

DEPARTMENT OF GEOLOGY
KAKCHING KHUNOU COLLEGE, UMATHEL



PROGRAM OUTCOMES & COURSE OUTCOMES
B.SC (HONS) IN GEOLOGY (NEP)

PROGRAM OUTCOMES

B.Sc. GEOLOGY

After successful completion of degree program in Geology, a student should be able to:

PO-1. Emphasize the importance of Geology as the most important discipline for sustaining the existing industries and establishing new ones to create job opportunities at all levels of employment.

PO-2. Expose the student to the vast scope of geosciences in the field of disaster management, watershed management, water pollution, oil exploration, mining, etc.

PO-3. Apply skills to the various fields like engineering, mountaineering and any other expeditions, etc.

PO-4. Earn the knowledge of basic geological concept.

PO-5. Learn and perform experiment in the labs to demonstrate which learn in the classroom.

COURSE OUTCOMES

B.Sc. GEOLOGY

1ST SEMESTER

Core course-I

GL501: Mineralogy and Crystallography

After completion of this course, student should be able to:

1. Know about minerals and its classification, physical, chemical and optical properties of some common minerals.
2. Understand the optical properties of some common rock forming minerals by applying the knowledge of light.
3. Learn about the crystals, crystal form and their formulation, crystal growth, theory, crystal system and classes.

Core Course-II

GL502: Fundamentals of Geology, understanding planet earth and Geomorphology.

The outcome expected on completion of course:

1. Earn the knowledge of various Hypothesis of origin and evolution of earth, its composition, age, life forms, fossils, rock deformation, climate change and mass extinction events, etc.
2. Understanding the landform of earth; get the idea of mitigation of environmental hazards – Landslides, Earthquake, floods, etc.

SKILL ENHANCEMENT COURSE
GL521: Watershed Development.

Outcome:

The outcomes expected on completion of course:

Student will understand the key concepts like watershed characteristics development measures (contour bonding, gully plugs, etc.), water resources assessment and roles of NGOs and government.

It also touches upon watershed management, water balance and sustainability.

COURSE OUTCOMES

B.Sc. GEOLOGY

2ND SEMESTER

Core Course-III

GL503: PETROLOGY

After completing the course, the students are able to

1. Understand the genesis, types and evolution of magmas, explain evolution of magma by different processes takes place from origin to emplacement.
2. Explain crystallizing phase, equilibrium of multi component magma system.
3. Learn the forms and structure, texture, classification of some common igneous rocks.
4. Get the knowledge of phase rule and Goldsmith's mineralogical phase rule, chemical equilibrium in metamorphism and principles of metamorphic reactions.
5. Metamorphic grades, facies and facies series and types of metasomatism are also learned in this course.
6. Have an idea on graphical representation of mineral assemblages - ACF, AKF, AFM diagrams.

Core course-IV

GL504: Geochemistry and Thermodynamics

After completing the course, the students are able to:

1. Describe the composition of the earth and cosmos, periodic table, crystal bonding, etc.
2. Get the knowledge of polymorphism, pseudomorphism, solid solution and isomorphism, explain the geochemical classification of elements, chemical and mineralogical phase rules.
3. Understand the basic concept of Thermodynamics and its objectives, various Thermodynamic terms and processes, Thermodynamic equilibrium, concept of first, second, third and zeroth law of Thermodynamics and their significance, concept of Entropy and Enthalpy, Gibbs Free Energy and Helmholtz Free Energy Fugacity and activity, Raoult's law, ideal and non ideal solution, etc.
4. Get the knowledge of measuring dip and strike of planar structure on spot through field work.

SKILL ENHANCEMENT COURSE

GL524: GEOTECHNOGY

Outcomes:

It provides the new facts about the geodynamic processes on the Earth which lead to different formations and deformations subsequently.

