |
|  |                  |                                    | 2. Profile survey using dumpy Level                                                                                        | 12 | Shri Sajal Ghosh          |
|  |                  |                                    | 3. Height determination of base accessible and inaccessible (same vertical plane method) objects by theodolite             | 18 | Dr. Mausumi Bandyopadhyay |
|  |                  |                                    | 4. Interpretation of geological maps with                                                                                  | 20 | Shri Kaushik              |

|     |                  |                            |                                                                                                                                              |    |                           |
|-----|------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----|---------------------------|
|     |                  |                            | uniclinal structure, folds, unconformity, and intrusions                                                                                     |    | Halder                    |
| III | GEO-A-CC-3-05-TH | Climatology                | 1. Nature, composition and layering of the atmosphere                                                                                        | 4  | Smt. Munmun Mondal        |
|     |                  |                            | 2. Insolation: Controlling factors. Heat budget of the atmosphere                                                                            | 6  | Smt. Munmun Mondal        |
|     |                  |                            | 3. Temperature: horizontal and vertical distribution. Inversion of temperature: types, causes and consequences                               | 6  | Smt. Munmun Mondal        |
|     |                  |                            | 4. Overview of climate change: Greenhouse effect. Formation, depletion and significance of the ozone layer                                   | 4  | Smt. Mouli Banerjee       |
|     |                  |                            | 5. Condensation: Process and forms. Mechanism of precipitation: Bergeron-Findeisen theory, collision and coalescence. Forms of precipitation | 6  | Smt. Mouli Banerjee       |
|     |                  |                            | 6. Air mass: Typology, origin, characteristics and modification                                                                              | 4  | Smt. Mouli Banerjee       |
|     |                  |                            | 7. Fronts: Warm and cold, frontogenesis and frontolysis                                                                                      | 5  | Dr. Mausumi Bandyopadhyay |
|     |                  |                            | 8. Weather: Stability and instability, barotropic and baroclinic conditions                                                                  | 5  | Dr. Mausumi Bandyopadhyay |
|     |                  |                            | 9. Circulation in the atmosphere: Planetary winds, jet streams, index cycle                                                                  | 5  | Shri Sajal Ghosh          |
|     |                  |                            | 10. Atmospheric disturbances: Tropical and mid-latitude cyclones, thunderstorms                                                              | 5  | Shri Sajal Ghosh          |
|     |                  |                            | 11. Monsoon circulation and mechanism with reference to India                                                                                | 5  | Shri Kaushik Halder       |
|     |                  |                            | 12. Climatic classification after Thornthwaite (1955) and Oliver                                                                             | 5  | Shri Kaushik Halder       |
|     | GEO-A-CC-3-05-P  | Climatology Lab            | 1. Measurement of weather elements using analogue instruments: Mean daily temperature, air pressure, relative humidity, rainfall             | 15 | Shri Sajal Ghosh          |
|     |                  |                            | 2. Interpretation of a daily weather map of India (any two): Pre-Monsoon, Monsoon and Post-Monsoon                                           | 20 | Shri Kaushik Halder       |
|     |                  |                            | 3. Construction and interpretation of hythergraph and climograph (G. Taylor)                                                                 | 15 | Smt. Munmun Mondal        |
|     |                  |                            | 4. Construction and interpretation of wind rose                                                                                              | 10 | Dr. Mausumi Bandyopadhyay |
|     | GEO-A-CC-3-06-TH | Hydrology and Oceanography | 1. Systems approach in hydrology. Global hydrological cycle: Its physical and biological role                                                | 5  | Smt. Munmun Mondal        |
|     |                  |                            | 2. Run off: controlling factors. Infiltration and evapotranspiration. Run off cycle                                                          | 5  | Smt. Munmun Mondal        |
|     |                  |                            | 3. Drainage basin as a hydrological unit. Principles of water harvesting and watershed management                                            | 5  | Smt. Munmun Mondal        |
|     |                  |                            | 4. Groundwater: Occurrence and storage. Factors controlling recharge, discharge and movement                                                 | 5  | Smt. Mouli Banerjee       |
|     |                  |                            | 5. Major relief features of the ocean floor: Characteristics and origin according to plate tectonics                                         | 6  | Smt. Mouli Banerjee       |

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|  |                  |                                      | 6. Physical and chemical properties of ocean water                                                                                                             | 4  | Smt. Mouli Banerjee                           |
|  |                  |                                      | 7. Water mass, T–S diagram                                                                                                                                     | 4  | Shri Kaushik Halder                           |
|  |                  |                                      | 8. Air-Sea interactions, ocean circulation, wave and tide                                                                                                      | 8  | Shri Kaushik Halder                           |
|  |                  |                                      | 9. Ocean temperature and salinity: Distribution and determinants                                                                                               | 4  | Shri Kaushik Halder                           |
|  |                  |                                      | 10. Coral reefs: Formation, classification and threats                                                                                                         | 5  | Shri Sajal Ghosh                              |
|  |                  |                                      | 11. Marine resources: Classification and sustainable utilisation                                                                                               | 4  | Shri Sajal Ghosh                              |
|  |                  |                                      | 12. Sea level change: Types and causes                                                                                                                         | 5  | Dr. Mausumi Bandyopadhyay                     |
|  | GEO-A-CC-3-06-P  | Hydrology and Oceanography Lab       | 1. Construction and interpretation of rating curves                                                                                                            | 10 | Smt. Mouli Banerjee                           |
|  |                  |                                      | 2. Construction and interpretation hydrographs and unit hydrographs                                                                                            | 15 | Smt. Munmun Mondal                            |
|  |                  |                                      | 3. Monthly rainfall dispersion diagram (Quartile method), Climatic water budget, and Ergograph                                                                 | 25 | Shri Sajal Ghosh<br>Dr. Mausumi Bandyopadhyay |
|  |                  |                                      | 4. Construction of Theissen polygon from precipitation data                                                                                                    | 10 | Shri Kaushik Halder                           |
|  | GEO-A-CC-3-07-TH | Statistical Methods in Geography     | 1. Importance and significance of statistics in Geography                                                                                                      | 4  | Smt. Mouli Banerjee                           |
|  |                  |                                      | 2. Discrete and continuous data, population and samples, scales of measurement (nominal, ordinal, interval and ratio)                                          | 5  | Smt. Mouli Banerjee                           |
|  |                  |                                      | 3. Sources of geographical data for statistical analysis                                                                                                       | 4  | Shri Kaushik Halder                           |
|  |                  |                                      | 4. Collection of data and formation of statistical tables                                                                                                      | 5  | Shri Kaushik Halder                           |
|  |                  |                                      | 5. Sampling: Need, types, and significance and methods of random sampling                                                                                      | 4  | Dr. Mausumi Bandyopadhyay                     |
|  |                  |                                      | 6. Theoretical distribution: Frequency, cumulative frequency, normal and probability                                                                           | 6  | Dr. Mausumi Bandyopadhyay                     |
|  |                  |                                      | 7. Central tendency: Mean, median, mode, partition values                                                                                                      | 6  | Smt. Mouli Banerjee                           |
|  |                  |                                      | 8. Measures of dispersion range, mean deviation, standard deviation, coefficient of variation                                                                  | 6  | Smt. Munmun Mondal                            |
|  |                  |                                      | 9. Association and correlation: Rank correlation, product moment correlation                                                                                   | 5  | Smt. Munmun Mondal                            |
|  |                  |                                      | 10. Regression: Linear and non-linear                                                                                                                          | 5  | Shri Sajal Ghosh                              |
|  |                  |                                      | 11. Time series analysis: Moving average                                                                                                                       | 5  | Shri Sajal Ghosh                              |
|  |                  |                                      | 12. Hypothesis testing: Chi-squared test and T-test                                                                                                            | 5  | Shri Sajal Ghosh                              |
|  | GEO-A-CC-3-07-P  | Statistical Methods in Geography Lab | 1. Construction of data matrix with each row representing an areal unit (districts / blocks / mouzas / towns) and corresponding columns of relevant attributes | 15 | Dr. Mausumi Bandyopadhyay                     |
|  |                  |                                      | 2. Based on the above, a frequency table, measures of central tendency and dispersion would be computed and interpreted using                                  | 15 | Smt. Munmun Mondal                            |

