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Website: www.pedongcollege.in

GOVERNMENT OF WEST BENGAL

Office of the Principal

**GOVERNMENT GENERAL DEGREE COLLEGE AT
PEDONG**

DIST. KALIMPONG – 734311

E-Mail: pedong.govt.college@gmail.com

Department of Geology
Government General Degree College at Pedong
Pedong, Kalimpong, West Bengal - 734311

Programme Specific Outcomes

Facilitate collaborative learning experiences during field training programs and educational excursions.

1. Encourage students and faculty to participate in conferences, seminars, workshops, and other professional development activities to enhance their academic and administrative competencies.
2. Promote and support research endeavors among faculty members and students to contribute to the advancement of geological knowledge.
3. Organize career counseling sessions to guide students in making informed decisions about their professional paths.
4. Cultivate an ethical consciousness and promote awareness on issues such as gender sensitivity, environmental conservation, and cleanliness.
5. Foster a value-oriented mindset among students, encouraging respect for their surroundings and diverse cultures.
6. Assist students in preparing for competitive examinations, such as the Joint Admission Test for M.Sc. (JAM), to pursue higher education opportunities in geology and related fields.

Course Specific Outcomes

Core Course

Course Code GELH CC 1

Course Title Earth System Science

Course Outcome :

- Concept of Plate tectonic
- Concept of time in geological Science


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- Cosmic abundance of elements
- Internal structure of Earth
- Ability to understand different processes working on Earth
- Ability to understand origin of life on Earth
- Complete knowledge about the tectonic framework of the Earth
- Idea about the inter-relationship between biosphere, hydrosphere and atmosphere

Course Code : GELH CC 2

Course Title : Mineral Science

Course Outcome :

- Concept of Crystallography, Crystal Chemistry and Structure.
- Idea about structure of minerals and chemical bonding
- Physical and Optical properties of rock forming minerals.
- Ability to identify different minerals in hand specimen
- Ability to identify different crystal systems
- Ability to identify different minerals under microscope
- Understanding the working principle and use of a petrological microscope.

Course Code GELH CC 3

Course Title Elements of Geochemistry

Course Outcome :

- Concepts of geochemistry
- Element transport
- Analytical Instruments, Data Acquisition and Interpretation
- Ability to understand geochemistry of Earth as a planet
- Ability to understand Layered structure of Earth
- Idea about Geochemical classification of elements
- Complete understanding of different geochemical techniques employed in geology
- Idea about Isotope Geochemistry


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Course Code GELH CC 4

Course Title Structural Geology

Course Outcome :

- Structure and Topography
- Stress and strain in rocks
- Folds, Foliation and lineation
- Fractures and faults
- Ability to understand different structural features of Earth
- Ability to understand the mechanics of deformation
- Complete knowledge to interpret topographic maps
- Complete grasp of mathematical methods to solve structural geology problems

Course Code : GELH CC 5

Course Title : Igneous Petrology

Course Outcome :

- Physical properties and formation process of magma
- Formation and types of igneous rocks
- Geothermal gradient
- Forms, Textures and Structures of igneous rocks
- Phase diagrams in understanding crystal-melt equilibrium
- Magma generation, their emplacement and evolution
- Different magmatic processes
- Magmatism in different tectonic settings
- Petrogenesis of various types of igneous rocks

Course Code : GELH CC 6

Course Title : Sedimentology

Course Outcome :

- Outline of sedimentation process
- Sedimentary textures
- Fluid flow and Mass flow
- Sedimentary structures and identification of sedimentary structures


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- Paleocurrent analysis
- Components and classification of Siliciclastic and carbonate rocks
- Tectonic control on sandstone composition
- Concepts and stages of diagenesis

Course Code : GELH CC 7

Course Title : Paleontology

Course Outcome :

- Fossilization and fossil record
- Species concept with special reference to paleontology
- Taxonomic hierarchy Theory of organic evolution
- Important invertebrate groups (Bivalvia, Gastropoda, Brachiopoda) and their biostratigraphic significance
- Paleobiogeographic implications of ammonites in Mesozoic biostratigraphy
- Functional adaptation in trilobites and ammonoids
- Origin and major steps in vertebrate evolution
- Origin, diversity and extinction of dinosaurs
- Horse and Human evolution
- Introduction to Ichnology
- Application of fossils in Stratigraphy

Course Code : GELH CC 8

Course Title : Metamorphic Petrology

Course Outcome :

- Controls and types of Metamorphism
- Concept of P-T-t paths
- Metamorphic Facies and grades
- Mineralogical phase rules
- Principles of geothermobarometry and textural identification
- Metamorphism and Tectonism
- Different Metamorphic rock Association
- Ultra High Pressure and Ultra High temperature metamorphism


