

<b>Module Code</b>	CE7S06
<b>Module Name</b>	S6: Offshore Geotechnical Engineering
<b>ECTS Weighting<sup>1</sup></b>	5 ECTS
<b>Semester taught</b>	Semester 2
<b>Module Coordinator/s</b>	Assistant Prof. David Igoe ( <a href="mailto:igoed@tcd.ie">igoed@tcd.ie</a> ) Lecturers: David Igoe (50%), Brendan O’Kelly (25%), Breiffni Fitzgerald (25%)
<b><u>Module Learning Outcomes</u> with reference to the <u>Graduate Attributes</u> and how they are developed in discipline</b>	<p>On successful completion of this module, students should be able to:</p> <p>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.  LO5. Perform calculations to determine the environmental loading on an offshore structures.</p> <p><b>Graduate Attributes: levels of attainment</b>  To act responsibly - Enhanced  To think independently - Enhanced  To develop continuously - Enhanced  To communicate effectively - Enhanced</p>
<b>Module Content</b>	<p>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.</p> <p>This module will examine the following topics:</p> <ul style="list-style-type: none"> <li>• Introduction to Offshore Foundation Engineering</li> <li>• Introduction into Jacket Structure Foundation Design</li> <li>• Jacket Pile Design Methods – Traditional Design and State of the Art</li> <li>• Introduction to Offshore Monopile Design</li> <li>• Monopile Design Process and Standards</li> <li>• Recent Advances in Monopile Design</li> <li>• Site Investigations - Laboratory and In-situ testing</li> </ul>

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<sup>1</sup> [TEP Glossary](#)

- Dynamics and Loading of offshore structures

**Teaching and Learning Methods**

Lectures and coursework

**Assessment Details<sup>2</sup>**

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	4 x take home assignments	L01-L03	20	

**Reassessment Requirements**

**Contact Hours and Indicative Student Workload<sup>2</sup>**

<p><b>Contact hours:</b> 27 hours of lectures Coursework comprising 4 x Design Exercises</p>
<p><b>Independent Study (preparation for course and review of materials):</b></p>
<p><b>Independent Study (preparation for assessment, incl. completion of assessment):</b></p>

**Recommended Reading List**

Offshore Geotechnical Engineering – Randolph & Gourvenec – Taylor & Francis 2011

**Module Pre-requisite**

CEU33A5, CEU44A51

<sup>2</sup> [TEP Guidelines on Workload and Assessment](#)

<b>Module Co-requisite</b>	
<b>Module Website</b>	
<b>Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.</b>	No
<b>Module Approval Date</b>	
<b>Approved by</b>	
<b>Academic Start Year</b>	September 2022
<b>Academic Year of Date</b>	2022-23