Course Name:

Engineering Geology

Course Number: 20-451	**Credit:** 2
Program: Undergraduate	**Course Type:** Technical required
Prerequisite: -	**Corequisite:** Solid Mechanics 1

Course Description (Objectives):

This course describes the basic geology and origins of soils and rocks along with the engineering properties of geological materials. The importance of geology in civil engineering projects are emphasized via actual examples.

Course Content (outline):

- Role and importance of engineering geology in civil engineering projects
- Planet Earth and its internal structure
- Geological Processes
- Earth surficial features (bedding planes, folding, faults, fractures, etc.)
- Earth crustal activities (Tectonics. Earthquake)
- Geological materials (rocks and minerals)
- Classification of Rocks (Igneous, Sedimentary, Metamorphic) and their characteristics
- Classification of minerals and their characteristics
- Rock weathering and formation of soils
- Soil transporting agents (water, wind, glacier, gravity and their related sediments).
- Rock mass characteristics and introduction to rock mass classification for engineering purposes
- Landslides and effects of geological features on instability of slopes and trenches
- Geological Investigations (desk studies, site investigation, sub-surface explorations)
- Field visit

References:

- Engineering Geology for Engineers, H. Memarian.
- Structural Geology and Tectonics, H. Madani.
- Geology and Engineering, R. F. Leggett, McGraw Hill, 1962.
- Foundations and Earth Retaining Structures, M. Budhu, John Wiley & sons