

Module Code	CEU44A51
Module Name	4A5(1) Geotechnical Engineering I
ECTS Weighting¹	5 ECTS
Semester taught	Semester 1
Module Coordinator/s	David Igoe
Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline	On successful completion of this module, students should be able to: LO1. Predict the effective stresses in the ground for hydrostatic and artesian conditions LO2. Assess the principal tests used to determine the strength, stiffness and compressibility parameters of soil and when they are used LO3. Determine the stresses in the ground due to the loading from a foundation on the surface LO4. Estimate the elastic and consolidation settlements of a foundation LO5. Determine the at rest, active and passive earth pressures on retaining walls LO6. Design a cantilever embedded and a gravity retaining wall LO7. Calculate the bearing capacity and design a shallow foundation LO8. Analysis of slope stability using slip surfaces and method of slices Graduate Attributes: levels of attainment To act responsibly - Enhanced To think independently - Enhanced To develop continuously - Enhanced To communicate effectively - Enhanced
Module Content	The objectives of the module are to advance from the basic soil mechanics principles presented in the JS CEU33A5 module, so as to: • Provide students with a good understanding of the properties of soil and how to determine them • Enable students carry out geotechnical designs involving slope stability, bearing capacity, settlement of spread foundations and earth pressures acting on retaining structures

¹ [TEP Glossary](#)

Teaching and Learning Methods	Lectures, Invited talks, Laboratory Practicals and Tutorials.				
Assessment Details² Please include the following: • Assessment Component • Assessment description • Learning Outcome(s) addressed • % of total • Assessment due date	Assessment Component	Assessment Description	LO Addressed	% of total	Week due
	Examination	2 hour examination	LO1-8	80	
	Coursework	5 x Tutorials and 2 x Practicals in Geotech Lab	LO1-8	20	
Reassessment Requirements	100% Written Examination				
Contact Hours and Indicative Student Workload²	Contact hours: 38 hours (Online Lectures + Labs + Tutorials) Independent Study (preparation for course and review of materials): 40 hours Independent Study (preparation for assessment, incl. completion of assessment): 45 hours				
Recommended Reading List	Craig's Soil Mechanics, Eighth Edition. Jonathan Knappett and R.F. Craig. CRC Press.				
Module Pre-requisite	CEU33A05				
Module Co-requisite					
Module Website	https://www.tcd.ie/Engineering/undergraduate/baiyear4/modules/4A5.pdf				
Are other Schools/Departments involved in the delivery of this	No				

² [TEP Guidelines on Workload and Assessment](#)

module? If yes, please provide details.

Module Approval Date

Approved by

Academic Start Year September 2024

Academic Year of Date 2024-25