



Module Descriptor Form

Civil and Environmental Engineering

EO107 - Soils And Water 1

Module Code	EO107	Module Title	Soils And Water 1				
Module Registrar	Kremer, Dr Yannick						
Other Staff Involved	Mrs Sarah E Lavery (Lecturer)						
Credit Weighting	20	Semester	3	Elective	No	Academic Level	1
Pre-requisites							
Required for							

Module Format and Delivery (hours):

Lectures	Tutorials	Assignments	Labs	Private Study	Total
33	11	22	17	117	200

Educational Aim

This module aims to:

This module aims to introduce civil engineering students to key aspects of the physical and mechanical properties and characteristics of soils used in civil engineering and earthworks. It also aims to develop an understanding of the water systems at work in the environment and the role of water engineers in practice

Syllabus

This module will teach the following:

- Introduction to soils and rocks in civil engineering applications.
- Physical composition of soils. Engineering description of soils.
- Classification of coarse-grained and fine-grained soils.
- Phase relationships, between the various phases of soils.
- Soil compaction: processes and controls used to produce engineering fills from different soils .
- Processes and controls for earthworks, calculation of simple volumes of earthworks. Bills of quantities.
- Laboratory report writing skills.
- Introduction to the water environment, catchment hydrology and common water systems
- Properties of Fluids including density, compressibility, viscosity, vapour pressures, surface tension and capillary action
- Pressure & Pressure Measurement
- Hydrostatics, Pascal's Law, Fluid pressure, centre of pressure, centroid of area, hydrostatic forces on submerged plane and curved surfaces
- Stability of Floating Bodies: Archimedes Principle, Centre of Buoyancy, Meta-centric height

Learning Outcomes

On Completion of the module, the student is expected to be able to:

LO: 1	Describe the physical characteristics of soils used in civil engineering earthworks, and classify soils for engineering purposes, and how to report the results.
LO: 2	Determine the physical properties and phase relationships of soils.
LO: 3	Determine the compaction characteristics of soils, and how to report the results.
LO: 4	Understand the water systems at work in the environment and the role of water engineers in practice
LO: 5	Understand the significance of fluid properties and how they define the application of fluid mechanics at work in water engineering systems
LO: 6	Analyse hydrostatic forces on simple floating bodies and structures surrounded by water

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)

Assessment of Learning Outcomes - Criteria

Learning Outcome: 1

	Criteria
1	Describe the tests used to classify soils.
2	Classify soils according to recognised standards (BS1377 and BS5930).

Learning Outcome: 2

	Criteria
1	Calculate physical properties of soils.
2	Understand that soil is a three-phase material.

Learning Outcome: 3

	Criteria
1	Soil compaction: processes and controls used to produce engineering fills from different soils.
2	Determine the compaction characteristics of soils.

Learning Outcome: 4

	Criteria
1	Detail the underlying principles and individual components of the hydrological cycle
2	Detail the underlying principles and individual components of common water systems

Learning Outcome: 5

	Criteria
1	Ability to solve problems involving properties of fluids
2	Ability to use absolute and gauge pressures, piezometers and manometers

Learning Outcome: 6

	Criteria
1	Ability to solve problems on the hydrostatic force on floating bodies
2	Ability to solve problems on the hydrostatic force on plane submerged surfaces
3	Ability to solve problems on the hydrostatic force on curved submerged surfaces

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

To Pass the module, students need to gain a summative mark of: 40%

Description	Semester	Start Week	Duration	Weight	Submission Week	Linked Criteria
Lab A Soil classification	3	2		10%	4	
Lab B Soil Compaction	3	5		10%	7	
Lab C Hydrostatic Pressure	3	10		10%	11	
Exam. Closed Book	3		3.00	40%	E	
weekly assessments	3	1		30%	E	

Principles of Assessment Feedback

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Please state briefly how these are incorporated in this module.

1. Encourage interaction and dialogue around learning (peer and teacher-student)

Discussion of the course material between teacher & learner and between learners is encouraged in both online and face-to-face tutorial sessions and in online discussion boards.

Students are encouraged to collaborate in tutorials, lab reports and other formative exercises. However, it is emphasised that work submitted by students for summative assessment must be entirely their own work.

2. Deliver high quality feedback that helps learners self-correct

Regular feedback and discussion will be available in online and face-to-face tutorial sessions and in online discussion boards. Feedback from on-line quizzes and class-tests will enable students to reflect on their understanding of the subject material prior to the final examination. Individual feedback will be available by appointment with the course lecturers.

3. Ensure that summative assessment has a positive impact on learning

Feedback from on-line quizzes and other coursework submissions will include detailed written feedback to allow students to reflect on their performance.

Formal, summative feedback will be provided by the return of examination marks to students after assessment. Individual feedback on the exam may be arranged if appropriate

Additional Information**Resit Procedure**

3hr examination in August diet

Recommended Reading

***Purchase recommended **Highly recommended reading *For reference

*** Knappet, J., Craig, R.F. (2012) Craig's Soil Mechanics, Eighth Edition, Spon Press

*** Hamil, L. (2011) Understanding Hydraulics, 3rd Ed, Palgrave MacMillan.

Module Timetable

Week	Semester 1	Semester 2
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1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
E		

Date of Last Modification

10-09-2025