Geology I (GEO 107)
Tribhuvan University
Soch College of Information Technology
Bachelor of Science in Computer Science and Information Technology

Course Title: Geology I
Course no: GEO-107 ---------- Full Marks: 60+20+20
Credit hours: 3 ---------- **Nature of course:** Theory (3 Hrs.) + Lab (3 Hrs.)
Course Synopsis: Fundamental concepts of contemporary earth and environmental science and engineering with increasing computer application.
Goal: This course aims at providing general understanding of Earth and environmental science and engineering

Course Contents:

Unit 1. ----------- 10 Hrs.
1.1 New Global Tectonic framework of the earth: Continental margins, earthquakes, volcanoes and mountain ranges.
1.2 Crystal, minerals and rocks: rock types and rock systematic
Unit 2. ---------- 10 Hrs.
2.1 Mineral deposits and mineral mining: technologies, reserves, economics and environment
2.2 Engineering geology: construction and stability of structures and natural and artificial face stability
Unit 3. ---------- 10 Hrs.
3.1 Climate changes and natural disasters: Landslides, Floods and Desertification.
3.2 Natural resources depletion: Hydrocarbons, metals and new sources of energy and materials.
Unit 4. ---------- 10 Hrs.
4.1 Geographic Information system (GIS): Vectors and raster and remote sensing database management.
4.2 Computer aided data management: remote sensing data acquisition, storage, processing and interpretation.
4.3 GIS and RS packages: ERDAS, ER Mapper, ArcView and other operating systems and capabilities

Laboratory works: Mineral / Rock identification, Soil types, Reserve calculation, Slope stability calculation, Rock Mass Ratings, ER Mapper, ArcView, ILWIS tour, RS data analysis, Digitization, practice and Geographic locking, GIS Layers shows and illustrations, GIS assignment with digital RS data.

Practical:
To identify elements of symmetry of a cube.
To identify 5 oxides and 5 sulphide minerals.

To calculate reserve of a ore deposit.
To calculate cost - benefit analysis of a mining enterprise
To calculate the stability of natural slope
To calculate and interpret precipitation data
To calculate rock mass rating form data
To perform digitization and geographic locking in computer
GIS assignment with RS data.

Text Books: No specific text book covering all materials but a working manual could be easily prepared.