Program Outcome (PO) and Course Outcome (CO)

Program Offered: B.Sc (Hons.) in Geology

Programme Outcomes	B.Sc (Hons.) in Geology
PO1	Graduate Attributes: the quality and feature or characteristics of an individual, including the knowledge, skills, attitudes, and values that are expected to be acquired by a graduate through studies at the higher education institution.
PO2	Analytical reasoning, Research-related skills, Cooperation/Teamwork, Scientific reasoning, Reflective thinking
PO3	Information/digital literacy, Self-directed learning, Multicultural competence
PO4	Moral and ethical awareness/reasoning, Leadership readiness/qualities
PO5	Problem solving, Analytical reasoning
PO6	Lifelong learning

COURSE OUTCOMES (CO) - NCCF			
Sl No.	**Course Name**	**Course Code**	**Course Outcomes(CO)**
1.	EARTH SYSTEM SCIENCE	BSCGELMJ101	**On completion of this course the students** **i) Analyze the interactions between biological, chemical and physical processes that shape and define the earth system** **ii) Correlate between the past Earth evolution and its current changes.** **iii) Develop effective communication skills to help diffusing major current environmental problems.**
2.	FIELD GEOLOGY - I	BSCGELSE101	**To gain basic knowledge about field geology and field ethics.** **To gain basic ideas on topographic map reading.** **To gain basic knowledge about principles of clinometer compass and Brunton compass.** **To gain basic knowledge in field reconnaissance.** **Acquisition of basic field data and collection of samples.** **Basic principles of field photography.**
3.	EARTH SYSTEM SCIENCE	BSCGELMN101	**On completion of this course the students** **i) Analyze the interactions between biological, chemical and physical processes that shape and define the earth system** **ii) Correlate between the past Earth evolution and its current changes.** **iii) Develop effective communication skills to help diffusing major current environmental problems.**
4.	A B C D OF GEOLOGY	MDC-121	**To have a brief idea about Earth and solar system; Geology and its branches, natural resources and their use, natural disaster and their effects**
5.	MINERAL SCIENCE	BSCGELMJ201	**To gain basic idea on the crystallography crystal morphology in relation to internal structures.** **Physicochemical propertiesand crystal structures of rock forming minerals.** **Optical behavior of different minerals under plane-polarized light.**

6.	FIELD GEOLOGY - II	BSCGELSE201	**To gain basic knowledge about field geology and field ethics.** **To gain basic ideas on topographic map reading.** **To gain basic knowledge about principles of clinometer compass and Brunton compass.** **To gain basic knowledge in field reconnaissance.** **Acquisition of basic field data and collection of samples.** **Basic principles of field photography.** **To gain knowledge of sample processing, preparation of thin sections of collected samples and study under microscope, Sampling protocol, recovery and restoration of fossil samples.**
7.	MINERAL SCIENCE	BSCGELMN201	**To gain basic idea on the crystallography crystal morphology in relation to internal structures.** **Physicochemical properties and crystal structures of rock forming minerals.** **Optical behavior of different minerals under plane-polarized light.**
8.	THE PAST LIFE ON EARTH	MDC-219	**To have a brief idea of origin and evolution of life through ages (during Palaeozoic, Mesozoic, Cenozoic).**
9.	ELEMENTS OF GEOCHEMISTRY & GEOPHYSICS	BSCGELMJ301	**To gain knowledge on the behaviour of different elements in geochemical context and their distribution in different reservoirs of the earth.** **Establish the Earth's chemistry in terms of interactions between reservoirs.** **Analyze the major processes operating in the Earth's crust and mantle.** **Use of radiogenic and stable isotopes to trace geological processes and date specific events.**
10.	STRUCTURAL GEOLOGY	BSCGELMJ302	**To understand the structure of the rocks in the earth's crust and mantle.** **To determine the deformational history**

