

**NAME OF THE PROGRAMME : B.Sc. GEOLOGY**

**PROGRAMME OUTCOME**

1. Getting information about Geology and its branches, formation of earth and its surface features, modification of surface through time process.
2. Tectonic modifications through geological periods and its evidences by biological and lithological formations.
3. Study of minerals and their combining process to form rocks in to three major types.
4. Knowing the earth's structural modifications by tectonic process and its effects.
5. Information about economically viable mineral formations and their exploitation through Remote sensing and GIS.

## **COURSE OUTCOME**

### **COURSE DYNAMIC GEOLOGY**

1. Introducing the branches of geology, solar system and its relation to other planets, origin of the earth and their hypothesis.
2. Knowing the age of the earth with different methods, volcanoes and their classification, Products of volcanoes and their distribution.
3. Describe earthquakes, effects and causes of earthquakes, intensity and distribution of earthquakes.
4. Understand the plate tectonic movements, mountain building activities and plate tectonic theories, continental drift theory and isostasy.
5. Understand the concept of plate tectonics, lithospheric plates, plate boundaries and mechanism of plate motion.

### **COURSE: GEOMORPHOLOGY**

1. Describing the geomorphic process, weathering, mass wasting and classification of relief features
2. Understanding the composition and zones of atmosphere, landforms produced by wind action and geological work of groundwater.
3. Understand the geological work and landforms produced by fluvial processes with drainage patterns.
4. Explaining the glacial action and landforms produced by them with reference to glacial epochs.
5. Understanding the marine process and their landforms. Origin and classification of lakes.

### **COURSE: PALAEOLOGY AND GENERAL STRATIGRAPHY**

1. Defining fossil, classification and geological history of Phylum Mollusca and Brachiopoda.
2. Describing morphology, classification and geological history of phylum Arthropoda and Hemichordata.
3. General morphological characters, classification of phylum Coelenterata and Echinodermata.
4. Knowing the geological history and stratigraphic importance of phylum Protozoa and Porifera.
5. Understanding the principles of stratigraphy, geological time scale and stratigraphy classification.

### **COURSE: PRACTICAL - PALAEOLOGY**

1. Identifying the characteristic feature of phylum Protozoa and Porifera
2. Identifying the morphological characters of phylum Brachiopoda and Mollusca
3. Identifying the characteristic feature of phylum Coelenterata.

4. Classifying phylum Echinodermata
5. Identifying the characteristic features of plant fossils.

#### **COURSE: CRYSTALLOGRAPHY AND OPTICAL MINERALOGY**

1. Knowing crystal structure, forms, system and classification.
2. Study of symmetry elements and forms of Tetragonal system with special reference to its crystals.
3. Study of symmetry elements and forms of Orthogonal system with special reference to its crystals.
4. General characteristics of light - polarisation, refraction, petrological microscope and its accessories.
5. Learning the properties of uniaxial and biaxial minerals under parallel and crossed nicols.

#### **COURSE: MINERALOGY**

1. Defining the general characteristics, mode of occurrence and physical properties of minerals.
2. Studying physical and optical properties, chemical composition and occurrence of silicate group of minerals viz. Quartz group, Feldspar and Feldspathoid Groups
3. Pyroxene and Amphibole groups
4. Mica, Garnet, Zeolite groups.
5. Miscellaneous.

#### **COURSE: INDIAN STRATIGRAPHY**

1. Comparative study of physiographic and stratigraphic formations of India including Archaean and Dharwar rocks of peninsular India.
2. Descriptive study and economic importance of Cuddapah and Vindhyan systems of peninsular India.
3. Descriptive study of stratigraphic formations of Cambrian, Permocarboniferous, Triassic and Jurassic systems of India.
4. Study of Gondwana super group - divisions, structure, climate and conditions of sedimentation.
5. Study of Deccan traps, rise of Himalayas, Eocene, Oligocene and Miocene deposits and Siwalik system.

#### **COURSE: STRUCTURAL GEOLOGY**

1. Preparation and uses of geologic maps, topographic maps with special reference to different formations
2. Defining stress and strain and their deformation process including different types of folds.
3. Defining stress and strain and their deformation process including different types of faults.

4. Study of joints and their relation to other structures.
5. Kinds of unconformities and their recognition. Using of Brunton, Clinometer compass and their functions.

