Module Code	CE7S06
Module Name	S6: Offshore Geotechnical Engineering
ECTS Weighting[1]	5 ECTS
Semester taught	Semester 2
Module Coordinator/s	Associate Prof. David Igoe (igoed@tcd.ie) Lecturers: David Igoe (50%), Brendan O'Kelly (25%), Breiffni Fitzgerald (25%)
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. Discuss the basic geotechnical design requirements of offshore structures LO2. Perform design calculations to size offshore Jacket Piles LO3. Perform design calculations to size offshore Monopiles LO4. Design a site investigation for an offshore structure or wind farm. L05. Perform calculations to determine the environmental loading on an offshore structures. **Graduate Attributes: levels of attainment** To act responsibly - Enhanced To think independently - Enhanced To develop continuously - Enhanced To communicate effectively - Enhanced
Module Content	Foundations for offshore structures can often represent up to 30% of the overall cost of the structure. This module will provide an understanding of geotechnical engineering for fixed bottom offshore structures focussing on offshore wind. The module will cover the basics of geotechnical engineering for offshore foundation design and describe how the principles of soil-structure interaction can be applied to optimise the design of these structures. This module will examine the following topics: • Introduction to Offshore Foundation Engineering • Introduction into Jacket Structure Foundation Design • Jacket Pile Design Methods – Traditional Design and State of the Art • Introduction to Offshore Monopole Design • Monopile Design Process and Standards • Recent Advances in Monopile Design

[1] TEP Glossary

	• Site Investigations - Laboratory and In-situ testing • Dynamics and Loading of offshore structures
Teaching and Learning Methods	Lectures and coursework

Assessment Details[2]
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	3 hour In person exam	L01-L05	80	
Coursework	2 x take home assignments	L01-L03	20	

Reassessment Requirements	
Contact Hours and Indicative Student Workload[2]	**Contact hours:** 27 hours of lectures Coursework comprising 2 x Design Exercises
	Independent Study (preparation for course and review of materials):
	Independent Study (preparation for assessment, incl. completion of assessment):
Recommended Reading List	Offshore Geotechnical Engineering – Randolph & Gourvenec – Taylor & Francis 2011
Module Pre-requisite	CEU33A5, CEU44A51

[2] TEP Guidelines on Workload and Assessment

Module Co-requisite	
Module Website	
Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.	No
Module Approval Date	
Approved by	
Academic Start Year	September 2025
Academic Year of Date	2025-26