			based on fabrics and geometric relationships. To quantify stress and strain of deformed rocks.
11.	ESSENTIALS OF PETROLOGY	BSCGELMN301	**To gain introductory idea on igneous, metamorphic, and sedimentary processes and related rock formation. Structures and textures of igneous and metamorphic rocks.**
12.	REMOTE SENSING AND GIS	MDC-309	**To recognize and explain at a basic level fundamental physical principles of remote sensing, including the electromagnetic spectrum; the emission, scattering, reflection, and absorption of electromagnetic (EM) radiation; how EM radiation interactions vary across a limited number of substances, geometries, and temperatures; and geometric properties of photographs and imagery.**
13.	IGNEOUS PETROLOGY	BSCGELMJ401	**To have knowledge on igneous rocks and their textures and applying knowledge on magma generation, crystallization historyresulting diverse rock types. Linking such rock types to different tectonic settings.**
14.	METAMORPHIC PETROLOGY	BSCGELMJ402	**Identifying equilibrium mineral assemblages through textural and mineralogical observations** **Plotting the quantitative as well as qualitative mineral and mineral assemblage data to interpret the discontinuous reactions and to infer the nature of continuous reactions** **Apply the basics of Schreinemakers geometric plots for a set of reactions** **Pressure-temperature estimations by geothermobarometric data.** **Tectonic characters linked to different metamorphic rocks.**
15.	FIELD GEOLOGY - III	BSCGELSE401	**To gain basic knowledge about field geology and field ethics.** **To gain basic ideas on topographic map reading.** **To gain basic knowledge about principles of clinometer compass and Brunton compass.** **To gain basic knowledge in field reconnaissance.** **Acquisition of basic field data and collection**

			of samples. **Basic principles of field photography.** **To gain knowledge of sample processing, Preparation of thin sections of collected samples and study under microscope, Sampling protocol, recovery and restoration of fossil samples.**
16.	STRUCTURAL GEOLOGY & GEODYNAMICS	BSCGELMN401	**To understand the structure of the rocks in the earth's crust and mantle.** **To determine the deformational history based on fabrics and geometric relationships.** **To quantify stress and strain of deformed rocks.** **Introduction to global tectonics and distributions of plates on the Earth.** **Continental drift theory and formation of ocean.** **Basic concepts on different types of plate boundaries. Plate motions and their driving forces.**

COURSE OUTCOMES (CO-LOCF)

Sl No.	Course Name	Course Code	Course Outcomes(CO)
1.	Economic Geology	BSCHGELC501	**Recognizing common ore minerals in hand samples and under microscope.** **Knowledge about a wide range of ore deposits, the geometry of ore bodies, alteration patterns and assemblage of ore and gangue minerals.** **Awareness about distribution of mineral deposits in India.**
2.	Fuel Geology	BSCHGELC502	**To have a basic concept about different fuel types such as Coal, Petroleum, CBM and their formation processes and deposits. Potentials and Importance of other fuel types like shale gas and nuclear fuel.**

3.	Introduction to Geophysics	BSCHGELDSE504	**To understand the interrelationship between Geology and Geophysics, General and Exploration Geophysics, Geophysical field operations, Application of Geophysical methods, Geophysical anomalies.**
4.	Engineering Geology	BSCHGELC601	**To provide basic knowledge about natural material like rocks and minerals and their usage as well as their availability.** **The students will get acquainted with natural dynamic processes and their actions.** **To understand the influence of natural processes and geological factors on civil structures and help them to take decision while planning, design and execution stage of the structures in their professional life.** **To understand the significance of geological investigations for civil engineering projects and site selection as well as for the preparation of feasibility reports and others.** **The knowledge of subject will also help to understand the geological maps and language for the discussion on geological reports to resolve civil engineering issues.**
5.	Hydrogeology	BSCHGELC602	**Describe the occurrence of groundwater, water bearing properties of formations, aquifer types and aquifer parameters.** **Apply the concept of development of water wells,** **Estimate the aquifer parameter and to deduce the groundwater flow under different conditions.** **Describe the groundwater chemistry and its influence in the society** **Apply the concepts of groundwater exploration in an integrated way.**

