

Shahid Matangini Hazra Government College for Women

Lesson Plan for the academic session 2024-2025

Department: **Geology**

Semester: First (CCFUP)

B.Sc. Honours

Core Course (CC)

| Name of the Teacher | Title of the Teaching Assignment | Dividing the Assignment into Number of Units along with detailed lesson plan as per the University Syllabus | | Date of Commencement of the Assignment | Number of classes required to complete each unit | Total number of class |
|---------------------|----------------------------------|---|---|--|--|-----------------------|
| APARUPA BANERJEE | C1T: Earth System Science | Unit 1: Earth as a planet: | Introduction to various branches of Earth Science; Origin of the Universe, Solar System and its planets; Meteorites and Asteroids; Cosmic abundance of elements; Origin of Earth-atmosphere, ocean, and life. | 07/08/2024 | 8 | 46 |
| ENAKSHI DAS | | Unit 2: Solid Earth | Seismic waves and internal constitution of the Earth; Concept of isostasy; Earth's magnetic field; Geothermal gradient and internal heat of the Earth. Introduction to structure: Structural elements: planar and linear structures, concept of strike and dip, trend and plunge rake/ pitch. | | 10 | |
| | | Unit 3: Plate Tectonics | Concept of plate tectonics, sea-floor spreading and continental drift; Plate boundaries; Earthquake and earthquake belts; Volcanoes- types, products and their distribution. | | 8 | |
| APARUPA BANERJEE | | Unit 4: Hydrosphere and Atmosphere | Atmospheric circulations; Oceanic currents, tides and waves; Concepts of eustasy. | | 5 | |

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| LOVELY BURMAN | | Unit 5: Earth surface processes | Weathering; erosion; mass wasting; Geological work of wind, river and glacier Formation of soil, soil profile and soil types | | 5 | |
| | | Unit 6: Understan ding the past from stratigraph ic records | Stratigraphy and nature of stratigraphic records; Fundamental laws of stratigraphy: laws of superposition and faunal succession, Absolute and relative time in Geology. Unconformity and its types, recognition of unconformity. Geological time scale. | | 10 | |

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Shahid Matangini Hazra Government College for Women

Lesson Plan for the academic session 2024-2025

Department: **GEOLOGY**

Semester: First

B.Sc. MINOR

Core Course-GELMI01

| Name of the Teacher | Title of the Teaching Assignment | Dividing the Assignment into Number of Units along with detailed lesson plan as per the University Syllabus | Date of Commencement of the Assignment | Number of classes required to complete each unit | Total number of class |
|---------------------|---------------------------------------|---|--|--|-----------------------|
| APARUPA BANERJEE | GELMI01 : Essentials of Geology | Unit-I: Introduction to geology: scope, sub-disciplines and relationship with other branches of sciences. | 07/08/2024 | 15 | 31 |
| | | <p>Unit-II: Earth in the solar system, origin Earth's size, shape, mass, density, rotational and evolutionary parameters Solar System- Introduction to Various planets - Terrestrial Planets Solar System- Introduction to Various planets - Jovian Planets.</p> <p>Unit-III: Mechanical layering of the Earth: lithosphere, asthenosphere, mantle and core. Earthquake and earthquake belts: seismic waves and internal constitution of the Earth. Volcanoes and volcanism, distribution of volcanoes. Formation of core, mantle, crust, atmosphere, hydrosphere and biosphere. Convection in Earth's core and production of its magnetic field.</p> | | | |

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| LOVELY BURMAN & ENAKSHI DAS | | Unit-IV: Fundamental Earth process: Plate tectonics. Plates and plate boundaries. | | 6 | |
| | | Unit-V: Weathering and Erosion. Landforms in deserts, glaciated region and river valleys. | | 10 | |

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Shahid Matangini Hazra Government College for Women