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|    |                     |                    | histogram and frequency curve                                                                                                                                                                                                                   |    |                                         |
|    |                     |                    | 3. From the data matrix, a sample set (20%) would be drawn using random, systematic and stratified methods of sampling and the samples would be located on a map with an explanation of the methods used                                        | 15 | Shri Kaushik Halder                     |
|    |                     |                    | 4. Based on of the sample set and using two relevant attributes, a scatter diagram and linear regression line would be plotted and residual from regression would be mapped with a short interpretation                                         | 15 | Shri Sajal Ghosh                        |
|    | GEO-A-SEC-A-3-02-TH | Tourism Management | 1. Scope and Nature: Concepts and issues, tourism, recreation and leisure inter-relations; Factors influencing tourism, Types of Tourism: Ecotourism, cultural tourism, adventure tourism, medical tourism, pilgrimage, international, national | 10 | Shri Kaushik Halder<br>Shri Sajal Ghosh |
|    |                     |                    | 2. Use of information on factors (Historical, natural, socio-cultural and economic; motivating factors for pilgrimages) to plan destination marketing; tourism products; niche tourism planning                                                 | 5  | Smt. Mouli Banerjee<br>Shri Sajal Ghosh |
|    |                     |                    | 3. Tourism impact assessment, Sustainable tourism, Information Technology and Tourism, Tour operations planning and guiding                                                                                                                     | 8  | Dr. Mausumi Bandyopadhyay               |
|    |                     |                    | 4. Increasing Global tourism; Tourism in India: Tourism infrastructure, access, planning for different budgets for case study sites of Western Himalayas, Goa, Chilka/Vembanad, Jaipur                                                          | 4  | Smt. Munmun Mondal                      |
| IV | GEO-A-CC-4-08-TH    | Economic Geography | 1. Meaning and approaches to economic geography                                                                                                                                                                                                 | 4  | Dr. Mausumi Bandyopadhyay               |
|    |                     |                    | 2. Concepts in economic geography: Goods and services, production, exchange and consumption                                                                                                                                                     | 6  | Shri Kaushik Halder                     |
|    |                     |                    | 3. Concept of economic man, theories of choices                                                                                                                                                                                                 | 6  | Shri Kaushik Halder                     |
|    |                     |                    | 4. Economic distance and transport costs                                                                                                                                                                                                        | 4  | Smt. Mouli Banerjee                     |
|    |                     |                    | 5. Concept and classification of economic activities                                                                                                                                                                                            | 4  | Smt. Mouli Banerjee                     |
|    |                     |                    | 6. Factors affecting location of economic activity with special reference to agriculture (von Thünen), and industry (Weber)                                                                                                                     | 6  | Smt. Mouli Banerjee                     |
|    |                     |                    | 7. Primary activities: Agriculture, forestry, fishing and mining                                                                                                                                                                                | 6  | Shri Sajal Ghosh                        |
|    |                     |                    | 8. Secondary activities: Classification of manufacturing, concept of manufacturing regions, special economic zones and technology parks                                                                                                         | 6  | Shri Sajal Ghosh                        |
|    |                     |                    | 9. Tertiary activities: Transport, trade and services                                                                                                                                                                                           | 6  | Shri Sajal Ghosh                        |
|    |                     |                    | 10. Transnational sea-routes, railways and highways with reference to India                                                                                                                                                                     | 4  | Smt. Munmun Mondal                      |

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|  |                  |                                       | 11. International trade and economic blocs                                                                   | 4  | Smt. Munmun Mondal                            |
|  |                  |                                       | 12. WTO and BRICS: Evolution, structure and functions                                                        | 4  | Smt. Munmun Mondal                            |
|  | GEO-A-CC-4-08-P  | Economic Geography Lab                | 1. Choropleth mapping of state-wise variation in GDP                                                         | 10 | Dr. Mausumi Bandyopadhyay<br>Shri Sajal Ghosh |
|  |                  |                                       | 2. State-wise variation in occupational structure by proportional divided circles                            | 15 | Smt. Mouli Banerjee                           |
|  |                  |                                       | 3. Time series analysis of industrial production (India and West Bengal)                                     | 20 | Smt. Munmun Mondal                            |
|  |                  |                                       | 4. Transport network analysis by detour index and shortest path analysis                                     | 15 | Shri Kaushik Halder                           |
|  | GEO-A-CC-4-09-TH | Regional Planning and Development     | 1. Concept of regions: Types of regions and their delineation                                                | 4  | Smt. Mouli Banerjee                           |
|  |                  |                                       | 2. Regional Planning: Types, principles, objectives, tools and techniques                                    | 6  | Smt. Mouli Banerjee                           |
|  |                  |                                       | 3. Regional planning and multi-level planning in India                                                       | 6  | Smt. Mouli Banerjee                           |
|  |                  |                                       | 4. Metropolitan concept and urban agglomerations                                                             | 4  | Smt. Mouli Banerjee                           |
|  |                  |                                       | 5. Concepts of growth and development, growth versus development                                             | 6  | Dr. Mausumi Bandyopadhyay                     |
|  |                  |                                       | 6. Indicators of development: Economic, social and environmental                                             | 6  | Shri Sajal Ghosh                              |
|  |                  |                                       | 7. Human development: Concept and measurement                                                                | 4  | Shri Sajal Ghosh                              |
|  |                  |                                       | 8. Theories and models for regional development: Cumulative causation (Myrdal)                               | 4  | Smt. Munmun Mondal                            |
|  |                  |                                       | 9. Theories and models for regional development: Stages of development (Rostow), growth pole model (Perroux) | 6  | Smt. Munmun Mondal                            |
|  |                  |                                       | 10. Concept and causes of underdevelopment                                                                   | 4  | Smt. Munmun Mondal                            |
|  |                  |                                       | 11. Regional development in India: Disparity and diversity                                                   | 5  | Shri Kaushik Halder                           |
|  |                  |                                       | 12. Need and measures for balanced development in India                                                      | 5  | Shri Kaushik Halder                           |
|  | GEO-A-CC-4-09-P  | Regional Planning and Development Lab | 1. Delineation of formal regions by weighted index method                                                    | 15 | Shri Kaushik Halder                           |
|  |                  |                                       | 2. Delineation of functional regions by breaking point analysis                                              | 15 | Shri Sajal Ghosh                              |
|  |                  |                                       | 3. Measurement of inequality by location quotient                                                            | 15 | Smt. Munmun Mondal                            |
|  |                  |                                       | 4. Measuring regional disparity by Sopher index                                                              | 15 | Dr. Mausumi Bandyopadhyay                     |
|  | GEO-A-CC-4-10-TH | Soil and Biogeography                 | 1. Factors of soil formation. Man as an active agent of soil transformation                                  | 4  | Shri Sajal Ghosh                              |
|  |                  |                                       | 2. Soil profile. Origin and profile characteristics of lateritic, podzol and chernozem soils                 | 6  | Shri Sajal Ghosh                              |
|  |                  |                                       | 3. Definition and significance of soil properties: Texture, structure and moisture                           | 5  | Smt. Munmun Mondal                            |
|  |                  |                                       | 4. Definition and significance of soil                                                                       | 5  | Shri Kaushik                                  |