6.	Mineral Explorartion and Mining	BSCHGELDSE601	**The course gives the student a fundamental understanding of the art and science of mining mineral resources as well as the methods used in mineral exploration.** **The student will have gained knowledge of surface and subsurface sampling methods as well as geochemical exploration by the end of the course.** **After completing the course, students will have a comprehensive understanding of mineral exploration and exploitation, drilling techniques, sampling data evaluation, and ore reserve estimation.** **The goal of this course is to give undergraduate students a foundational understanding of the fundamental ideas behind mining processes, from exploration to exploitation, as well as familiarity with the laws and rules that govern mining and the preservation of minerals.** **The course introduces the students to subjects including the use of geology in the mining sector, the effects of mining on the environment, and the significance of protecting mineral resources.** **After completing this course, the student will have all the information and abilities needed to work as both an exploration and a mining geologist.**

7.	Climatology	BSCHGELDSE602	**Upon completion of this course, students will be able to:** **Describe the components and interactions of Earth's climate system, including the atmosphere, hydrosphere, biosphere, cryosphere, and lithosphere.** **Explain the principles of Earth's heat budget and the role of solar radiation,albedo, greenhouse gases, and atmospheric dynamics in regulating global and regional climate patterns.** **Analyze the interactions between the atmosphere and hydrosphere, includingprocesses such as evaporation, condensation, precipitation, and ocean-atmosphere interactions.** **Evaluate the response of the biosphere to Earth's changing climate, including shiftsin vegetation zones, species distributions, and ecological processes.** **Discuss the influence of orbital cyclicity, such as Milankovitch cycles, on long-termclimate variability and their impact on global climate patterns over geological time scales.** **Examine the characteristics and drivers of monsoon systems worldwide, includingseasonal variability in precipitation and wind patterns, and assess their socioeconomic and environmental impacts on regions and populations.** **These learning outcomes encompass a comprehensive understanding of the physical** **processes and interactions that shape Earth's climate system, preparing students to analyze** **and interpret climate data, understand climate variability, and evaluate its implications for** **natural systems and human societies.**

Durgapur Government College Mapping/Co-relation Program Outcome(PO) & Course Outcome(CO)							
Department : Mathematics Academic Session : 2024-25							
CO details	PO details						
Sl. No.	Course Code	PO1	PO2	PO3	PO4	PO5	PO6
1.	BSCGELMJ101	✓	✓	✓	✓	✓	✓
2.	BSCGELSE101	✓		✓	✓	✓	✓
3.	BSCGELMN101	✓	✓	✓		✓	✓
4.	MDC-121	✓	✓	✓	✓	✓	✓
5.	BSCGELMJ201	✓	✓	✓	✓	✓	✓
6.	BSCGELSE201	✓		✓	✓	✓	✓
7.	BSCGELMN201	✓	✓	✓	✓	✓	✓
8.	MDC-219	✓	✓	✓		✓	✓
9.	BSCGELMJ301	✓		✓	✓	✓	✓
10.	BSCGELMJ302	✓	✓	✓	✓	✓	✓
11.	BSCGELMN301	✓	✓	✓	✓	✓	
12.	MDC-309		✓	✓	✓	✓	✓
13.	BSCGELMJ401	✓		✓	✓	✓	✓
14.	BSCGELMJ402	✓	✓	✓		✓	✓
15.	BSCGELSE401	✓	✓	✓	✓	✓	✓

16.	BSCGELMN401	✓	✓	✓	✓	✓	✓
17.	BSCHGELC501	✓	✓	✓		✓	✓
18.	BSCHGELC502	✓		✓	✓	✓	
19.	BSCHGELDSE504	✓	✓	✓	✓	✓	✓
20.	BSCHGELC601	✓	✓	✓	✓		✓
21.	BSCHGELC602	✓	✓	✓	✓	✓	✓
22.	BSCHGELDSE601		✓	✓	✓	✓	
23.	BSCHGELDSE602	✓	✓	✓	✓		✓