Lesson Plan for the academic session 2024-2025

Department: **GEOLOGY**

Semester: Third

B.Sc. Honours

Core Course (CC)

| Name of the Teacher | Title of the Teaching Assignment | Dividing the Assignment into Number of Units along with detailed lesson plan as per the University Syllabus | | Date of Commencement of the Assignment | Number of classes required to complete each unit | Total number of class |
|---|----------------------------------|---|--|--|--|-----------------------|
| ENAKSHI DAS & APARUPA BANERJEE | C5T: Igneous Petrology | Unit 1: Introduction to Igneous petrology | 1. Modes of magma formation in the crust and upper mantle | To be decided | 1 | |
| | | | 2. Physical properties of magma - temperature, viscosity, density and volatile content | | 1 | |
| | | | 3. Modes of emplacement of igneous rocks: volcanic, hypabyssal, plutonic | | 1 | |
| | | Unit 2: Forms of Igneous rock bodies | 1. Mode of occurrence of Igneous rocks | | 1 | |
| | | | 2. Forms of igneous rocks | | 1 | |
| | | Unit 3: Texture and microstructure of Igneous rocks | 1. Crystallinity, granularity, shapes and mutual relations of grains; nucleation and growth of igneous minerals | | 2 | |
| | | | 2. Description of the following textures and microstructures with their occurrence in different rocks - panidiomorphic, hypidiomorphic, allotriomorphic, porphyritic, vitrophyric, poikilitic, ophitic, sub- | 2 | | |

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| | | | ophitic, intergranular, intersertal, pilotaxitic, trachytic, graphic, granophyric, rapakivi, orbicular, corona, perthitic, myrmekitic, variolitic, speherulitic & spinifex | | | |
| | | | 3. Binary and Ternary Phase diagrams in understanding crystal-melt equilibrium in basaltic and granitic magmas | | 2 | 40 |
| | | | 4. Magma generation in crust and mantle, their emplacement and evolution | | 2 | |
| | | Unit 4: Classification of igneous rocks | 1. Bases of classification of igneous rocks: mineralogical, textural, chemical, chemico-mineralogical and associational; Norm and mode; Standard classification schemes – Niggli, Wells & Wells and IUGS. TAS diagram for volcanic rocks | | 3 | |
| | | | 2. Composition and texture of important igneous rocks: Granitoids, Pegmatite, Syenite, Monzonite, Diorite, Norite, Gabbro, Anthrothosite, Dolerite, Pyroxenites, Peridotite, Lamprophyres, Carbonatite, Rhyolite, Andesite, Dacite, Basalt, Komatiite | | 2 | |
| | | Unit 5: Phase Diagrams | Phase Rule and its application to eutectic, peritectic and solid solution system: Phase equilibria in the following binary and ternary systems, and their petrogenetic significance: | | 10 | |

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| | | | diopside – anorthite, forsterite – silica, albite – anorthite, albite – orthoclase, diopside – albite – anorthite, forsterite – diopside – silica and nepheline - kalsilite – silica. | | | |
| | | Unit 6: Petrogenesis of Igneous rocks | 1. Magma generation in crust and mantle, their emplacement and evolution | To be decided | 2 | |
| | | | 2. Petrogenesis of Felsic and Mafic igneous rocks: Granitoids, Basalt, Gabbros, Anorthosite, Komatiites, Alkaline rocks, Kimberlites | | 4 | |
| | | Unit 7: Magmatism in different tectonic settings | 1. Magmatism in the oceanic domains (MORB, OIB) | | 2 | |
| | | | 2. Magmatism along the subduction zones: Island arcs and continental arcs | | 2 | |
| | | | 3. Magmatism along continental rifts | | 2 | |
| | C5P: Igneous Petrology | 1. Study of important igneous rocks in hand specimens and thin sections: granite, granodiorite, diorite, syenite, nepheline syenite, gabbro, anorthosites, ultramafic rocks, basalts, andesites, trachyte, rhyolite, dacite | To be decided | | 15 | 25 |
| | | 2. Norm calculation. Visual estimation of modes from thin sections | | 7 | | |
| | | 3. Plotting of mode in IUGS classification of plutonic rocks (Streckeisen diagram) | | 3 | | |
| | LOVELY BURMAN & ENAKSHIDAS | C6T: Sedimentary Petrology | Unit 1: Introduction to Sedimentology | Outline of sedimentation process: Definition of sediment; origin of sediments: mechanical and chemical sediments; source rock or provenance | To be decided | 3 |
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| | | Unit 2: Granulometry | Grain size: concept and size scale, particle size distribution, environmental connotation; particle shape and fabric; Sedimentary textures | | 4 | 33 |
| | | Unit 3: Basic hydraulics and Sedimentary structures | 1. Fluid flow: Types of fluids, Laminar and turbulent flow, subcritical, critical and supercritical flows; concept of mean flow velocity, unit discharge and bed shear stress; flow profile and flow separation; particle entrainment, transport and deposition | | 2 | |
| | | | 2. Mass flow: types, mechanisms and controlling factors, process-product relationship | | 2 | |
| | | | 3. Penecontemporaneous deformation: mechanisms and controlling factors | | 2 | |
| | | | 4. Sedimentary structure: Primary and penecontemporaneous deformation structures | | 2 | |
| | | | 5. Bedform stability diagram | | 2 | |
| | | | 6. Paleocurrent analysis: Data acquisition, methodology, different palaeocurrent patterns | | 2 | |
| | | Unit 4: Sedimentary rocks | 1. Siliciclastic rocks: Components and classification(s) of conglomerates and sandstones | | 3 | |
| | | | 2. Tectonic control on sandstone composition | | 1 | |
| | | | 3. General introduction to Mudrocks, Carbonate rocks; controlling factors of carbonate | | 5 | |

