

Module Title:	Engineering Geology II
Language of Instruction:	English
Credits:	5
NFQ Level:	8
Module Delivered In	3 programme(s)
Teaching & Learning Strategies:	Lectures. Demonstrations. Project work. Practicals and Site visits. Site visits and private study
Module Aim:	The aims of this module are to a) extend the learner's engineering knowledge base associated with surficial and bedrock geology, groundwater and surface water, b) build on the knowledge introduced in Geotechnical Engineering 1 and 2. c) To enable the learner to appreciate the interaction between ground and human activity in civil engineering projects and to d) incorporate this understanding into design and construction. e) To appreciate and have a general understanding of groundwater, f) to appreciate the formation of topography by water and ice agents. g) to understand the technologies available to investigate and understand geohazards, to gain an appreciation of the interaction of the physical environment on development and how impacts can be recognised, eliminated or mitigated.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Appreciate the depositional characteristics of various soil and bedrock deposits and how they influence development
LO2	Assess the requirements of a development as they relate to ground and groundwater and select the appropriate investigative techniques
LO3	Interpret general geomorphological and subsurface conditions based on the use of desk study mapping, site reconnaissance, invasive and non-invasive techniques.
LO4	Develop competence in the organisational, communicative and team-working skills required of civil engineers in practice - through group design project.
LO5	Apply engineering geology principles to design of substructures/embankments/tunnels and landslide assessment and remediation.
Pre-requisite learning	
Module Recommendations <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
Bachelor of Engineering (Ordinary) in Civil Engineering	

Module Content & Assessment

Indicative Content

Glacial Geomorphology

Introduction to glaciers and glaciation; Landforms; Transportation of sediment; Formations; Deposits; Engineering uses

Geophysics

Introduction to Geophysics, Geophysics contracts, Seismic, Electrical resistivity, Gravity and magnetic surveys, Geophysical borehole logging and electromagnetic methods.

Groundwater Control

Application of groundwater hydrology to groundwater control and dewatering in construction.

Applications of Engineering Geology

Design and construction of highways and tunnels. Landslide assessment and remediation.

Design Team Project

Cross Disciplinary Group design project promoting inclusion and understanding of other discipline drivers. Collaboration with construction/architectural technology students required who will design the structure and engineering geology students the substructure. Students design the substructure of a multi-story building with basement. The brief requires design/assessment of a temporary retaining structure, groundwater control via pumping and bearing capacity/ settlement considerations for the foundation of the structure. Student self-assessment required.

Assessment Breakdown	%
Continuous Assessment	50.00%
Project	50.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Glacial Geomorphology Project	1,2,3	20.00	n/a
Project	Geophysics Project	1,2,3	15.00	n/a
Project	Groundwater Control	1,2,3	15.00	n/a

Project

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Application of engineering geology to design and construction of embankments and tunnels and landslide assessment and remediation.	1,2,3,4,5	20.00	n/a
Project	Cross Disciplinary Group design project promoting inclusion and understanding of other discipline drivers. Collaboration with construction/architectural technology students required who will design the structure and engineering geology students the substructure. Students design the substructure of a multi-story building with basement. The brief requires design/assessment of a temporary retaining structure, groundwater control via pumping and bearing capacity/ settlement considerations for the foundation of the structure. Student self-assessment required.	1,2,3,4,5	30.00	End-of-Semester

No Practical

No End of Module Formal Examination

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	12 Weeks per Stage	2.00
Practicals	12 Weeks per Stage	1.00
Estimated Learner Hours	12 Weeks per Stage	7.50
Total Hours		126.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMHCE_B	Bachelor of Engineering (Honours) in Civil Engineering	6	Mandatory
CW_CMHCE_B	Bachelor of Engineering (Honours) in Civil Engineering - Ab Initio	5	Mandatory
CW_CMCEN_B	Bachelor of Engineering (Honours) in Civil Engineering - Add On	1	Mandatory