CVX4344 Engineering Geology

Level	4
Course Code	CVX4344
Course Title	Engineering Geology
Credit value	3
Core/Optional	Core (Civil Engineering)
Course Aim/s	The aim is to introduce basic concepts in Geology, Hydrogeology and Engineering Geology
Course Learning Outcomes (CLO):	At the completion of this course student will be able to: CLO1: Explain the subject of Engineering Geology, history of the earth, its structure and Geological periods; describe different types of minerals and their engineering geological behaviour.[Multi-structural] CLO2: Perform simple laboratory tests to identify different minerals; classify minerals into different categories.[Uni-structural] CLO3: Describe different rock formation processes and plate tectonics; explain different types of rocks and their engineering and engineering geological behaviour. [Multi-structural] CLO4: Perform simple laboratory tests to identify different rock types, their textures and engineering properties; explain possible engineering geological behaviour of such rocks. [Relational] CLO5: Describe different structural features of rocks; explain structural parameters of each geological structure. [Multi-structural] CLO6: Perform simple classroom mapping exercises to obtain different structural parameters; develop subsurface cross sections for complex engineering geological conditions. [Relational] CLO7: Describe different geological processes; explain different types of landforms. [Multi-structural] CLO8: Explain hydrogeological behaviour of groundwater and associated basic hydrogeological parameters; interpret aquifer potential of different groundwater regimes. [Relational] CLO9: Explain different Geo-physical and direct sub-surface exploration techniques, different sampling and in-situ testing techniques adopted for soils and rocks. Develop a Geotechnical investigation programme for a given construction project [Uni-structural]
Content (Main topics, sub topics)	**Outline Syllabus:** Unit 1:Earth and Composition of Earth Session 01:Introduction to Engineering Geology and Course Outline Session 02:The Universe, Galaxy, Solar System and Origin of the Earth Session 03:Structure and History of the Earth Session 04:Minerals Session 05:Rocks and Rock Cycle Session 06:Plate Tectonics and Oscillatory Movement of the Earth's Crust Session 07:Main Structural Features of Rocks Session 08:Engineering Properties of Rocks Unit 2:Earth Processes and Landforms Session 09:Weathering and Erosion Session 10:Transportation and Deposition Session 11:Landforms Session 12: Geological Background of Sri Lanka Unit 3:Hydrogeology Session 13:Introduction to Hydrogeology Session 14:Soil Moisture and Groundwater Recharge Session 15:Aquifers and Geology of Different Aquifers Unit 4: Geological Investigations

	Session 16: Introduction to Geological Investigations Session 17: Geophysical Investigations Session 18: Sub-surface Explorations Sesion 19: Soil Samplaing Session 20: Rock Coring and Sampling Session 21: In-situ Tests in Soil & Rock Session 22: Planning and Development of Geotechnical Investigation Programmes **Laboratory work** 1. Perform laboratory tests to identify different minerals using their physical properties; classify identified minerals into pertaining groups 2. Perform laboratory tests to identify different types of rocks; use standard engineering rock classification system to classify a given rock sample based on mineralogy and texture 3. Perform simple classroom mapping exercises to obtain different geological structural parameters 4. Develop subsurface cross sections for complex engineering geological conditions