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Course Code : GELH CC 9

Course Title : Principles of Stratigraphy and Indian Stratigraphy

Course Outcome :

- Walther's Law of Facies.
- Fundamentals of litho-, bio- and chrono-stratigraphy
- Introduction to concepts of dynamic stratigraphy
- Code of stratigraphic nomenclature
- Sequence stratigraphy and their subdivisions with Indian examples
- Concept of paleogeographic reconstruction
- Physiographic and tectonic subdivisions of India
- Phanerozoic Stratigraphy of India
- Deccan, Rajmahal, Sylhet Trap
- Precambrian-Cambrian boundary, Permian-Triassic boundary, and Cretaceous-Tertiary boundary in India

Course Code : GELH CC 10

Course Title : Hydrogeology

Course Outcome :

- Scope of hydrogeology and its societal relevance
- Hydrologic cycle
- Rock properties affecting groundwater
- Types, parameters, anisotropy and heterogeneity of aquifers
- Groundwater flow
- Well hydraulics and Groundwater exploration
- Physical and chemical properties of water
- Sea water intrusion in coastal aquifers
- Groundwater management
- Rainwater harvesting and artificial recharge of groundwater

Course Code : GELH CC 11


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Course Title : Economic Geology

Course Outcome :

- Basic understanding of the introductory concepts of genesis and localization of ore deposits .
- Awareness of the minerals associated with ore deposits.
- Understanding the structure and texture of ore deposits.
- Introductory concepts of mineral exploration.

Course Code : GELH CC 12

Course Title : Engineering Geology

Course Outcome :

- Introductory concepts on the geological aspects of the location, design, construction, operation and maintenance of various engineering works.
- Basic outline of rock mass properties and rock quality assessment
- To understand role engineering geologists in site investigation and characterization
- Causes of Natural disasters and its implication in various engineering constructions, possible mitigation and important case histories related to Indian Civil Engineering Projects

Course Code : GELH CC 13

Course Title : Geomorphology

Course Outcome :

- Understanding of the conceptual and dynamic aspects of landform development (introductory concepts of geomorphology)
- Role of plate tectonics in the landscape formation
- Overview of Indian Geomorphology and Extraterrestrial landforms

Course Code : GELH CC 14

Course Title : Remote Sensing and GIS


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Course Outcome :

- Fundamental concepts of photogeology (interpretation of aerial photographs)
- Basic principles to identify the earth surface features from satellite images and digital image processing
- Analyze the basic components of GIS ;
- introduction to GPS

Discipline Specific Elective Courses

Course Code GELH DSE 1

Course Title Earth and Climate

Course Outcome :

- Understanding of how the earth's climate system works.
- Climate controlling factors, response and feedback in the climatic system, orbital cyclicality.
- To understand the interaction between the hydrosphere and atmosphere.
- To discuss the heat budget of earth.
- To understand the response of the biosphere to earth's climate (especially the anthropogenic effects causing climate change).
- Basic outline of mechanism of monsoon.

Course Code : GELH DSE 2

Course Title : River Science

Course Outcome :

- Basic idea about stream hydrology; Physical properties of water, sediment and channel flow
- Introduction to the sedimentological processes associated in a river basin
- Basic idea about drainage network, pattern of alluvial rivers and associated landscapes
- Introductory concept of integrated stream management and river ecology.

Course Code GELH DSE 3

Course Title Oceanography


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Course Outcome :

- Introductory concept of chemical and Physical aspects of Ocean
- Role of plate tectonics on the land-Ocean distribution
- First order idea about the marine Life and the Environment

Course Code GELH DSE 4

Course Title Physics and Chemistry of Earth

Course Outcome :

- To understand what and how physico-chemical processes are working in Earth's surface and interior
- Basic idea on the elements of earth's magnetism
- Introduction to the environmental geochemistry


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Skill Enhancement Course (SEC)

Two SEC's are both Field Visit during 3rd and 4th Semester under CBCS. The locations chosen for these field work are usually different, but the outcome of the SEC are following :

Course Outcome :

- Field Mapping Skills: Proficiency in creating detailed geological maps.
- Rock Identification: Ability to identify and classify various rock types.
- Structural Analysis: Skills in analyzing geological structures like folds and faults.
- Stratigraphic Interpretation: Understanding of the sequence and age of rock layers.
- Sampling Techniques: Proficiency in collecting and documenting rock and soil samples.
- Geospatial Data Collection: Use of GPS and other tools for precise location mapping.
- Geological History Reconstruction: Capability to infer past geological events.
- Data Integration: Skills in integrating field data with remote sensing and lab analyses.
- Field Safety and Logistics: Knowledge of safety protocols and effective field planning.
- Team Collaboration: Experience in working collaboratively in diverse field teams.


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