

University of the West of Scotland

Module Descriptor

Session: 2024/2025

Title of Module: Applied Soil Mechanics			
Code: ENGG09016	SCQF Level: 9 (Scottish Credit and Qualifications Framework)	Credit Points: 20	ECTS: 10 (European Credit Transfer Scheme)
School:	School of Computing Engineering & Physical Sciences		
Module Co-ordinator:	Djamalddine Boumezerane		
Summary of Module			
<p>In this module the students are instructed in the science of soil mechanics so that they can apply this to the problems associated with and the design of foundations, slopes, and other ground engineering problems. Students will be instructed in geologic hazards and geotechnical disasters to impress upon them the importance of proper care and attention to the ground. As part of the design considerations students will consider the sustainability associated with ground engineering.</p> <p>Students will also be provided with an in-depth review of ground investigation procedures so that they have an appreciation of the importance of ground investigation in the overall success of civil engineering projects.</p> <p>Students will be instructed in various aspects of soil mechanics such as effective stress, strengths of soils, flow of water in soil etc. There will be a review of laboratory work to introduce the students to the main geotechnical tests such as plastic limit/liquid limit, shear strength and consolidation testing.</p> <p>Students will be provided with an overview of the Eurocode for geotechnical design. They will study implementation of the Eurocode procedures and soil mechanics principles via straight forward exercises in foundation, slopes and retaining wall design.</p> <p>This module will support students to develop their UWS graduate attributes, namely: Academic (critical and analytical thinking, inquiring, knowledgeable, innovation, and problem solving); Personal (effective communicator, creative, imaginative); Professional (Collaborative, research-minded, and socially responsible).</p> <ul style="list-style-type: none"> • Introduction to and review of the basic principles of soil mechanics. • Introduction to and review of the basic procedures of foundation design, retaining wall design and slope stability analysis. • Introduction to basic soil laboratory testing procedures and the analysis of results. 			

Module Delivery Method					
Face-To-Face	Blended	Fully Online	HybridC	Hybrid0	Work-Based Learning
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
See Guidance Note for details.					

Campus(es) for Module Delivery

The module will normally be offered on the following campuses / or by Distance/Online Learning: (Provided viable student numbers permit) (tick as appropriate)						
Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Add name

Term(s) for Module Delivery					
(Provided viable student numbers permit).					
Term 1	<input type="checkbox"/>	Term 2	<input checked="" type="checkbox"/>	Term 3	<input type="checkbox"/>

Learning Outcomes: (maximum of 5 statements) These should take cognisance of the SCQF level descriptors and be at the appropriate level for the module. At the end of this module the student will be able to:	
L1	To be able to comment on and make suggestions concerning ground investigations.
L2	To be able to apply basic principles of soil mechanics to simple designs for foundations, soil slopes and retaining walls.
L3	To be able to understand simple soil laboratory tests to gain parameters for design.

Employability Skills and Personal Development Planning (PDP) Skills	
SCQF Headings	During completion of this module, there will be an opportunity to achieve core skills in:
Knowledge and Understanding (K and U)	<p>SCQF Level 9</p> <ul style="list-style-type: none"> Students will develop an appreciation of Geotechnical engineering as a specialism in the broader field of Civil Engineering. Students will have an understanding of the theory of soil mechanics.
Practice: Applied Knowledge and Understanding	<p>SCQF Level 9</p> <ul style="list-style-type: none"> Soil laboratory tests and analysis
Generic Cognitive skills	<p>SCQF Level 9</p> <p>Review proposed designs of foundations, soil slopes and retaining walls.</p>

Communication, ICT and Numeracy Skills	SCQF Level 9 Use and development of spreadsheets to deal with specific problems. Interpretation skills involved with summarizing and presenting the contents of a technical paper.	
Autonomy, Accountability and Working with others	SCQF Level 9 Working under guidance in a soils laboratory environment.	
Pre-requisites:	Before undertaking this module the student should have undertaken the following:	
	Module Code:	Module Title:
	Other:	
Co-requisites	Module Code:	Module Title:

*Indicates that module descriptor is not published.

Learning and Teaching	
In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours.	
Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	Student Learning Hours (Normally totalling 200 hours): (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture/Core Content Delivery	24
Tutorial/Synchronous Support Activity	12
Laboratory/Practical Demonstration/Workshop	12
Independent Study	152
	200 Hours Total
**Indicative Resources: (eg. Core text, journals, internet access)	

The following materials form essential underpinning for the module content and ultimately for the learning outcomes:

Frank et al, 2004, Designer's Guide to En 1997-1 Eurocode 7: Geotechnical design – General Rules

Simons et al, 2002, A short course in Geotechnical Site Investigation

Simons & Manzies, 2000, A short course in Foundation Engineering (2nd Edition)

Simons et al, 2001, A short course in Soil and Rock Slope Engineering

Smith, I. M. (2014) Smith's elements of soil mechanics. 1st edn. John Wiley & Sons Ltd.

Knappett J & R.F. Craig, 2012. Craig's Soil Mechanics, 8th Edition. CRC Press, Taylor & Francis.

Please ensure the list is kept short and current. Essential resources should be included, broader resources should be kept for module handbooks / Aula VLE.

Resources should be listed in Right Harvard referencing style or agreed professional body deviation and in alphabetical order.

(*N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Attendance and Engagement Requirements

In line with the [Student Attendance and Engagement Procedure](#): Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time.

For the purposes of this module, academic engagement equates to the following:

- Attending the lectures, tutorials, and lab sessions.
- Engaging, participating, and delivering coursework, assignments in due time.

Equality and Diversity

The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: [UWS Equality, Diversity and Human Rights Code](#).

Please ensure any specific requirements are detailed in this section. Module Co-ordinators should consider the accessibility of their module for groups with protected characteristics..

(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	Engineering
Assessment Results (Pass/Fail)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
School Assessment Board	Civil Engineering and Quality Management
Moderator	Shakun Paudel
External Examiner	Jonathan Oti
Accreditation Details	This module is accredited by the Joint Board of Moderators as part of BEng (Hons) Civil Engineering & GA-BEng (Hons) Civil Engineering.
Changes/Version Number	4.03 April 2024 - Assessment 2 changed to "Unseen Closed Book Class Test" from "Unseen open book". Assessment outcome grid updated.

Assessment: (also refer to Assessment Outcomes Grids below)
Assessment 1 - Coursework 40%
Assessment 2 - Examination 60% Unseen Closed Book Class Test.
(N.B. (i) Assessment Outcomes Grids for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed. (ii) An indicative schedule listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Module Handbook.)

Assessment Outcome Grids (See Guidance Note)

Component 1					
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Design/ Diagram/ Drawing/ Photograph/ Sketch Portfolio of practical work	✓	✓	✓	20	6
Laboratory/ Clinical/ Field notebook			✓	10	1
Presentation	✓			10	1

Component 2					
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Unseen Closed Book Class Test	✓	✓	✓	60	2
Combined Total for All Components				100%	10 hours