#### **COURSE: CRYSTALLOGRAPHY AND MINERALOGY**

1. Morphological study of crystal models belonging to cubic, tetragonal and hexagonal system.
2. Morphological study of crystal models belonging to orthorhombic, monoclinic and triclinic systems.
3. Identification and description of minerals in thin section under polarized microscope.
4. Identification and description of silica, feldspar and feldspathoid groups of minerals in hand specimens.
5. Identification, description and mode of occurrence of Pyroxene, Amphibole, Mica, Garnet and Zeolite groups of minerals in hand specimens

#### **COURSE: IGNEOUS PETROLOGY**

1. Study of chemical composition of the earth, magma composition and forms of intrusive and extrusive igneous rocks.
2. Studying different texture and structure of igneous rocks.
3. Learning the process of crystallisation of unicomponent magma, binary magma and assimilation process.
4. Classification of igneous rocks based on megascopic properties and chemical analysis
5. Study of Petrographic characters and origin of different types of igneous rocks.

#### **COURSE: SEDIMENTARY AND METAMORPHIC PETROLOGY**

1. Study of different sedimentary processes; classification of sedimentary rocks based on texture and structure.
2. Study of residual deposits and their formation.
3. Study of calcareous, siliceous, phosphatic, ferugineous and carbonaceous deposits.
4. Study of the basics of metamorphism, its types, facies, grades and zones.
5. Understanding dynamic, thermal, dynamo thermal and plutonic metamorphism and their rock types.

#### **COURSE: FIELD GEOLOGY**

1. Study of field equipments and important geological features.
2. Preparation of topographic maps with the help of clinometer and brunton compass.
3. Production of field maps with the help of measurements and calculation of field data.
4. Study of sampling, its importance and types.
5. Use of topographic maps for analysing rock types and structural features.

## **COURSE : HYDROGEOLOGY AND ENGINEERING GEOLOGY**

1. Study of hydrological cycle, distribution and occurrence of groundwater.
2. Understanding rock properties affecting groundwater in relation to groundwater movement.
3. Study of properties of water; water quality; exploration process for identifying groundwater zones.
4. Study of engineering properties of rocks pertaining to landslides.
5. Knowing geological investigations for the construction of dams, tunnels, bridges and highways.

## **COURSE : PRACTICAL - PETROLOGY**

Megascopic identification and description of

1. Igneous rocks - Acid, basic and ultrabasic types.
2. Sedimentary rocks – Residual, calstic, chemical and organic origin.
3. Metamorphic rocks with oriented and non oriented textures.

Microscopic identification of

4. Igneous rocks
5. Sedimentary and metamorphic rocks.

## **COURSE : ECONOMIC GEOLOGY**

1. Learning the methods of formation of economic mineral deposits.
2. Studying the metallogenetic epochs and provinces and classification of ore deposits.
3. Knowing geological occurrences, uses and distribution of major economic minerals.
4. Studying mode of occurrence and distribution in India of industrial minerals.
5. Studying origin, classification, occurrence and distribution of fossil fuels in India.

## **COURSE : REGIONAL GEOLOGY**

1. Studying about physiography of western and eastern ghats of Tamil Nadu and their structural aspects.
2. Comparative study of stratigraphy with rock types of Archaean group in Peninsular India.
3. Study of cretaceous and tertiary formations of Tamil Nadu.

4. Study of mode of occurrence and distribution of lignite deposits and gem stones in Tamil Nadu.
5. Study of mode of occurrence and distribution of iron ores, magnesite, bauxite and graphite deposits in Tamil Nadu.

**COURSE: PHOTOGEOLOGY, REMOTE SENSING, GIS AND MINING GEOLOGY**

1. Study of aerial photographs with the help of stereoscopes.
2. Interpretation and analysis of drainage patterns, landforms and vegetation based on aerial photographs.
3. Definition and scope of remote sensing; EM Spectrum for the study of earth surface and atmosphere.
4. Understanding the basic principles, elements, concepts and uses of Geographical Information System.
5. Study of different mining methods, mineral policies and mineral economics.

**COURSE: PRACTICAL– STRUCTURAL GEOLOGY, FIELD GEOLOGY & ECONOMIC GEOLOGY)**

1. Producing structural maps based on field data.
  2. Solving of problems based on structures.
  3. Participating in a geological field work for a period of at least one week
  4. Collection of mineral and rock samples from the field and preparing a field report.
  5. Identification and description of economic minerals in hand specimens.
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