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|   |                     |                                    | properties: pH, organic matter and NPK                                                                                                                                                           |    | Halder                                  |
|   |                     |                                    | 5. Soil erosion and degradation: Factors, processes and mitigation measures                                                                                                                      | 4  | Shri Kaushik Halder                     |
|   |                     |                                    | 6. Principles of soil classification: Genetic and USDA. Concept of land capability and its classification                                                                                        | 6  | Shri Sajal Ghosh                        |
|   |                     |                                    | 7. Concepts of biosphere, ecosystem, biome, ecotone, community and ecology                                                                                                                       | 5  | Smt. Mouli Banerjee                     |
|   |                     |                                    | 8. Concepts of trophic structure, food chain and food web. Energy flow in ecosystems                                                                                                             | 5  | Smt. Mouli Banerjee                     |
|   |                     |                                    | 9. Classification of world biomes (Whittaker). Geographical extent and characteristics of tropical rain forest, savanna, hot desert, taiga and coral reef biomes                                 | 8  | Dr. Mausumi Bandyopadhyay               |
|   |                     |                                    | 10. Bio-geochemical cycles with special reference to carbon dioxide and nitrogen                                                                                                                 | 4  | Smt. Mouli Banerjee                     |
|   |                     |                                    | 11. Deforestation: Causes, consequences and management                                                                                                                                           | 4  | Smt. Munmun Mondal                      |
|   |                     |                                    | 12. Biodiversity: Definition, types, threats and conservation measures                                                                                                                           | 4  | Smt. Munmun Mondal                      |
|   | GEO-A-CC-4-10-P     | Soil and Biogeography Lab          | 1. Determination of soil reaction (pH) and salinity using field kit                                                                                                                              | 15 | Dr. Mausumi Bandyopadhyay               |
|   |                     |                                    | 2. Determination of soil type by ternary diagram textural plotting                                                                                                                               | 15 | Smt. Mouli Banerjee                     |
|   |                     |                                    | 3. Plant species diversity determination by matrix method                                                                                                                                        | 10 | Dr. Mausumi Bandyopadhyay               |
|   |                     |                                    | 4. Time series analysis of biogeography data                                                                                                                                                     | 20 | Shri Sajal Ghosh                        |
|   | GEO-A-SEC-B-4-03-TH | Rural Development                  | 1. Rural Development: Concept, basic elements, measures of level of rural development                                                                                                            | 5  | Dr. Mausumi Bandyopadhyay               |
|   |                     |                                    | 2. Paradigms of rural development: Gandhian approach to rural development Lewis model of economic development, 'big push' theory of development, Myrdal's model of 'spread and backwash effects' | 10 | Smt. Munmun Mondal                      |
|   |                     |                                    | 3. Area based approach to rural development: Drought prone area programmes, PMGSY, SJSY, MNREGA, Jan Dhan Yojana                                                                                 | 10 | Smt. Mouli Banerjee<br>Shri Sajal Ghosh |
|   |                     |                                    | 4. Rural Governance: Panchayati Raj System and rural development policies and Programmes in India                                                                                                | 5  | Shri Kaushik Halder                     |
|   |                     |                                    |                                                                                                                                                                                                  |    |                                         |
| V | GEO-A-CC-5-11-TH    | Research Methodology and Fieldwork | 1. Research in Geography: Meaning, types and significance                                                                                                                                        | 5  | Shri Sajal Ghosh                        |
|   |                     |                                    | 2. Literature review and formulation of research design                                                                                                                                          | 5  | Shri Sajal Ghosh                        |
|   |                     |                                    | 3. Defining research problem, objectives and hypothesis                                                                                                                                          | 6  | Shri Sajal Ghosh                        |
|   |                     |                                    | 4. Research materials and methods                                                                                                                                                                | 4  | Dr. Mausumi Bandyopadhyay               |
|   |                     |                                    | 5. Techniques of writing scientific reports: Preparing notes, references, bibliography, abstract and keywords                                                                                    | 6  | Dr. Mausumi Bandyopadhyay               |

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|  |                  |                                        | 6. Plagiarism: Classification and prevention                                                                                                              | 4  | Dr. Mausumi Bandyopadhyay                                                                                         |
|  |                  |                                        | 7. Fieldwork in Geographical studies: Role and significance. Selection of study area and objectives. Pre-field academic preparations. Ethics of fieldwork | 6  | Shri Kaushik Halder                                                                                               |
|  |                  |                                        | 8. Field techniques and tools: Observation (participant, non-participant), questionnaires (open, closed, structured, non-structured). Interview           | 5  | Shri Kaushik Halder                                                                                               |
|  |                  |                                        | 9. Field techniques and tools: Landscape survey using transects and quadrants, constructing a sketch, photo and video recording                           | 5  | Smt. Munmun Mondal                                                                                                |
|  |                  |                                        | 10. Positioning and collection of samples. Preparation of inventory from field data                                                                       | 4  | Smt. Munmun Mondal                                                                                                |
|  |                  |                                        | 11. Post-field tabulation, processing and analysis of quantitative and qualitative data                                                                   | 5  | Smt. Mouli Banerjee                                                                                               |
|  |                  |                                        | 12. Fieldwork: logistics and handling of emergencies                                                                                                      | 5  | Smt. Mouli Banerjee                                                                                               |
|  | GEO-A-CC-5-11-P  | Research Methodology and Fieldwork Lab | 1. Field report based on primary data collected from field survey                                                                                         | 10 | Dr. Mausumi Bandyopadhyay<br>Shri Kaushik Halder<br>Shri Sajal Ghosh<br>Smt. Munmun Mondal<br>Smt. Mouli Banerjee |
|  |                  |                                        | 2. Field report based on collected from different sources.                                                                                                | 10 |                                                                                                                   |
|  | GEO-A-CC-5-12-TH | Remote Sensing, GIS and GNSS           | 1. Principles of Remote Sensing (RS): Types of RS satellites and sensors                                                                                  | 5  | Smt. Munmun Mondal                                                                                                |
|  |                  |                                        | 2. Sensor resolutions and their applications with reference to IRS and Landsat missions                                                                   | 5  | Smt. Munmun Mondal                                                                                                |
|  |                  |                                        | 3. Image referencing schemes and acquisition procedure of free geospatial data from NRSC / Bhuvan and USGS                                                | 5  | Smt. Mouli Banerjee                                                                                               |
|  |                  |                                        | 4. Preparation of False Colour Composites from IRS LISS-3 and Landsat TM / OLI data.                                                                      | 5  | Smt. Mouli Banerjee                                                                                               |
|  |                  |                                        | 5. Principles of image interpretation. Preparation of inventories of land use land cover (LULC) features from satellite images                            | 5  | Shri Sajal Ghosh                                                                                                  |
|  |                  |                                        | 6. Acquisition and utilisation of free Digital Elevation Model data: CartoDEM, SRTM and ALOS                                                              | 5  | Shri Sajal Ghosh                                                                                                  |
|  |                  |                                        | 7. GIS data structures: types: spatial and non-spatial, raster and vector                                                                                 | 5  | Dr. Mausumi Bandyopadhyay                                                                                         |
|  |                  |                                        | 8. Principles of preparing attribute tables and data manipulation and overlay analysis                                                                    | 6  | Dr. Mausumi Bandyopadhyay                                                                                         |
|  |                  |                                        | 9. Principles and significance of buffer preparation                                                                                                      | 4  | Dr. Mausumi Bandyopadhyay                                                                                         |
|  |                  |                                        | 10. Principles and significance overlay analysis                                                                                                          | 5  | Shri Sajal Ghosh                                                                                                  |