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| LOVELY BURMAN | | | deposition; components and classifications of limestone; dolomite and dolomitisation | | | |
| | | Unit 5: Diagenesis | 1. Concepts of diagenesis | | 1 | |
| | | | 2. Stages of diagenesis: diagenetic changes in sand and carbonate deposits, lithification | | 4 | |
| | C6P: Sedimentary Petrology | 1. Identification of sedimentary structures | | 2 | 22 | |
| | | 2. Particle size distribution and statistical analysis | | 4 | | |
| | | 3. Paleocurrent analysis | | 1 | | |
| | | 4. Petrographic study of clastic and non-clastic rocks through hand specimens and thinsections | | 15 | | |
| | C7T: Paleontology | Unit 1: Fossilization and fossil record | 1. Fossilization: definition of fossil, fossilization processes and modes of preservation, exceptional preservation | | 1 | 44 |
| | | | 2. Taphonomy: definition, different types of taphonomic filters | | 1 | |
| | | Unit 2: Taxonomy and Systematics | 1. Taxonomy: concept of taxonomy and taxonomic hierarchy | | 1 | |
| 2. Biological and morphological species concept | | | | 1 | | |
| Unit 3: Evolution and History of Life | | 1. Theory of organic Evolution: theory, concept of adaptation and variation, Natural Selection. Precambrian – doubtful organic traces of life during the Precambrian, Ediacaran fauna | | 4 | | |
| | | 2. Paleozoic – Cambrian Explosion of life. Episodes of mass extinction | | 2 | | |
| | | 3. Plants: Appearance of angiosperma and gymnosperma | | 1 | | |
| | | 4. Appearance of fish, amphibia, reptiles, birds, mammals and | | 1 | | |

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| | | | humans | | | |
| | | | 5. Mass extinction: five major extinction episodes and their causes; effect of extinction | | 2 | |
| | | Unit 6: Application of fossils in Stratigraphy | 1. Definitions: Biozones, index fossils, stratigraphic correlation, examples - significance of ammonites in Mesozoic paleobiostratigraphy | | 1 | |
| | | | 2. Application of fossils in Paleoenvironmental analysis | | 1 | |
| | | | 3. Fossils and paleobiogeography, biogeographic provinces, dispersals and barriers. Paleoenvironmental analysis | | 2 | |
| APARUPA BANERJEE | C7T: Paleontology | Unit 4: Invertebrates and Vertebrates | 1. Brief introduction to important invertebrate groups (Bivalvia, Gastropoda, Brachiopoda) and their biostratigraphic significance | To be decided | 6 | |
| | | | 2. Significance of ammonites in Mesozoic biostratigraphy and their paleobiogeographic implications. Functional adaptation in trilobites and ammonoids | | 4 | |
| | | | 3. Origin of vertebrates and major steps in vertebrate evolution | | 2 | |
| | | | 4. Mesozoic reptiles with special reference to origin, diversity and extinction of dinosaurs | | 4 | |
| | | | 5. Evolution of horse and intercontinental migrations | | 2 | |
| | | | 6. Human evolution | | 2 | |
| | | Unit 5: | 1. Introduction to Paleobotany, | | 4 | |

