

## Geology

Course Title: Geology of Nepal  
Credits: 3  
Teaching hours: 55 hrs.  
Full Marks: 100  
Pass Marks: 50  
Nature of the course: Theory

**Objectives:** To provide basic knowledge and understanding of geology in general and the geology of Nepal in particular with its geological zones and types of materials, and special concentration in the formation of Himalayas of Nepal.

### Course Contents:

Title	Details	Hours
Introduction	The science of geology, scope, its various branches, method of study, application of geology in mineral resource, infrastructure developments, disaster mitigation.	6
Minerals	Definition, processes of formation, and classification of minerals.	4
Rocks	Classification of rock, rock cycle.	4
Earth's interior	Probing Earth's interior, internal structure of the Earth, Earth's major internal boundaries, the crust, mantle and core, lithosphere and asthenosphere, pressure, temperature and seismic wave velocities inside the earth.	4
Earthquake	Earthquakes and faults; elastic rebound theory, seismic waves; seismograph, magnitude and intensity of earthquakes, world distribution of earthquakes, forecast and prediction of earthquake.	4
Crystallography	Definition of crystals, Crystal symmetry elements, crystal face, Bravais law, law of constancy of interfacial angles, Crystallographic axes, symmetry operations, unit cell, lattice; Thirty-two point groups and their symmetry elements; Bravais lattices, screw and glide symmetries, concept of space group and international space notation.	6

Minerology	Definition of mineral, scope of determinative mineralogy Scalar properties–colour, lustre, and streak, their definition and varieties with examples, specific gravity, determination of specific gravity of pure mineral grains by sink and float method, fluorescence and phosphorescence, magnetic properties–ferromagnetic, paramagnetic, and diamagnetic minerals.	6
Chemical properties of minerals	Minerals as a chemical system; native elements, sulphides, halides, oxides, silicates, titanates, phosphates, arsenates and vanadates, nitrates, borates and uranates, sulphates and chromates, tungstates and molybdates, oxalates and hydrocarbons. Rock-forming (silicate) minerals and their classification.	6
Geology of Nepal	Himalaya in brief, Nepal Himalaya, geological zones and types of materials, physiography of the Nepal Himalaya.	15