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|  |                     |                                                   | 11. Principles of GNSS positioning and waypoint collection                                                                                                | 5  | Shri Kaushik Halder                       |
|  |                     |                                                   | 12. Principles of transferring of GNSS waypoints to GIS. Area and length calculations from GNSS data                                                      | 5  | Shri Kaushik Halder                       |
|  | GEO-A-CC-5-12-P     | Remote Sensing, GIS and GNSS Lab                  | 1. Image georeferencing and enhancement. Preparation of reflectance libraries of LULC features across different image bands of IRS L3 or Landsat OLI data | 15 | Shri Sajal Ghosh                          |
|  |                     |                                                   | 2. Supervised image classification, class editing and post-classification analysis                                                                        | 15 | Shri Kaushik Halder                       |
|  |                     |                                                   | 3. Digitisation of features and administrative boundaries. Data attachment, overlay and preparation of annotated thematic maps                            | 20 | Smt. Munmun Mondal<br>Smt. Mouli Banerjee |
|  |                     |                                                   | 4. Waypoint collection from GNSS receivers and exporting to GIS database                                                                                  | 10 | Dr. Mausumi Bandyopadhyay                 |
|  | GEO-A-DSE-A-6-02-TH | Climate Change: Vulnerability and Adaptation      | 1. The science of climate change: Origin, scope and trends                                                                                                | 5  | Dr. Mausumi Bandyopadhyay                 |
|  |                     |                                                   | 2. Climate change with reference to the geological time scale                                                                                             | 6  | Dr. Mausumi Bandyopadhyay                 |
|  |                     |                                                   | 3. Evidences and factors of climate change: The nature–man dichotomy                                                                                      | 4  | Shri Sajal Ghosh                          |
|  |                     |                                                   | 4. Greenhouse gases and global warming                                                                                                                    | 5  | Smt. Munmun Mondal                        |
|  |                     |                                                   | 5. Electromagnetic spectrum, atmospheric window, heat balance of the earth                                                                                | 5  | Smt. Munmun Mondal                        |
|  |                     |                                                   | 6. Global climatic assessment: IPCC reports                                                                                                               | 5  | Smt. Mouli Banerjee                       |
|  |                     |                                                   | 7. Climate change and vulnerability: Physical; economic and social                                                                                        | 5  | Shri Kaushik Halder                       |
|  |                     |                                                   | 8. Impact of climate change: Agriculture and water; flora and fauna; human health and morbidity                                                           | 5  | Shri Kaushik Halder                       |
|  |                     |                                                   | 9. Global initiatives to climate change mitigation: Kyoto Protocol, carbon trading, clean development mechanism, COP, climate fund                        | 5  | Shri Sajal Ghosh                          |
|  |                     |                                                   | 10. Climate change vulnerability assessment and adaptive strategies with particular reference to South Asia                                               | 5  | Smt. Mouli Banerjee                       |
|  |                     |                                                   | 11. National Action Plan on climate change                                                                                                                | 5  | Smt. Munmun Mondal                        |
|  |                     |                                                   | 12. Role of urban local bodies, panchayats and educational institutions on climate change mitigation: Awareness and action programmes                     | 5  | Smt. Mouli Banerjee                       |
|  | GEO-A-DSE-A-6-02-P  | Climate Change: Vulnerability and Adaptations Lab | 1. Analysis of trends of temperatures (maximum and minimum of about three decades) of any India Meteorological Department (IMD) station                   | 10 | Shri Kaushik Halder                       |
|  |                     |                                                   | 2. Comparative analysis of seasonal variability of rainfall on the basis of monthly data of any two IMD stations                                          | 15 | Smt. Munmun Mondal                        |
|  |                     |                                                   | 3. Annual rainfall variability of about three                                                                                                             | 15 | Smt. Mouli                                |

|    |                     |                                       |                                                                                                                                                                                                  |    |                                               |
|----|---------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----------------------------------------------|
|    |                     |                                       | decades for any two representative climatic regions of India                                                                                                                                     |    | Banerjee                                      |
|    |                     |                                       | 4. Preparation of an inventory of extreme climatic events and mitigation measure of any climatic region / country of South Asia for a period of one decade on the basis of secondary information | 20 | Dr. Mausumi Bandyopadhyay<br>Shri Sajal Ghosh |
|    | GEO-A-DSE-B-6-05-TH | Cultural and Settlement Geography     | 1. Definition, scope and content of cultural geography                                                                                                                                           | 5  | Dr. Mausumi Bandyopadhyay                     |
|    |                     |                                       | 2. Development of cultural geography in relation to allied disciplines                                                                                                                           | 5  | Shri Sajal Ghosh                              |
|    |                     |                                       | 3. Cultural hearth and realm, cultural diffusion, diffusion of major world religions and languages                                                                                               | 6  | Shri Kaushik Halder                           |
|    |                     |                                       | 4. Cultural segregation and cultural diversity, culture, technology and development.                                                                                                             | 5  | Shri Kaushik Halder                           |
|    |                     |                                       | 5. Races and racial groups of the world                                                                                                                                                          | 5  | Shri Kaushik Halder                           |
|    |                     |                                       | 6. Cultural regions of India                                                                                                                                                                     | 4  | Shri Sajal Ghosh                              |
|    |                     |                                       | 7. Rural Settlement: Definition, nature and characteristics                                                                                                                                      | 3  | Smt. Mouli Banerjee                           |
|    |                     |                                       | 8. Morphology of rural settlements: site and situation, layout-internal and external                                                                                                             | 5  | Smt. Mouli Banerjee                           |
|    |                     |                                       | 9. Rural house types with reference to India, Social segregation in rural areas; Census categories of rural settlements                                                                          | 7  | Smt. Mouli Banerjee                           |
|    |                     |                                       | 10. Urban Settlements: Census definition (Temporal) and categories in India                                                                                                                      | 3  | Smt. Munmun Mondal                            |
|    |                     |                                       | 11. Urban morphology: Models of Burgess, Hoyt, Harris and Ullman                                                                                                                                 | 7  | Smt. Munmun Mondal                            |
|    |                     |                                       | 12. City-region and conurbation. Functional classification of cities: Schemes of Harris, Nelson, and McKenzie                                                                                    | 5  | Smt. Munmun Mondal                            |
|    | GEO-A-DSE-B-6-05-P  | Cultural and Settlement Geography Lab | 1. Mapping language distribution of India                                                                                                                                                        | 10 | Dr. Mausumi Bandyopadhyay                     |
|    |                     |                                       | 2. CD block-wise housing distribution in any district of West Bengal using proportional square                                                                                                   | 20 | Shri Sajal Ghosh                              |
|    |                     |                                       | 3. Identification of rural settlement types from toposheet                                                                                                                                       | 15 | Smt. Munmun Mondal                            |
|    |                     |                                       | 4. Social area analysis of a city (Shevky & Bell)                                                                                                                                                | 15 | Smt. Mouli Banerjee                           |
| VI | GEO-A-CC-6-13-TH    | Evolution of Geographical Thought     | 1. Development of pre-modern Geography: Contributions of Greek, Chinese, and Indian geographer                                                                                                   | 5  | Smt. Mouli Banerjee                           |
|    |                     |                                       | 2. Impact of 'Dark Age' in Geography and Arab contribution                                                                                                                                       | 5  | Smt. Mouli Banerjee                           |
|    |                     |                                       | 3. Geography during the age of 'Discovery' and 'Exploration' (contributions of Portuguese voyages, Columbus, Vasco da Gama, Magellan, Thomas Cook)                                               | 5  | Smt. Mouli Banerjee                           |
|    |                     |                                       | 4. Transition from cosmography to scientific Geography (contributions of Bernard Varenius and Immanuel Kant). Dualism and                                                                        | 7  | Shri Sajal Ghosh                              |

|  |                  |                                       |                                                                                                                                            |   |                                                                                                                   |
|--|------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------|
|  |                  |                                       | Dichotomies (General vs. Particular, Physical vs. Human, Regional vs. Systematic, Determinism vs. Possibilism, Ideographic vs. Nomothetic) |   |                                                                                                                   |
|  |                  |                                       | 5. Evolution of Geographical thoughts in Germany, France, Britain and United States of America                                             | 5 | Shri Sajal Ghosh                                                                                                  |
|  |                  |                                       | 6. Contributions of Humboldt and Ritter                                                                                                    | 3 | Dr. Mausumi Bandyopadhyay                                                                                         |
|  |                  |                                       | 7. Contributions of Richthofen, Hartshorne–Schaeffer, Ratzel, La Blaché                                                                    | 6 | Dr. Mausumi Bandyopadhyay                                                                                         |
|  |                  |                                       | 8. Trends of geography in the post World War-II period: Quantitative revolution, systems approach                                          | 7 | Shri Kaushik Halder                                                                                               |
|  |                  |                                       | 9. Structuralism and historical materialism                                                                                                | 3 | Shri Kaushik Halder                                                                                               |
|  |                  |                                       | 10. Changing concept of space with special reference to Harvey                                                                             | 5 | Smt. Munmun Mondal                                                                                                |
|  |                  |                                       | 11. Evolution of Critical Geography: Behavioural, humanistic and radical                                                                   | 5 | Smt. Munmun Mondal                                                                                                |
|  |                  |                                       | 12. Towards post modernism: Geography in the 21st Century                                                                                  | 5 | Smt. Munmun Mondal                                                                                                |
|  | GEO-A-CC-6-13-P  | Evolution of Geographical Thought Lab | 1. Changing Perception of maps of the world (Ptolemy, Ibn Batuta, Mercator)                                                                | 4 | Shri Kaushik Halder                                                                                               |
|  |                  |                                       | 2. Mapping voyages; Columbus, Vasco da Gama, Magellan, Thomas Cook                                                                         | 4 | Shri Sajal Ghosh                                                                                                  |
|  |                  |                                       | 3. Group Presentation of 5–10 students any selected school of geographical thought                                                         | 8 | Dr. Mausumi Bandyopadhyay<br>Shri Kaushik Halder<br>Shri Sajal Ghosh<br>Smt. Munmun Mondal<br>Smt. Mouli Banerjee |
|  | GEO-A-CC-6-14-TH | Hazard Management                     | 1. Classification of hazards and disasters. Hazard continuum                                                                               | 4 | Smt. Munmun Mondal                                                                                                |
|  |                  |                                       | 2. Approaches to hazard study: Risk perception and vulnerability assessment. Hazard paradigms                                              | 6 | Smt. Munmun Mondal                                                                                                |
|  |                  |                                       | 3. Responses to hazards: Preparedness, trauma and aftermath. Resilience and capacity building                                              | 5 | Shri Sajal Ghosh                                                                                                  |
|  |                  |                                       | 4. Hazards mapping: Data and geospatial techniques (for hazards enlisted in Unit II and GEO-A-CC-6-14-P)                                   | 5 | Shri Sajal Ghosh                                                                                                  |
|  |                  |                                       | 5. Earthquake: Factors, vulnerability, consequences and management                                                                         | 5 | Shri Kaushik Halder                                                                                               |
|  |                  |                                       | 6. Landslide: Factors, vulnerability, consequences and management                                                                          | 5 | Shri Kaushik Halder                                                                                               |
|  |                  |                                       | 7. Land subsidence: Factors, vulnerability, consequences and management                                                                    | 5 | Shri Kaushik Halder                                                                                               |
|  |                  |                                       | 8. Tropical Cyclone: Factors, vulnerability, consequences and management                                                                   | 5 | Dr. Mausumi Bandyopadhyay                                                                                         |

