

Module Title:	Geotechnical Engineering I
Language of Instruction:	English
Credits:	5
NFQ Level:	7
Module Delivered In	2 programme(s)
Teaching & Learning Strategies:	Projects Practicals Continuous assessments Terminal exam Private study
Module Aim:	The aims of the module are: (1) to provide the graduate with appropriate technical skills in analysis, design and construction work in the geotechnical area; (2) to work effectively as an individual and in teams. (3) to provide the graduate with the opportunity to progress to honours degree level in civil engineering.

Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Select appropriate parameters related to soil behaviour for design purposes including the health and safety implications of design
LO2	Analyse and evaluate stresses in soil in selected areas;
LO3	Analyse the stability of shallow foundations including the responsibilities and roles of relevant parties
LO4	Integrate the relationship between the Ground Investigation and the Geotechnical design combining Earthworks Analysis learning to produce sustainable construction and design
LO5	Compare and contrast geologic history of strata to engineering performance

Pre-requisite learning		
Module Recommendations <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>		
6566	ENGR H3503	Geotechnical Engineering I
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>		
No requirements listed		

Module Content & Assessment

Indicative Content

(1) Stresses in a Soil Mass

(a) Stresses due to overburden (b) Stresses due to applied loads, rectangular and circular

(2) Geology

(a) Rock forming minerals and crystallography (b) Elementary petrology (c) Stratigraphy and palaeontology (d) Earth building forces (e) Weathering and landscape change (f) Erosion and deposition

(3) Foundations

(a) Introduction to ultimate & serviceability limit state design (b) Introduction to piles and piling (c) Evaluation of Ground Investigation Reports and their application to design (d) Understanding the difference between undrained and drained analysis

(4) Health and safety and risk associated with geotechnical design

(a) Health and safety in geotechnical investigation, design and construction. (b) Risk assessment of geotechnical investigation. (c) Responsibilities of relevant duty holders (d) Safety file (e) Health and Safety Plan

Sustainable Design of Earthworks and Foundation Design

(a) Implications of re-using existing foundations and waste material as engineering material

Health and safety and risk associated with geotechnical design

a) Health and safety in geotechnical investigation, design and construction. (b) Risk assessment of geotechnical investigation. (c) Responsibilities of duty holders (d) Safety file (e) Health and Safety Plan

Assessment Breakdown

%

Continuous Assessment

100.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	Analysis and design projects, written lab reports and exams	1,2,3,4,5	100.00	n/a

No Project

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>
Contact Hours	12 Weeks per Stage	4.00
Estimated Learner Hours	12 Weeks per Stage	6.50
Total Hours		126.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMHCE_B	Bachelor of Engineering (Honours) in Civil Engineering	3	Mandatory
CW_CMCIV_D	Bachelor of Engineering in Civil Engineering	5	Mandatory