

Module Title:	Soil Mechanics
Language of Instruction:	English
Credits:	5
NFQ Level:	6
Module Delivered In	1 programme(s)
Teaching & Learning Strategies:	Lectures Practicals Private study
Module Aim:	The aims of the module are: (1) to provide students with a sound knowledge of the fundamentals of soil mechanics laboratory testing, as a basis for further studies in the area of geotechnical engineering; (2) to provide students with the technical ability to participate in quality control in earthworks and other associated areas.

Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Examine and relate the significance of moisture content in a soil and describe the soil property changes as moisture content varies
LO2	Evaluate excavated soil to improve project sustainability in accordance with the BS/Eurocode 7 Classification Systems, having a basic knowledge of technical report writing and appreciation of the the importance of moisture content
LO3	have a basic knowledge of site investigation stages and techniques;
LO4	undertake Hazard Identification and Risk Assessment for the laboratory tests undertaken in this module and demonstrate competence in undertaking these tests
LO5	demonstrate a knowledge of the requirements, duties, responsibilities and competencies associated with SAFE PASS and also for a variety of design and construction activities so as comply with the competencies required by the QQI Manual Handling and Ergonomic Certificate.

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>
No requirements listed

Module Content & Assessment

Indicative Content
(1) Introduction To Soils Technology (a) Geological formation of soil and rock - Rock cycle. (b) Clay and silt minerals.
(2) Site Investigation (a) Aims and objectives (b) Desk study (c) Site reconnaissance (d) Ground investigation
(3) Classification Of Soils (a) Moisture content (b) Atterberg limits (c) Particle size analysis - wet sieve analysis (d) Particle size analysis - sedimentation (e) Particle density
(4) Strength Of Soil (a) Shear strength theory (b) Direct shear test - shear box (c) Quick undrained triaxial test (d) Field testing - vane test (e) California Bearing Ratio
(5) Sustainability and Re-use of Soil (a) Optimum Moisture Content (b) Dry density / moisture content test (c) Measurement of in-situ density (D) Converting waste soil and rock into engineered material to increase project sustainability
Typical Laboratory Experiments (a) Soil sampling & sub-sampling (b) Classification of a soil (c) Measurement of Optimum Moisture Content (d) Measurement of California Bearing Ratio (e) Measurement of shear strength parameters using shear box (f) Measurement of shear strength parameters using triaxial apparatus
Self-Assessment Students assess own H&S assessments

Assessment Breakdown	%
Continuous Assessment	60.00%
End of Module Formal Examination	40.00%

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	In-class exams, practicals	1,2,3,5	60.00	n/a

No Project

No Practical

End of Module Formal Examination				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	n/a	1,2,3,4,5	40.00	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
Practicals	12 Weeks per Stage	3.00
Estimated Learner Hours	12 Weeks per Stage	6.00
Total Hours		144.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMCIV_D	Bachelor of Engineering in Civil Engineering	3	Mandatory