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|  |                     |                                       |                                                                                                             |    |                                                                                                                   |
|  |                     |                                       | 9. Flood: Factors, vulnerability, consequences and management                                               | 5  | Dr. Mausumi Bandyopadhyay                                                                                         |
|  |                     |                                       | 10. Riverbank erosion: Factors, vulnerability, consequences and management                                  | 5  | Smt. Mouli Banerjee                                                                                               |
|  |                     |                                       | 11. Fire: Factors, vulnerability, consequences and management                                               | 5  | Smt. Mouli Banerjee                                                                                               |
|  |                     |                                       | 12. Biohazard: Classification, vulnerability, consequences and management                                   | 5  | Smt. Mouli Banerjee                                                                                               |
|  | GEO-A-CC-6-14-P     | Hazard Management Lab                 | A Group Project Report                                                                                      | 12 | Dr. Mausumi Bandyopadhyay<br>Shri Kaushik Halder<br>Shri Sajal Ghosh<br>Smt. Mouli Banerjee<br>Smt. Munmun Mondal |
|  | GEO-A-DSE-A-6-03-TH | Environmental Issues in Geography     | 1. Geographers' approach to environmental studies                                                           | 5  | Shri Sajal Ghosh                                                                                                  |
|  |                     |                                       | 2. Concept of holistic environment and systems approach                                                     | 5  | Shri Sajal Ghosh                                                                                                  |
|  |                     |                                       | 3. Ecosystems and their relation with habitats. Habitat loss in West Bengal                                 | 5  | Smt. Munmun Mondal                                                                                                |
|  |                     |                                       | 4. Wetland ecosystem with special reference to East Kolkata Wetlands                                        | 5  | Shri Kaushik Halder                                                                                               |
|  |                     |                                       | 5. Rural environmental issues: Special reference to sanitation and public health                            | 6  | Shri Kaushik Halder                                                                                               |
|  |                     |                                       | 6. Urban environmental issues with special reference to waste management                                    | 4  | Shri Kaushik Halder                                                                                               |
|  |                     |                                       | 7. Environmental policies – Club of Rome, earth summits (special reference to Stockholm, Rio, Johannesburg) | 5  | Dr. Mausumi Bandyopadhyay                                                                                         |
|  |                     |                                       | 8. Global initiatives for environmental management (special reference to Montreal, Kyoto, Paris)            | 5  | Dr. Mausumi Bandyopadhyay                                                                                         |
|  |                     |                                       | 9. Environmental Impact Assessment and Environmental Management Planning                                    |    | Smt. Mouli Banerjee                                                                                               |
|  |                     |                                       | 10. Overview of principal environment-related regulations of India. Review of their achievements            | 5  | Smt. Mouli Banerjee                                                                                               |
|  |                     |                                       | 11. Principles of wasteland management with special reference to West Bengal                                | 5  | Smt. Munmun Mondal                                                                                                |
|  |                     |                                       | 12. Principles of forest management with special reference to West Bengal                                   | 5  | Smt. Munmun Mondal                                                                                                |
|  | GEO-A-DSE-A-6-03-P  | Environmental Issues in Geography Lab | 1. Preparation of questionnaire for perception survey on environmental problems                             | 15 | Smt. Munmun Mondal                                                                                                |
|  |                     |                                       | 2. Preparation of check-list for Environmental Impact Assessment of an urban / industrial project           | 15 | Dr. Mausumi Bandyopadhyay                                                                                         |
|  |                     |                                       | 3. Quality assessment of soil using field kit: Organic matter and NPK                                       | 15 | Dr. Mausumi Bandyopadhyay                                                                                         |

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|  |                     |                        | 4. Interpretation of air quality using CPCB / WBPCB data                                                         | 15 | Shri Sajal Ghosh          |
|  | GEO-A-DSE-B-6-08-TH | Geography of India     | 1. Physiographic divisions with reference to tectonic provinces                                                  | 5  | Shri Kaushik Halder       |
|  |                     |                        | 2. Climate, soil and vegetation: Classification and interrelation                                                | 6  | Shri Kaushik Halder       |
|  |                     |                        | 3. Population: Distribution, growth, structure and policy                                                        | 4  | Shri Kaushik Halder       |
|  |                     |                        | 4. Tribes of India with special reference to Gaddi, Toda, Santal and Jarwa                                       | 5  | Smt. Munmun Mondal        |
|  |                     |                        | 5. Agricultural regions. Green revolution and its consequences                                                   | 4  | Smt. Munmun Mondal        |
|  |                     |                        | 6. Mineral and power resources: Distribution and utilisation of iron ore, coal, petroleum and natural gas        | 6  | Smt. Munmun Mondal        |
|  |                     |                        | 7. Industrial development: Automobile and information technology                                                 | 3  | Shri Sajal Ghosh          |
|  |                     |                        | 8. Regionalisation of India: Physiographic (R.L. Singh) and economic (P. Sengupta)                               | 7  | Shri Sajal Ghosh          |
|  |                     |                        | 9. Physical perspectives: Physiographic divisions, forest and water resources                                    | 6  | Smt. Mouli Banerjee       |
|  |                     |                        | 10. Resources: Agriculture, mining, and industry                                                                 | 6  | Smt. Mouli Banerjee       |
|  |                     |                        | 11. Population: Growth, distribution and human development                                                       | 4  | Dr. Mausumi Bandyopadhyay |
|  |                     |                        | 12. Regional Issues: Darjeeling Hills and Sundarban                                                              | 4  | Dr. Mausumi Bandyopadhyay |
|  | GEO-A-DSE-B-6-08-P  | Geography of India Lab | 1. Monthly temperature and rainfall graphs of five select stations from different physiographic regions of India | 15 | Smt. Mouli Banerjee       |
|  |                     |                        | 2. Crop Combination: Comparison of any two contrasting districts in West Bengal                                  | 15 | Shri Sajal Ghosh          |
|  |                     |                        | 3. Annual trends of production: Mineral resources and manufacturing goods over two decades                       | 20 | Smt. Munmun Mondal        |
|  |                     |                        | 4. Composite Index: Comparison of developed and backward states                                                  | 10 | Shri Kaushik Halder       |

