

Course Information	
Course title	Foundation Design and Analysis
Semester	114-2
Designated for	VARIOUS PROGRAM Offshore Wind Energy Program
Instructor	Jiunn-Shyang Chiou
Curriculum Number	CIE7208
Curriculum Identity Number	521EM3700
Class	
Credits	3.0
Full/Half Yr.	Half
Required/ Elective	Elective
Time	Monday 2,3,4(9:10~12:10)
Remarks	The upper limit of the number of students: 30.
Course introduction video	
Table of Core Capabilities and Curriculum Planning	Table of Core Capabilities and Curriculum Planning
Course Syllabus	
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Course Description	1. Foundation design principles 2. Foundation analysis methods 3. Design and analysis of shallow foundations 4. Design and analysis of deep foundations 5. Seismic design considerations
Course Objective	This course introduces design and analysis of shallow and deep foundations, along with associated construction methods. This course focuses on foundation analysis. In place of empirical design methods, this course trains students to apply theories of mechanics of elasticity, mechanics of plasticity, structural mechanics and soil mechanics, and numerical methods for performing analysis and design of various

	foundations. Through this course, students can have foundation design and analysis abilities.																		
Course Requirement	Prerequisite courses: Soil Mechanics, Foundation Engineering, and Mechanics of Materials																		
Student Workload (Expected weekly study hours before and/or after class)																			
Office Hours	Appointment required.																		
Designated reading																			
References	1. Coduto, D.P. (2001). Foundation Design: Principles and Practices, 2nd edition (Prentice Hall). 2. Scott, R.F. (1981). Foundation Analysis (Prentice Hall). 3. Das, B.M. (2016). Principles of Foundation Engineering, 8th edition (CL Engineering). 4. Salgado, R. (2008). The Engineering of Foundations (McGraw-Hill). 5. 內政部建築物基礎構造設計規範（民國 113 年） 6. Other related design specifications and literature																		
Grading	<table border="1"> <thead> <tr> <th>No.</th><th>Item</th><th>%</th><th>Explanations for the conditions</th></tr> </thead> <tbody> <tr> <td>1.</td><td>Homework & Participation</td><td>50%</td><td>5 assignments</td></tr> <tr> <td>2.</td><td>Midterm</td><td>25%</td><td></td></tr> <tr> <td>3.</td><td>Final</td><td>25%</td><td></td></tr> </tbody> </table> 1. NTU has not set an upper limit on the percentage of A+ grades. 2. NTU uses a letter grade system for assessment. The grade percentage ranges and the single-subject grade conversion table in the NATIONAL TAIWAN UNIVERSITY Regulations Governing Academic Grading are for reference only. Instructors may adjust the percentage ranges according to the grade definitions. For more information, see the Assessment for Learning Section .			No.	Item	%	Explanations for the conditions	1.	Homework & Participation	50%	5 assignments	2.	Midterm	25%		3.	Final	25%	
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1.	Homework & Participation	50%	5 assignments																
2.	Midterm	25%																	
3.	Final	25%																	
Progress																			
Week	Date	Topic																	
Week 1	2/23	Sec. 1 Introduction; Sec. A1 SAP 2000																	
Week 2	3/2	Sec. 1.1 Tolerable Total Settlement Sec. A2 Finite Element Method																	

Week 3	3/9	Sec. 2 Shallow Foundation Design
Week 4		Sec. 2 Shallow Foundation Design
Week 5		Sec. 2.1 Structural Design of Mat Foundations Sec. A3 Plastic hinge method
Week 6		Sec. 3 Beam on Elastic Foundation
Week 7		Sec. 4 Vertical Subgrade Reaction Coefficient Sec. 5 Moment-Rotation Response of a Rigid Footing
Week 8		Sec. 6 Construction of Pile Foundations Sec. 7 Pile Foundation Design
Week 9		Midterm
Week 10		Sec. 7 Pile Foundation Design Sec. 8 Theoretical Single Pile Analysis (Vertically and laterally loaded piles)
Week 11		Sec. 7 Pile Foundation Design Sec. 9a Pile Analysis Methods I
Week 12		Sec. 7 Pile Foundation Design Sec. 9b, 9c Pile Analysis Methods II, III
Week 13		Sec. 10 Pile Load Testing Sec. 11 Deducing p-y curves
Week 14		Sec. 12 Introduction to Seismic Foundation Design
Week 15		Sec. 13 Caisson Foundation Design and Analysis