

Module Title:	Geotechnical Engineering III	
Language of Instruction:	English	
Credits:	5	
NFQ Level:	8	
Module Delivered In	1 programme(s)	
Teaching & Learning Strategies:	Lectures Demonstrations Project work Practicals Presentation Private study	
Module Aim:	(a) To understand the physical and mechanical properties of soils; (b) To develop a general appreciation of environmental issues and their vulnerability to engineering development projects; (c) To develop a general appreciation of sustainable construction principles as it relates to Civil & Geotechnical Engineering; (d) To be able to determine parameters from soil testing to characterize soil properties, (d) soil strength and soil deformations, (e) to be able to apply the principles of soil mechanics to analyze and design simple geotechnical systems; (f) To increase the understanding of the effects of construction on groundwater and the effects of groundwater on construction; (g) To develop the skills required to evaluate factual Geotechnical Engineering reports;	
Learning Outcomes		
On successful completion of this module the learner should be able to:		
LO1	Assess the information contained in factual geotechnical reports including laboratory test results	
LO2	Assess ground conditions to evaluate SI requirements for field work, sampling and testing so as to produce sustainable designs	
LO3	Relate and defend the value of desk study information and its role in preparation of factual and interpretative reports	
LO4	Undertake geotechnical designs to Eurocode 7 and BS/US methods	
Pre-requisite learning		
Module Recommendations		
This is prior learning (or a practical skill) that is recommended before enrolment in this module.		
6566	ENGR H3503	Geotechnical Engineering I
6801	ENGR H3504	Earthworks Analysis
Incompatible Modules		
These are modules which have learning outcomes that are too similar to the learning outcomes of this module.		
No incompatible modules listed		
Co-requisite Modules		
No Co-requisite modules listed		
Requirements		
This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.		
Engineering Geology		

Module Content & Assessment

Indicative Content

Site Investigation

(a) Contents of GI report, (b) Determination of appropriate site investigation techniques, (c) Sample selection, in-situ testing, (d) laboratory testing on a site specific basis,

Stresses, Strains and Elastic Deformation of Soils

(a) Stress-strain, (b) Stresses from surface loads, (c) Settlements,

Shear strength of Soils

(a) Undrained and drained shear strength, (b) Laboratory determination of shear strength using shear box, Triaxial (drained and undrained), (b) In-situ determination, (c) Introduction to Piezocone and pressure meter

Bearing capacity of soils and settlement of shallow foundations

(a) Collapse and failure loads - Ultimate and service loads, (b) Settlement, (c) In-situ testing (d) Design to EC 7, (e) Comparison of European vs other International Design Principles

Soil stabilization

(a) Lime, cement, pfa, stabilization on mineral soils and peat - chemical reactions within soil mass

Sustainability

(a) Reuse of waste materials, CBM's, LEED Design and Construction principles

Assessment Breakdown	%
Continuous Assessment	50.00%
End of Module Formal Examination	50.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	n/a	1,2,3,4	50.00	n/a

No Project

No Practical

End of Module Formal Examination

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	End of term exam	1,2,3,4	50.00	End-of-Semester

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	3.00
Estimated Learner Hours	12 Weeks per Stage	8.00
Total Hours		132.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMHCE_B	Bachelor of Engineering (Honours) in Civil Engineering	7	Mandatory