

CE 586 Offshore Engineering

Credit and Contact hours	3 / 3 (Lectures), 0 (Tutorials), 0 (Laboratory)														
Required, or Elective	Elective														
Course Description	This course explores offshore geotechnical engineering, the marine environment, and sediment behavior. Key topics include offshore site investigation, types of offshore structures, pile and drilled shaft foundations, jacket structures, and geohazards. Students gain advanced skills in analyzing and designing offshore foundations, preparing them for technical and leadership roles in the offshore energy and infrastructure sectors.														
Prerequisites or Co-requisites	None														
Course Learning Outcomes	<p>Students completing this course successfully will be able to:</p> <table> <thead> <tr> <th>Course Learning Outcomes (CLOs)</th><th>Related Student Outcomes (SO)</th></tr> </thead> <tbody> <tr> <td>CLO1. Recognize different types of offshore structures and their distribution worldwide. K1</td><td>SO1</td></tr> <tr> <td>CLO2. Recognize different types of geohazards in offshore engineering. K1</td><td>SO1</td></tr> <tr> <td>CLO3. Identify the methods of site investigation for offshore environment and determine the site characteristics. S1</td><td>SO2</td></tr> <tr> <td>CLO4. Estimate bearing capacity for different types of piles for offshore environments. S1</td><td>SO2</td></tr> <tr> <td>CLO5. Estimate bearing capacity for different types of drilled shafts for offshore environments. S1</td><td>SO2</td></tr> </tbody> </table>	Course Learning Outcomes (CLOs)	Related Student Outcomes (SO)	CLO1. Recognize different types of offshore structures and their distribution worldwide. K1	SO1	CLO2. Recognize different types of geohazards in offshore engineering. K1	SO1	CLO3. Identify the methods of site investigation for offshore environment and determine the site characteristics. S1	SO2	CLO4. Estimate bearing capacity for different types of piles for offshore environments. S1	SO2	CLO5. Estimate bearing capacity for different types of drilled shafts for offshore environments. S1	SO2		
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Student Outcomes related to this Course	<p>SO 1 Recognize advanced engineering knowledge, concepts, and techniques to identify, interpret, and analyze complex and real-life engineering problems.</p> <p>SO 2 Provide solutions for complex and real-life engineering problems through critical thinking and the use of modern engineering tools, and identify their impact on social, global, cultural, environmental, safety, and economic factors.</p>														
Topics Covered	<table> <thead> <tr> <th>List of Topics</th><th>Related CLOs</th></tr> </thead> <tbody> <tr> <td>1. Introduction to offshore geotechnical engineering</td><td>CLO 1,2</td></tr> <tr> <td>2. The marine environment and its sediments</td><td>CLO 1,2,3</td></tr> <tr> <td>3. Offshore site investigation</td><td>CLO 2,3</td></tr> <tr> <td>4. Types of offshore structures</td><td>CLO 3</td></tr> <tr> <td>5. Pile foundations and jacket structures</td><td>CLO 4</td></tr> <tr> <td>6. Drilled shaft foundations</td><td>CLO 1,2,5</td></tr> </tbody> </table>	List of Topics	Related CLOs	1. Introduction to offshore geotechnical engineering	CLO 1,2	2. The marine environment and its sediments	CLO 1,2,3	3. Offshore site investigation	CLO 2,3	4. Types of offshore structures	CLO 3	5. Pile foundations and jacket structures	CLO 4	6. Drilled shaft foundations	CLO 1,2,5
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	7. Geohazards	CLO 1,2
Textbook(s) and Other Required Material	<ul style="list-style-type: none">• Offshore engineering books and related research papers• Students are encouraged to read different journal papers concerning offshore geotechnical engineering	
Grading System	Assignments	20%
	Project work	20%
	Mid-term exam	20%
	Final Exam	40%
Instructors	Prof. Abdullah Al-Mhaidib	
Date of Review	November, 2024	