## LESSON PLAN FOR B.SC. GENERAL

### DEPARTMENT OF GEOGRAPHY

| Sem | Course Code      | Course Name            | Topic                                                                                                                                                                                                                       | No. of classes | Name of Teacher                           |
|-----|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------|
| I   | GEO-G-CC-1-01-TH | Physical Geography     | 1. Earth's interior with special reference to seismology                                                                                                                                                                    | 3              | Shri Sajal Ghosh                          |
|     |                  |                        | 2. Plate Tectonics as a unified theory of global tectonics. Formation of major relief features of the ocean floor and continents according to Plate Tectonics                                                               | 7              | Shri Sajal Ghosh                          |
|     |                  |                        | 3. Folds and faults: Classification and surface expression                                                                                                                                                                  | 6              | Dr. Mousumi Bandhopadhyay                 |
|     |                  |                        | 4. Degradational processes: Weathering, mass wasting and resultant landforms                                                                                                                                                | 4              | Shri Kaushik Halder                       |
|     |                  |                        | 5. Principal geomorphic agents. Classification and evolution of fluvial, coastal, aeolian and glacial landforms                                                                                                             | 12             | Shri Kaushik Halder                       |
|     |                  |                        | 6. Ideas of Davis, Penck and King on slope evolution. Systems approach and its significance in geomorphology                                                                                                                | 7              | Shri Kaushik Halder                       |
|     |                  |                        | 7. Global hydrological cycle: Its physical and biological role                                                                                                                                                              | 2              | Smt. Munmun Mondal                        |
|     |                  |                        | 8. Run off: controlling factors. Concept of ecological flow                                                                                                                                                                 | 4              | Smt. Munmun Mondal                        |
|     |                  |                        | 9. Drainage basin as a hydrological unit. Principles of watershed management                                                                                                                                                | 3              | Smt. Munmun Mondal                        |
|     |                  |                        | 10. Physical and chemical properties of ocean water. Distribution and determinants of temperature and salinity                                                                                                              | 5              | Smt. Mouli Banerjee                       |
|     |                  |                        | 11. Overview of air-sea interactions. Ocean circulation, wave and tide                                                                                                                                                      | 7              | Smt. Mouli Banerjee                       |
|     |                  |                        | 12. Marine resources: Classification and sustainable utilisation                                                                                                                                                            | 3              | Smt. Mouli Banerjee                       |
|     | GEO-G-CC-1-01-P  | Physical Geography Lab | 1. Megascopic identification of <i>mineral samples</i> : Bauxite, calcite, chalcopryrite, feldspar, galena, hematite, mica, quartz, talc, tourmaline                                                                        | 8              | Dr. Mousumi Bandhopadhyay                 |
|     |                  |                        | 2. Megascopic identification of rock samples: Granite, basalt, laterite, limestone, shale, sandstone, conglomerate, slate, phyllite, schist, gneiss, quartzite                                                              | 12             | Dr. Mousumi Bandhopadhyay                 |
|     |                  |                        | 3. Extraction of physiographic information from Survey of India 1:50k topographical maps of plateau region: Delineation of drainage basins, construction and interpretation of relief profiles (superimposed, projected and | 20             | Smt. Munmun Mondal<br>Smt. Mouli Banerjee |

|     |                  |                             |                                                                                                                                                                                                                  |    |                                         |
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|     |                  |                             | composite), Construction and interpretation of relative relief map                                                                                                                                               |    |                                         |
|     |                  |                             | 4. Extraction of drainage information from Survey of India topographical maps: Construction and interpretation of drainage density maps, extraction and interpretation of channel features and drainage patterns | 20 | Shri Sajal Ghosh<br>Shri Kaushik Halder |
| II  | GEO-G-CC-2-02-TH | Environmental Geography     | 1. Insolation and Heat Budget. Horizontal and vertical distribution of atmospheric temperature and pressure                                                                                                      | 5  | Shri Kaushik Halder                     |
|     |                  |                             | 2. Overview of planetary wind systems. Indian Monsoons: Mechanisms and controls                                                                                                                                  | 6  | Shri Kaushik Halder                     |
|     |                  |                             | 3. Atmospheric disturbances: Tropical and temperate cyclones. Thunderstorms                                                                                                                                      | 7  | Shri Sajal Ghosh                        |
|     |                  |                             | 4. Overview of global climatic change: Greenhouse effect. Ozone depletion                                                                                                                                        | 5  | Shri Sajal Ghosh                        |
|     |                  |                             | 5. Scheme of world climatic classification by Köppen                                                                                                                                                             | 2  | Shri Sajal Ghosh                        |
|     |                  |                             | 6. Factors of soil formation                                                                                                                                                                                     | 4  | Dr. Mousumi Bandhopadhyay               |
|     |                  |                             | 7. Soil profile development under different climatic conditions: Laterite, Podsol and Chernozem                                                                                                                  | 6  | Dr. Mousumi Bandhopadhyay               |
|     |                  |                             | 8. Physical and chemical properties of soils: Texture, structure, pH, salinity and NPK status                                                                                                                    | 6  | Dr. Mousumi Bandhopadhyay               |
|     |                  |                             | 9. USDA classification of soils. Soil erosion and its management                                                                                                                                                 | 4  | Smt. Mouli Banerjee                     |
|     |                  |                             | 10. Ecosystem and Biomes. Distribution and characteristics of tropical rainforest; Savannah and hot desert biomes                                                                                                | 6  | Smt. Mouli Banerjee                     |
|     |                  |                             | 11. Plant types, occurrence and ecological adaptations: Halophytes, xerophytes, hydrophytes and mesophytes                                                                                                       | 5  | Smt. Munmun Mondal                      |
|     |                  |                             | 12. Biodiversity: Types, threats and management with special reference to India                                                                                                                                  | 4  | Smt. Munmun Mondal                      |
|     | GEO-G-CC-2-02-P  | Environmental Geography Lab | 1. Interpretation of a daily weather map of India (any one): Pre-Monsoon, Monsoon or Post-Monsoon                                                                                                                | 20 | Shri Kaushik Halder                     |
|     |                  |                             | 2. Construction and interpretation of hythergraph, climograph (G. Taylor) and wind rose (seasonal)                                                                                                               | 20 | Shri Sajal Ghosh                        |
|     |                  |                             | 3. Determination of soil type by ternary diagram textural plotting                                                                                                                                               | 10 | Smt. Mouli Banerjee                     |
|     |                  |                             | 4. Preparation of peoples' biodiversity register                                                                                                                                                                 | 10 | Smt. Munmun Mondal                      |
| III | GEO-G-CC-3-03-   | Human Geography             | 1. Sectors of the economy: Primary, Secondary, Tertiary and Quaternary.                                                                                                                                          | 5  | Smt. Munmun Mondal                      |

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|--|-----------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---------------------------|
|  | TH                    | y                              | Factors affecting location of economic activities                                                                                                                             |    |                           |
|  |                       |                                | 2. Location of economic activities: Theories of von-Thunen, Lösch and Weber                                                                                                   | 5  | Smt. Munmun Mondal        |
|  |                       |                                | 3. Location of industries with special reference to India: Cotton, Iron and Steel                                                                                             | 5  | Smt. Munmun Mondal        |
|  |                       |                                | 4. Globalisation and integration of world economies                                                                                                                           | 5  | Mouli Banerjee            |
|  |                       |                                | 5. Human Society: Structure, functions, social systems. Population and migration: overview, causes and effects                                                                | 5  | Smt. Mouli Banerjee       |
|  |                       |                                | 6. Types and characteristics of social organisations: Primitive, hunting–gathering, agrarian, industrial                                                                      | 5  | Smt. Mouli Banerjee       |
|  |                       |                                | 7. Race, Language and Religion: Origin, characteristics and spatial variations                                                                                                | 6  | Dr. Mousumi Bandhopadhyay |
|  |                       |                                | 8. Social Issues: Diversity, conflict and transformation                                                                                                                      | 5  | Dr. Mousumi Bandhopadhyay |
|  |                       |                                | 9. Carl Sauer: cultural landscape and its elements                                                                                                                            | 6  | Shri Sajal Ghosh          |
|  |                       |                                | 10. Rural and urban settlements: Differentiation in cultural landscapes                                                                                                       | 5  | Shri Sajal Ghosh          |
|  |                       |                                | 11. Cultural regions and cultural realms                                                                                                                                      | 5  | Shri Kaushik Halder       |
|  |                       |                                | 12. Diffusion of culture and innovations                                                                                                                                      | 4  | Shri Kaushik Halder       |
|  | GEO-G-CC-3-03-P       | Human Geography Lab            | 1. State-wise variation in occupational structure by proportional divided circles                                                                                             | 15 | Smt. Mouli Banerjee       |
|  |                       |                                | 2. Time series analysis of industrial production using any two manufactured goods from India                                                                                  | 20 | Shri Sajal Ghosh          |
|  |                       |                                | 3. Measuring arithmetic growth rate of population comparing two datasets                                                                                                      | 15 | Shri Kaushik Halder       |
|  |                       |                                | 4. Nearest neighbour analysis: Rural example from Survey of India 1:50k topographical maps                                                                                    | 10 | Smt. Munmun Mondal        |
|  | GEO-G-SEC-A-3/5-02-TH | Forest and Wildlife Management | 1. Forest and wildlife management: Importance and strategies. Role and significance of stakeholders. Tangible and intangible benefits of forest and wildlife management       | 7  | Smt. Munmun Mondal        |
|  |                       |                                | 2. Legal framework of forest and wildlife protection in India: The Indian Forest Act 1927, Forest Conservation Act 1980, Wild Life Protection Act 1972, Biodiversity Act 2002 | 5  | Smt. Mouli Banerjee       |
|  |                       |                                | 3. Forests as common property resources.                                                                                                                                      | 8  | Shri Kaushik              |