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| | | Introduction to Paleobotany, Gondwana Flora | Gondwana Flora, Plants as indicator of past climate | | | |
| | | Introduction to Ichnology | 2. Ichnology and its application in paleoecology | | 2 | |
| APARUPA BANERJEE | C7P: Paleontology Lab | 1. Study of fossils with various modes of preservation | | To be decided | 2 | 30 |
| | | 2. Study of systematic position, stratigraphic position and age of various invertebrate, vertebrate and plant fossils | | | 4 | |
| | | 3. Study of functional morphological characters of different groups (Bivalvia, Gastropods, Brachiopoda, Echinodermata, Ammonoidea, Gondwana flora, vertebrates) | | 6 | | |
| | | 4. Identification of feeding habits from vertebrate (horse, elephants, Sus) teeth | | 2 | | |
| | | 5. Hard part morphology and identification of common Brachiopoda, Anthozoa, Trilobita, Echinoidea, Gastropoda. Identification of Gondwana flora | | 16 | | |

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Shahid Matangini Hazra Government College for Women

Lesson Plan for the academic session 2024-2025

Department: **GEOLOGY**

Semester: Third

B.Sc. Honours

Skill Enhancement Course (SEC)

| Name of the Teacher | Title of the Teaching Assignment | Dividing the Assignment into Number of Units along with detailed lesson plan as per the University Syllabus | Date of Commencement of the Assignment | Number of classes required to complete each unit | Total number of class |
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| - | FIELD GEOLOGY SEC1 | - | - | - | - |

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Shahid Matangini Hazra Government College for Women

Lesson Plan for the academic session 2024-2025

Department: **GEOLOGY**

Semester: Third

B.Sc. Honours

Generic Elective (GE)

| Name of the Teacher | Title of the Teaching Assignment | Dividing the Assignment into Number of Units along with detailed lesson plan as per the University Syllabus | | Date of Commencement of the Assignment | Number of classes required to complete each unit | Total number of class |
|---------------------|---|---|---|--|--|-----------------------|
| APARUPA BANERJEE | GE-3T Fossils and Their Applications | Unit 1: Introduction to Fossils | Definition of fossil, fossilization processes (taphonomy), taphonomic attributes and its implications, modes of fossil preservation, role of fossils in development of geological time scale and fossils sampling techniques. | To be decided | 6 | 38 |
| | | Unit II: Species concept | Definition of species, species problem in paleontology, speciation, methods of description and naming of fossils, code of systematic nomenclature (3) | | | |
| | | Unit III: Introduction to various fossils groups | Brief introduction of important fossils groups: invertebrate, vertebrate, microfossils, spore, pollens and plant fossils. Important age-diagnostic Fossiliferous horizons of India | To be decided | 16 | |
| | | Unit IV: Application of fossils | Principles and methods of paleoecology, application of fossils in the study of paleoecology, paleobiogeography and paleoclimate | | 8 | |

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| | | Unit 5: Economic importance of fossils | Implication of larger benthic and micropaleontology in hydrocarbon exploration: identification of reservoirs and their correlation. Application of spore and pollens in correlation of coal seams, spore and pollens as indicator of thermal maturity of hydrocarbons reservoirs, fossils associated with mineral deposits, fossils as an indicator of pollution. | | 5 | |
| | GE-3P Fossils and Their Applications | 1. Study of fossils showing various modes of fossilization | | To be decided | 3 | 18 |
| | | 2. Study of important fossils from India (list may be prepared by the department concern) | | | 15 | |

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Shahid Matangini Hazra Government College for Women

Lesson Plan for the academic session 2024-2025

Department: **GEOLOGY**

Semester: Third

B.Sc. General

Core Course-DSC

| Name of the Teacher | Title of the Teaching Assignment | Dividing the Assignment into Number of Units along with detailed lesson plan as per the University Syllabus | | Date of Commencement of the Assignment | Number of classes required to complete each unit | Total number of class |
|---------------------|----------------------------------|---|--|--|--|-----------------------|
| ENAKSHI DAS | DSC1C: Petrology (Theory) | Igneous Petrology | <p>Unit-I: Magma: definition, composition, types and origin; Forms of igneous rocks; textures and structures of igneous rocks.</p> <p>Unit-II: Reaction principle; Differentiation and Assimilation; Crystallization of unicomponent and bicomponent (mix-crystals); Bowen's reaction series.</p> <p>Unit-III: Mineralogical and chemical classification of igneous rocks.</p> <p>Unit-IV: Detailed petrographic description of Granite, Granodiorite, Rhyolite, Syenite, Diorite, Basalt, Gabbro.</p> | To be decided | 8 4 3 2 | |
| | | Metamorphic Petrology | <p>Unit-VII: Process and controlling factors of metamorphism; Type of metamorphism. Facies, zones and grade of metamorphism; Textures,</p> | | 10 | 31 |