COURSE OUTCOMES

3RD SEMESTER

Core Course-V

GL601: Structural Geology

After completing the course, the students can understand

1. The idea of various rock structure and mechanism of deformation.
2. The definition, elements, types and nature of joints, fracture, shear zones, faults and folds.
3. The exercise on structural geology problems, interpretation of geological maps, graphic solutions of dip and strike problems.
4. Evaluation of pitch and plunge from stereographic solution, etc. through practical class.

Core course-VI

GL602: Palaeontology

Outcome expected after completion of course:

1. Acquire knowledge about fossils and chronological sequence of rocks in different part of India.
2. Demonstrate, understanding of the uses of fossils in solving geological problems, palaeo environments, relative age, palaeoecology, etc.
3. Understand the different branches of palaeontology, viz. vertebrate, invertebrate and palaeobotany.
4. Getting the knowledge of morphological characters, systematic position, stratigraphic position and age of various types of fossils.

Core course-VII

GL603: Principles of stratigraphy and sedimentation

Upon completion of the course, student will be able to:

1. Collect the knowledge of stratigraphy definition, its scope and relationship with other sub-disciplines of Geology, and basic principles of stratigraphy.
2. Understand the principles of stratigraphy, nature of sediment formation, transport and deposition, use of sedimentary structures, palaeo geography, past climates and depositional histories.
3. Get the knowledge of different types of sedimentary rocks through hand specimen, study and in their section by practical classes.

COURSE OUTCOMES
4TH SEMESTER

Core course-VIII

GL604: Environmental Geology and natural disaster

After completing the course, students are able to:

1. Get the idea of fundamental concept of environmental geology.
2. Have the idea of surface and subsurface water resources, hydrogeologic cycle and pollution and cause of environmental pollution.
3. Understand the environmental hazards and preventing measures.
4. Get the knowledge of Seismic zones, Earthquake prone, landslide prone and flood prone areas through study of maps.
5. Can classify the groundwater which to use in drinking and industrial purposes.

Core course-IX

GL605: Economic Geology and Mineral Economics

After completing the course, the students will be able to:

1. Get the fundamental knowledge of economic minerals.
2. Learn about the terms related to the subject, mineralization and types of mineral deposits.
3. Get the knowledge on important industrial minerals of India – cement, glass, ceramics, Refractory, Fertilizers, Gemstone and building stones.
4. Have the idea of significance of minerals in the national economy and Indian mineral policy.
5. Identify the important minerals through practical class.

Core course-X

GL606: Geology of India

The outcome expected on completion of course:

1. Acquire knowledge about chronology and geologic column of stratigraphic sequence of India.
2. Get the knowledge of the stratigraphic terms – viz. Archean, Dharwar, Cuddapah, Vindhyan and Gondwana.
3. Understand the supergroups of Indian pre-cambrian rocks with special reference to lithology, tectonic and economic significance.
4. Learn the knowledge of distribution of some common supergroups through lithostratigraphic maps of India.

COURSE OUTCOMES

5th SEMESTER

Core Course-XI

GL701: Indian mineral resources and fuel Geology

1. The concept of Indian deposits of common ores and minerals with reference to their geology, mode of occurrence, distribution and uses.
2. The knowledge about Indian minerals wealth including coal and petroleum.
3. Get the idea of distribution of important metallic and non-metallic deposits and important coal and oil fields of India through maps and field visits.

Core Course-XII

GL702: Engineering Geology and Hydrology

Outcomes expected after completion of course:

1. Students are updated knowledge about various engineering structures like dams, reservoirs and spillways, tunnels, bridges, underground caverns, highways and shorelines.
2. Understand the concept of geological hazards, their significance, cause and prevention/remedial measures.
3. Learning about water resources for the surface water as well as groundwater in the country.
4. Students get the skill of selecting the proper sites for construction of dams, tunnels, bridges, etc. using topographic maps and surveying.
5. Hone the knowledge of origin of groundwater, vertical distribution of groundwater, types of aquifers, porosity, permeability, springs and their formations.
6. Get the idea of dissolved constituent of groundwater and salinization and groundwater province in India.