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|    |                  |                 | Forest rights: Tribals and forests. Gender dimension of forest management. Management of poaching and illegal logging                                                               |    | Halder                    |
|    |                  |                 | 4. Principles of community participation and joint forest management. Causes and management of human–wildlife conflicts with special reference to Jangal Mahal, Sundarban and Duars | 10 | Shri Sajal Ghosh          |
| IV | GEO-G-CC-4-04-TH | Cartography     | 1. Maps: Classification and types. Scales: Types, significance, and applications                                                                                                    | 3  | Smt. Munmun Mondal        |
|    |                  |                 | 2. Coordinate systems: Polar and rectangular. Bearing: Magnetic and true, whole-circle and reduced                                                                                  | 3  | Dr. Mousumi Bandhopadhyay |
|    |                  |                 | 3. Map projections: Classification, properties and uses. Concept and significance of UTM projection                                                                                 | 8  | Smt. Munmun Mondal        |
|    |                  |                 | 4. Survey of India topographical maps: Reference scheme of old and open series. Information on the margin of maps                                                                   | 4  | Smt. Munmun Mondal        |
|    |                  |                 | 5. Representation of data by dots and proportional circles                                                                                                                          | 4  | Smt. Mouli Banerjee       |
|    |                  |                 | 6. Representation of data by isopleth and choropleth                                                                                                                                | 4  | Smt. Mouli Banerjee       |
|    |                  |                 | 7. Principal national agencies producing thematic maps in India: GSI, NATMO, NBSSLUP, NHO, and NRSC. Acquaintance with Bhuvan platform                                              | 5  | Smt. Mouli Banerjee       |
|    |                  |                 | 8. Basics of Remote Sensing: Types of satellites, sensors, bands, and resolutions with special reference to the ISRO missions                                                       | 10 | Shri Sajal Ghosh          |
|    |                  |                 | 9. Principles of preparing standard FCCs and classified raster images                                                                                                               | 5  | Shri Sajal Ghosh          |
|    |                  |                 | 10. Principles of Geographical Information System: Concepts of vector types, attribute tables, buffers, and overlay analysis                                                        | 6  | Shri Sajal Ghosh          |
|    |                  |                 | 11. Basic concepts of surveying and survey equipment: Prismatic compass                                                                                                             | 6  | Shri Kaushik Halder       |
|    |                  |                 | 12. Basic concepts of surveying and survey equipment: Dumpy level                                                                                                                   | 6  | Shri Kaushik Halder       |
|    | GEO-G-CC-4-04-P  | Cartography Lab | 1. Graphical construction of scales: Plain and comparative                                                                                                                          | 10 | Smt. Mouli banerjee       |
|    |                  |                 | 2. Construction of projections: Simple Conic with one standard parallel, Cylindrical Equal Area,, and Polar Zenithal Stereographic                                                  | 20 | Shri Kaushik Halder       |
|    |                  |                 | 3. Construction of thematic maps:                                                                                                                                                   | 20 | Smt. Munmun               |

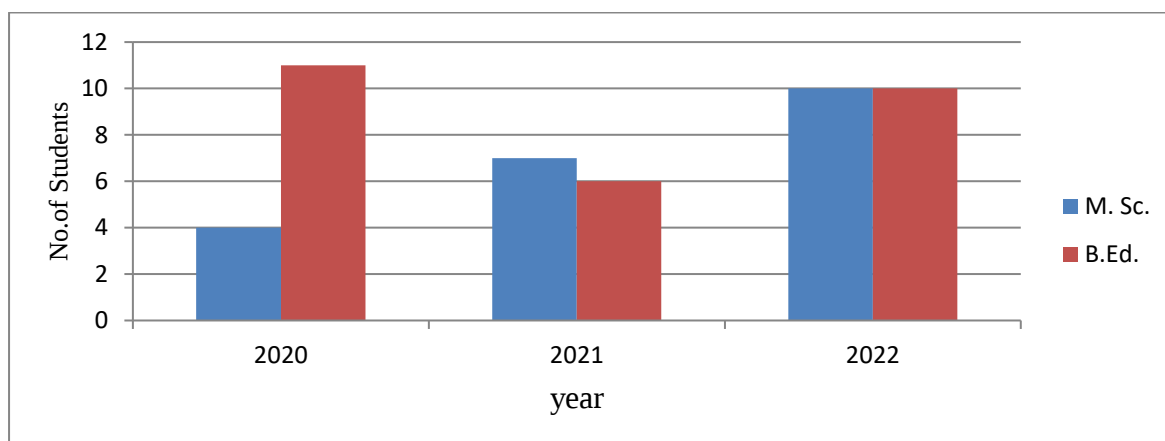
|   |                       |                      |                                                                                                                                                                                                     |    |                                         |
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|   |                       |                      | Proportional squares, proportional circles, choropleths, and isopleths                                                                                                                              |    | Mondal                                  |
|   |                       |                      | <ul style="list-style-type: none"> <li>4. Preparation of annotated thematic overlays from satellite standard FCCs of 1:50k</li> </ul>                                                               | 10 | Shri Sajal Ghosh                        |
|   | GEO-G-SEC-B-4/6-03-TH | Rural Development    | 1. Rural Development: Concept, basic elements, measuring the level of rural development                                                                                                             | 5  | Dr. Mousumi Bandhopadhyay               |
|   |                       |                      | 2. Paradigms of rural development: Cumulative causation model, core-periphery model, Gandhian approach to rural development                                                                         | 10 | Smt. Munmun Mondal                      |
|   |                       |                      | 3. Area based approach to rural development: Drought prone area programmes, PMGSY, SJSY, MGNREGA, Jan Dhan Yojana                                                                                   | 10 | Smt. Mouli Banerjee<br>Shri Sajal Ghosh |
|   |                       |                      | 4. Rural Governance: Panchayati Raj system, rural development policies and programmes in India – an overview                                                                                        | 5  | Shri Kaushik Halder                     |
| V | GEO-G-DSE-A-5-02-TH   | Geography of Tourism | 1. Scope and Nature: Concepts and issues, tourism, recreation and leisure inter-relations; geographical parameters of tourism by Robinson                                                           | 6  | Shri Kaushik Halder                     |
|   |                       |                      | 2. Types of Tourism: Ecotourism, cultural tourism, adventure tourism, medical tourism, pilgrimage, international, national                                                                          | 6  | Shri Kaushik Halder                     |
|   |                       |                      | 3. Factors influencing tourism: Historical, natural, socio-cultural and economic; motivating factors for pilgrimages                                                                                | 5  | Smt. Mouli Banerjee                     |
|   |                       |                      | 4. Spatial pattern of tourism: Spatial affinity; areal and locational dimensions comprising physical, cultural, historical and economic; International travel destinations- cultural and historical | 4  | Smt. Mouli Banerjee                     |
|   |                       |                      | 5. Impact of tourism: Physical, economic, social, and perceptive positive and negative impacts                                                                                                      | 4  | Dr. Mousumi Bandhopadhyay               |
|   |                       |                      | 6. Environmental laws and tourism – current trends, spatial patterns and recent changes                                                                                                             | 5  | Dr. Mousumi Bandhopadhyay               |
|   |                       |                      | 7. Role of foreign capital and impact of globalisation on tourism                                                                                                                                   | 4  | Smt. Munmun Mondal                      |
|   |                       |                      | 8. Recent trends of tourism: International and domestic (India) and local, sustainable tourism, Meeting Incentives Conventions and Exhibitions (MICE                                                | 6  | Smt. Munmun Mondal                      |
|   |                       |                      | 9. Tourism in India: Tourism infrastructure; regional dimensions of tourist attraction; case                                                                                                        | 5  | Smt. Munmun Mondal                      |