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| | | | structures and classification of metamorphic rocks. Unit-VIII: Petrographic details of some important metamorphic rocks such as - slate, schists, gneiss, quartzite, marble. | | 4 | |
| | DSC1CP: Practical | Igneous Petrology: Identification of rocks: On the basis of their physical properties in hand specimen; and optical properties in thin sections. Sedimentary and Metamorphic Petrology: Identification of sedimentary and metamorphic rocks both in hand specimen and thin sections. | | To be decided | | 24 |
| ENAKSHI DAS | DSC1C: Petrology (Theory) | Sedimentary Petrology | Unit-V: Processes of formation of sedimentary rocks; Classification, textures and structures of sedimentary rocks; Unit-VI: Petrographic details of important siliciclastic and carbonate rocks such as - conglomerate, breccia, sandstone, greywacke, shale, limestone | To be decided | 8 4 | 12 |

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Shahid Matangini Hazra Government College for Women

Lesson Plan for the academic session 2024-2025

Department: **GEOLOGY**

Semester: Fifth

B.Sc. Honours

Core Course (CC)

| Name of the Teacher | Title of the Teaching Assignment | Dividing the Assignment into Number of Units along with detailed lesson plan as per the University Syllabus | | Date of Commencement of the Assignment | Number of classes required to complete each unit | Total number of class |
|-------------------------------------|----------------------------------|---|---|--|--|-----------------------|
| APARUPA BANERJEE & LOVELY BURMAN | C11T: Hydrogeology | Unit 1: Introduction and basic concepts | 1. Scope of hydrogeology and its societal relevance. Global and Indian distribution of water resource | 16/11/2024 | 1 | |
| | | | 2. Hydrologic cycle: precipitation, evapo-transpiration, run-off, infiltration and groundwater flow. Basic concept of hydrographs Origin of groundwater, Vertical distribution of subsurface water, Genetic classification of groundwater. | | 3 | |

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| | | | 3. Classification of rocks with respect to water bearing characteristics, geomorphic and geologic controls of groundwater, Types of aquifer– unconfined, confined and semiconfined. Water table and piezometric surface. Groundwater provinces in India and West Bengal. | | 3 | |
| | | | 4. Rock properties affecting groundwater: Porosity, void ratio, specific retention and Storage coefficient - specific yield, specific storage and storativity, Anisotropy and heterogeneity of aquifers | | 2 | |
| | | Unit 2: Groundwater flow | 1. Darcy's law and its validity; Reynold's Number. Ground water velocity. | | 2 | |
| | | | 2. Intrinsic permeability and hydraulic conductivity, Transmissivity, Measurement of hydraulic conductivity in laboratory – Constant Head Permeameter and Falling (Variable) Head Permeameter. Water Table | | 4 | |

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| | | | and Piezometric surface contour maps and Groundwater flow direction, Laminar and turbulent groundwater flow | | | 42 |
| | | Unit 3: Well hydraulics and Groundwater exploration | 1. Basic Concepts (drawdown; specific capacity etc) | | 2 | |
| | | | 2. Elementary concepts related to equilibrium and non-equilibrium (Steady and unsteady) conditions for groundwater flow to a well | | 2 | |
| | | | 3. Surface-based groundwater exploration methods Introduction to subsurface borehole logging methods | | 4 | |
| | | Unit 4: Groundwater chemistry | 1. Physical, chemical and bacteriological properties of water and water quality | | 3 | |
| | | | 2. Introduction to methods of interpreting groundwater quality data using standard graphical plots | | 3 | |
| | | | 3. Elementary concept on Groundwater pollution: Arsenic, Fluoride and Nitrate, Seawater intrusion in coastal aquifers - Ghyben-Herzberg Relation | | 5 | |

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| | | Unit 5: Groundwater management | 1. Surface and subsurface water interaction. Recharge and discharge areas. Ground water level fluctuations. Effects of Climate Change on Ground water | | 3 | |
| | | | 2. Basic concepts of water balance studies, issues related to groundwater resources development and management | | 3 | |
| | | | 3. Rainwater harvesting and artificial recharge of groundwater | | 2 | |
| | C11P: Hydrogeology (Lab) | 1. Preparation and interpretation of depth to water level maps and water level contour maps. Study, preparation and analysis of hydrographs for differing groundwater conditions | | 16/11/2024 | 10 | 20 |
| 2. Water potential zones of India (map study) | | 2 | | | | |
| 3. Graphical representation of chemical quality data and water classification (C-S and Trilinear diagrams). Simple numerical problems related to: determination of permeability in field and laboratory and Groundwater flow | | 8 | | | | |
| APARUPA BANERJEE & ENAKSHI DAS | C12T: Economic Geology | Unit 1: Ores and gangues | 1. Ores, gangue minerals, tenor, grade and lodes. | 16/11/2024 | 1 | |
| | | | 2. Resources and reserves- Economic and Academic definitions | | 1 | |
| | | Unit 2: Mineral deposits and classical concepts of ore formation | 1. Mineral occurrence, Mineral deposit and ore deposit | | 1 | |
| | | | 2. Historical concepts of | | 1 | |

