

Course Code : ENCM 11543
Title : Soil and Mineral Resources
Pre-requisite : G.C.E. A/L Biology
Co-requisite : None
Status : Compulsory, Theory cum Practical

Learning outcomes:

After completion of the course unit, the student will be able to;

- explain types of mineral resources and their economic importance,
- describe mineral resource extraction and environmental impacts,
- describe the rock weathering and soil formation process,
- explain the physical, chemical and biological properties of soils,
- explain the process of soil erosion, estimate soil erosion and propose appropriate soil conservation measures, and
- demonstrate competencies in identifying rocks and minerals and quantifying physical and chemical properties of soils using standard procedures.

Course content:

Type of Rocks, classification of rocks; Rock formations and rock weathering; Geological map of Sri Lanka, Economically important global, regional and national mineral resources; Extraction of mineral resources and impacts on environment.

Soil as a natural resource and types of soils, Characteristics and properties of soils (physical, chemical and biological); Soil-Water Relationships; Soil classification; Soil formation, Soil profile; Soil erosion and soil degradation, types of soil erosion, estimation of soil erosion; Soil conservation measures, Soil Fertility and Nutrient Management, Geological processes that affect soil and water quality.

Practical sessions on Soil analysis; rocks and minerals of Sri Lanka, Soil sampling and sampling equipment; Soil profile, soil color; soil moisture and moisture factor; Soil texture by feel and sieving, soil structure; Soil texture by hydrometer method; Soil texture by pipette method; Soil particle density, soil bulk density and porosity; Soil pH, EC, CEC, Organic matter content, Soil fertility.

Method of teaching and learning:

A combination of lectures, practical sessions, computer based learning, assignments and small group discussions.

Assessment:

In-course assessment and end of semester examination.

Recommended reading:

1. Brady, N. C. & R. R. Weil (2007). The Nature and Properties of Soils. 14th Edition. Prentice Hall.
2. Dubey, S.K. & A. Arora (2010). A Practical Book on Soil, Plant, Water and Fertilizer Analysis. S.R. Scientific, India.
3. Geological Atlas of Sri Lanka.
4. Morgan, R.P.C (2005). Soil Erosion and Conservation. Wiley-Blackwell.
5. NSF(2014). Natural Resources of Sri Lanka: conditions, trends and prospects.