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|----|---------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------------------------------------|
|    |                     |                          | studies of Dal lake, Goa, Garhwal Himalaya, desert and coastal areas                                                                                                                                      |    |                                           |
|    |                     |                          | 10. Promotion of tourism: National tourism policy. Role of Internet                                                                                                                                       | 5  | Shri Sajal Ghosh                          |
|    |                     |                          | 11. Infrastructure and support system: Accommodation and supplementary accommodation, other facilities and amenities                                                                                      | 5  | Shri Sajal Ghosh                          |
|    |                     |                          | 12. Tourism circuits-short and longer detraction: Agencies and intermediaries, Indian hotel industry                                                                                                      | 5  | Shri Sajal Ghosh                          |
|    | GEO-G-DSE-A-5-02-P  | Geography of Tourism Lab | 1. Tourist flow analysis                                                                                                                                                                                  | 15 | Shri Kaushik Halder                       |
|    |                     |                          | 2. Tourist flow projection from time-series data                                                                                                                                                          | 15 | Shri Sajal Ghosh                          |
|    |                     |                          | 3. Isochronic map showing tourist resource and travel time                                                                                                                                                | 15 | Smt. Munmun Mondal<br>Smt. Mouli Banerjee |
|    |                     |                          | 4. Environmental Impact Assessment of tourism development: Preparation of questionnaire                                                                                                                   | 15 | Dr. Mousumi Bandhopadhyay                 |
| VI | GEO-G-DSE-B-6-04-TH | Population Geography     | 1. Development of Population Geography as a field of specialization. Relation between population geography and demography. Sources of population data, their level of reliability and problems of mapping | 6  | Dr. Mousumi Bandhopadhyay                 |
|    |                     |                          | 2. Population distribution: Density and growth. Classical and modern theories on population growth, Demographic transition model                                                                          | 6  | Smt. Munmun Mondal                        |
|    |                     |                          | 3. World patterns and determinants of population distribution and growth. Concept of optimum population                                                                                                   | 4  | Smt. Munmun Mondal                        |
|    |                     |                          | 4. Population distribution, density, and growth in India                                                                                                                                                  | 4  | Smt. Munmun Mondal                        |
|    |                     |                          | 5. Types of population composition: Age–sex. rural–urban, literacy and education                                                                                                                          | 5  | Smt. Mouli Banerjee                       |
|    |                     |                          | 6. Measurements of fertility and mortality. Concept of cohort and life table                                                                                                                              | 5  | Smt. Mouli Banerjee                       |
|    |                     |                          | 7. Population composition of India: Urbanisation and occupational structure                                                                                                                               | 7  | Shri Kaushik Halder                       |
|    |                     |                          | 8. Migration: Causes and types                                                                                                                                                                            | 3  | Shri Kaushik Halder                       |
|    |                     |                          | 9. National and international patterns of migration with reference to India                                                                                                                               | 5  | Shri Kaushik Halder                       |
|    |                     |                          | 10. Population and development: Population–resource regions (Sekerman). Concept of                                                                                                                        | 5  | Shri Sajal Ghosh                          |

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|  |                    |                          | human Development Index and its components                                                                                                               |    |                     |
|  |                    |                          | 11. Population policies in developed and less development countries. India's population policies. Population and environment, implication for the future | 5  | Shri Sajal Ghosh    |
|  |                    |                          | 12. Contemporary issues: Ageing of population, declining sex ratio, population and environment dichotomy, impact of HIV/AIDS                             | 5  | Shri Sajal Ghosh    |
|  | GEO-G-DSE-B-6-04-P | Population Geography Lab | 1. Population projection by arithmetic method                                                                                                            | 15 | Shri Kaushik Halder |
|  |                    |                          | 2. Population density mapping: State-wise for India                                                                                                      | 15 | Smt. Munmun Mondal  |
|  |                    |                          | 3. Analysis of work participation rate: Total and gender-wise for India                                                                                  | 15 | Shri Sajal Ghosh    |
|  |                    |                          | 4. Analysis occupation structure by dominant and distinctive functions: Districts of West Bengal                                                         | 15 | Smt. Mouli Banerjee |

## STUDENT PROGRESSION

**Student achievement:** Total numbers of students who engaged in higher studies during 2020 to 2022 has increased. It has been identified that admission in M.Sc. increased gradually although admission in B. Ed has fluctuated.



**NUMBERS OF STUDENTS WHO HAVE ADMITTED IN M.SC. AND B. ED.**

# SWOC ANALYSIS OF THE DEPARTMENT

## STRENGTHS:

- Department has Good academic culture. One Student achieved the *10 th rank in B.A Examination (honours)-2016 in the department of Geography of University of Calcutta*. 62.68 % students have got first class with honours in last 5 years. Many ex-students of this department are engaged in higher studies such as M.A/ M.Sc., Ph. D etc.
- Departmental library is one of the major strength of Geography Department. Departmental library have number of books, journal both in English and Bengali versions.
- Department has well equipped libratory viz. Weather Instruments, graphical Instrument, Area Calculating and Mapping Instruments, Surveying Instrument, Soil testing kits, Drawing Instrument, specimen of rocks and minerals and GIS Lab. etc.
- Geography department has various types of maps, photos and images such as topographical maps, planning series maps, aerial photos and satellite images.
- The department has a wealthy collection of learning resources like maps, models, charts and Atlas along with internet facilities etc for easy learning of learners.
- Department has qualified staff, 04- NET Qualified, 01 - Ph.D. Completed, 2 - Ph.D. (Ongoing) and 01- P.G. Diploma in Remote Sensing, GIS and GNSS, 01- M. Ed., 05- B.Ed. and 01- 10 th rank holder in B.A. Examination in the department of Geography of University of Calcutta.
- Geography faculties have good number of publications in reputed journals and also faculties attended various workshops and seminars.

## WEAKNESSES

- Most of the students of the geography department are belonging in economically backward class and also coming from remote area of Sundarban region.
- Students faced difficulties to admit in self-financed higher study such as M.Sc. and career-oriented courses like P. G. Diploma in Remote Sensing, GIS and GNSS.
- College located in rural area where communication systems are very poor. Students are facing the problem to join the online class or webinars due to lack of network service and as well as electricity spatially in monsoon. Students are also facing the problems to rich in college or examination centre at appropriate time due to the lack of transport connectivity and accessibility.

## OPPORTUNITIES

- Diamond Harbour Womens' University is located within accessible distance from the college which is good opportunity for the girl's students of this college to engage in higher study.
- Government provides several scholarships and academic loan to students which are big opportunity to continue their study.

## CHALLENGES

- To bridge the gap between economically strong and weak students and as well as Slow Learners and Advanced Learners
- Creating awareness about Digital learning

## CONCLUSION

The department of Geography wants to give thanks to our honorable Teacher in-charge, Dr. Debprasad Mandal and our fellow faculty members and colleagues for their support and whole-hearted cooperation.

Our objective is to lead our students to light the candle of higher education in an area of daily wage-earners. We hence forth look forward to the kind consideration of the government for promoting us to build a better future for the new generation.

It's a great honor to have the opportunity to offer thanks to the NAAC Peer Team for giving us their valuable time to kindly and patiently go through our departmental activities as provided in the departmental profile.

Thanks to the honourable NAAC Peer Team for their visit to our department. In anticipation and soliciting necessary help for betterment of the department as well as the college.