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| | | | ore genesis: Man's earliest vocation- Mining | | | 46 | |
| | | | 3. Plutonist and Neptunist concepts of ore genesis | | 1 | | |
| | | | 4. Metallogenic provinces and epochs | | 1 | | |
| | | Unit 3: Mineral exploration | 1. Exploration and exploitation techniques | | 2 | | |
| | | | 2. Brief idea on: Remote Sensing, Geophysical and Geochemical Explorations | | 6 | | |
| | | | 3. Geological mapping at different scales, drilling, borehole logs and transverse sections | | 3 | | |
| | | Unit 4: Structure and texture of ore deposits | 1. Concordant and discordant ore bodies | | 2 | | |
| | | | 2. Endogenous processes: Magmatic concentration, skarns, greisens, and hydrothermal deposits | | 8 | | |
| | | | 3. Exogenous processes: weathering products and residual deposits, oxidation and supergene enrichment, placer deposits | | 6 | | |
| | | Unit 5: Ore grade and Reserve | Assessment of ore grade and reserve, reserve estimation | | 2 | | |
| | | Unit 6: Metallic and Non-metallic ores | 1. Important deposits of India including atomic minerals: Study of geologic set up, mode of occurrence, mineralogy | | 6 | | |

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| | | | and genesis of the following ore deposits in India - Iron ore in Singhbhum and Karnatake, Manganese of Central India, Copper of Malanjkhanda, lead-zinc of Zawar area, Uranium of Singh bhum. | | | |
| | | | 2. Non-metallic and industrial rocks and minerals, in India. | | 4 | |
| | | | 3. Introduction to gemstones. | | 1 | |
| | C12P: Economic Geology | 1. Hand sample identification of important ores and non-metallic minerals | | 16/11/2024 | 4 | |
| | | 2. Study of microscopic properties of ore forming minerals (Oxides and sulphides) | | | 8 | |
| | | 3. Preparation of maps: Distribution of important ores and other economic minerals in India | | | 2 | 14 |

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Shahid Matangini Hazra Government College for Women

Lesson Plan for the academic session 2019-2020

Department: **GEOLOGY**

Semester: Fifth

B.Sc. Honours

Discipline Specific Elective (DSE)

| Name of the Teacher | Title of the Teaching Assignment | Dividing the Assignment into Number of Units along with detailed lesson plan as per the University Syllabus | | Date of Commencement of the Assignment | Number of classes required to complete each unit | Total number of class |
|-------------------------|--|---|---|--|--|-----------------------|
| APARUPA BANERJEE | DSE1T: Introduction to Geophysics | Unit 1: Geology and Geophysics | 1. What is geophysics? | 16/11/2024 | 1 | 40 |
| | | | 2. Interrelationship between geology and geophysics | | 1 | |
| | | Unit 2: General and Exploration geophysics | 1. Different types of geophysical methods - gravity, magnetic, electrical and seismic; Principles of different methods. Applications of different methods. Elements of well logging | | 12 | |
| | | | 2. Corrections in geophysical data | | 2 | |
| | | Unit 3: Geophysical field operations | 1. Data acquisition and Processing. Data reduction. Signal and noise. | | 4 | |
| | | | 2. Different types of surveys, grid and route surveys, profiling and sounding techniques a. Scales of survey b. Presentation of geophysical data | | 6 | |
| | | Unit 4: Application of | 1. Regional geophysics, oil and gas geophysics, ore geophysics, groundwater geophysics, | | 4 | |

