Module Descriptor

Title	Applied Soil Mechanics		
Session	2025/26	**Status**	Published
Code	ENGG09016	**SCQF Level**	9
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	D Boumezerane		

Summary of Module

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.

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.

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.

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.

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).

- 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	On-Campus[1] ☒	Hybrid[2] ☐	Online[3] ☐	Work -Based Learning[4] ☐
Campuses for Module Delivery	☐ Ayr ☐ Dumfries	☐ Lanarkshire ☐ London ☒ Paisley	☐ Online / Distance Learning ☐ Other (specify)	

Terms for Module Delivery	Term 1	☐	Term 2	☒	Term 3	☐
Long-thin Delivery over more than one Term	Term 1 – Term 2	☐	Term 2 – Term 3	☐	Term 3 – Term 1	☐

Learning Outcomes	
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 simples designs for foundations, soil slopes and retaining walls.
L3	To be able to understand simple soil laboratory tests to gain parameters for design.
L4	N/A
L5	N/A

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)	**SCQF 9** • 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	**SCQF 9** • Soil laboratory tests and analysis
Generic Cognitive skills	**Please select SCQF Level** Review proposed designs of foundations, soil slopes and retaining walls.

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

Communication, ICT and Numeracy Skills	**SCQF 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 9** Working under guidance in a soils laboratory environment

Prerequisites	**Module Code**	**Module Title**
	Other	
Co-requisites	**Module Code**	**Module Title**

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** (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
n/a	0
n/a	0
TOTAL	200

Indicative Resources
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 edition: John Wiley & Sons Ltd. Knappett J & R.F. Craig (2012) Craig's Soil Mechanics. 8th Edition: CRC Press, Taylor & Francis.

(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:** The School of Computing, Engineering and Physical Sciences considers attendance and engagement to mean a commitment to attending, and engaging in, timetabled sessions. You will scan your attendance via the scanners each time you are on-campus and you will login to the VLE several times per week. Where you are unable to attend a timetabled learning session due to illness or other circumstance, you should notify the Programme Leader that you cannot attend. Across the School an 80% attendance threshold is set. If you fall below this, you will be referred to the Student Success Team to see how we can best support your studies.

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. Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on inclusive learning and teaching practice. This module has lab-based teaching and as such you are advised to speak to the Module Co-ordinator to ensure that specialist assistive equipment, support provision and adjustment to assessment practice can be put in place, in accordance with the University's policies and regulations.
(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 Physical Sciences**
Overall Assessment Results	☐ **Pass / Fail** ☒ **Graded**
Module Eligible for Compensation	☐ **Yes** ☒ **No** **If this module is eligible for compensation, there may be cases where compensation is not permitted due to programme accreditation requirements. Please check the associated programme specification for details.**
School Assessment Board	Civil Engineering and Quality Management
Moderator	S Paudel
External Examiner	M Bock
Accreditation Details	This module is accredited by the Joint Board of Moderators as part of BEng (Hons) Civil Engineering & GA-BEng (Hons) Civil Engineering.

Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
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
Unseen Closed Book Class Test 60%
Assessment 3
(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.)

Component 1							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Design/ Diagram/ Drawing/ Sketch/ Portfolio of practical work/Laboratory/ /Presentation	☒	☒	☒	☐	☐	40	8

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Unseen Closed Book Class Test	☒	☒	☒	☐	☐	60	2

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
	☐	☐	☐	☐	☐		
Combined total for all components						100%	10 hours

Change Control

What	When	Who