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| | | Geophysical methods | engineering geophysics | | 2 | | | |
| | | | 2. Geological interpretation of geophysical data | | | | | |
| | | Unit 5: Geophysical anomalies | 1. Correction to measured quantities, geophysical, anomaly, regional and residual (local) anomalies, factors controlling anomaly | | | | 3 | |
| | | | 2. Depth of exploration | | | | 2 | |
| | | Unit 6: Integrated geophysical methods | Ambiguities in geophysical interpretation, planning and execution of geophysical surveys | 3 | | | | |
| | DSE1P: Introduction to Geophysics | | 1. Anomaly and background- Graphical method. | 16/11/2024 | 6 | | 16 | |
| | | | 2. Study and interpretation of seismic reflector geometry. | | 6 | | | |
| | | | 3. Gravity anomaly: Problems on gravity anomaly. | | 4 | | | |
| | LOVELY BURMAN & ENAKSHI DAS | DSE2T: Fuel Geology | Unit 1: Energy Resources | Different Sources of energy: Global and Indian scenario | 16/11/2024 | | 2 | 44 |
| | | | Unit 2: Coal | 1. Definition and origin of Coal | | | 2 | |
| 2. Basic classification of coal | | | | 1 | | | | |
| 3. Fundamentals of Coal Petrology - Introduction to lithotypes, microlithotypes and macerals in coal | | | | 3 | | | | |
| 4. Proximate and Ultimate | | | | 1 | | | | |
| 5. Major coal basins of India | | | | 3 | | | | |
| Unit 3: Coal as a fuel | | | 1. Concept of clean coal technology | 2 | | | | |
| | | | 2. Coal Bed Methane (CBM): global and Indian scenario | 3 | | | | |
| | | | 3. Underground coal gasification | 2 | | | | |
| | | | 4. Liquefaction of coal | 2 | | | | |
| Unit 4: Petroleum | | | 1. Chemical composition and physical properties of crudes oil | 3 | | | | |
| | | | 2. Origin and migration of petroleum | 3 | | | | |
| | | | 3. Kerogen: Maturation of kerogen; Biogenic and Thermal effect | 3 | | | | |

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| | | Unit 5: Petroleum Reservoirs and Traps | 1. Reservoir rocks: general attributes and petrophysical properties | | 2 | |
| | | | 2. Cap Rocks: definition and general properties | | 1 | |
| | | | 3. Hydrocarbon traps: definition, Classification of hydrocarbon traps - structural, stratigraphic and combination a. Time of trap formation and time of hydrocarbon accumulation. b. Plate tectonics and global distribution of hydrocarbon reserves c. Petroliferous basins of India | | 8 | |
| | | Unit 6: Other fuels | 1. Nuclear Fuel | | 2 | |
| | | | 2. Gas Hydrate | | 1 | |
| | DSE2P: Fuel Geology | 1. Study of hand specimens of coal | | 16/11/2024 | 2 | 18 |
| | | 2. Reserve estimation of coal | | | 4 | |
| | | 3. Section correlation and identification of hydrocarbon prospect | | | 6 | |
| | | 4. Panel and Fence diagrams | | | 6 | |

Contd....

Shahid Matangini Hazra Government College for Women

Lesson Plan for the academic session 2024-2025

Department: **GEOLOGY**

Semester: FIFTH

B.Sc. General

Core Course-DSE1A

| Name of the Teacher | Title of the Teaching Assignment | Dividing the Assignment into Number of Units along with detailed lesson plan as per the University Syllabus | | Date of Commencement of the Assignment | Number of classes required to complete each unit | Total number of class |
|--|--|---|---------------------------------|--|--|-----------------------|
| LOVELY BURMAN | DSE1AT: Introduction to Fuel Geology(Theory) | FUEL GEOLOGY | Unit 1: Energy Resources | 16/11/2024 | 4 | 23 |
| | Unit-II: Coal | | 4 | | | |
| Unit-III: Coal as a fuel | 4 | | | | | |
| Unit-IV:. Petroleum | 4 | | | | | |
| Unit-V:. Petroleum Reservoirs and Traps | 3 | | | | | |
| Unit-VI:.Other fuels | 4 | | | | | |
| DSE1AP: Introduction to Fuel Geology (Practical) | | 1.Study of hand specimens of coal 2. Reserve estimation of coal 3. Section correlation and identification of hydrocarbon prospect | 16/11/2024 | 6 2 2 | 12 | |

| | | | | | | |
|--|--|--|-----------------------------|--|---|--|
| | | | 4. Panel and Fence diagrams | | 2 | |
|--|--|--|-----------------------------|--|---|--|

Aparupa Banerjee

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