國立台灣科技大學 114學年 第2學期　課程大綱

Spring 2026 NTUST Course Outline

授課教師：葉馥瑄

Instructor:Fu-Hsuan Yeh

課程名稱：高等基礎工程

Course Title：Advanced Foundation Engineering

2026/11/3

課程代號：CT5608701 Course Code 學分數：3 Credits	必選修：選修/半學年 Required/Electve:Elective/Half Yr. 先修課程： Prerequisites
節次教室：R2(IB-602-1) R3(IB-602-1) R4(IB-602-1) Time/Location	
專業核心能力： Core Professional Competencies	
課程網址：N/A Course Website	
課程宗旨： Course Objectives	Foundation engineering involves designing foundations for various structures, including buildings, bridges, retaining walls, tanks, offshore structures, dams, highway pavements, etc. In this class, we will mainly focus on the aspects of foundation engineering - the bearing capacity and settlement of both shallow and deep foundations. Students will review fundamental theories and methods of foundation analysis and design, and better understand them. These fundamental concepts will help you understand the underlying principles that govern soil behavior and its interaction with the foundation. In this course, students will learn the importance of site investigation, how to classify and characterize soils for foundation design, how to estimate foundation capacity, and how to evaluate foundation settlement under the design load. The course will also clearly distinguish between foundation design for cohesive and cohesionless soils.
課程大綱： Outline of Lectures	1. Introduction 2. Geotechnical properties of soil and soil exploration 3. Shallow foundation; Beam on Elastic Foundation; Finite Element Method for Beam-Column Elements 4. Pile under vertical loading: Beyond static capacity (Load transfer mechanisms and settlement analysis; t-z and q-z curves) 5. Piles under lateral loading: Soil-structure interaction (Winkler foundation model; p-y curve method) 6. Pile groups and complex interactions 7. Machine foundations subjected to dynamic loads 8. Soil improvement
授課方式： Method of Instruction	講授 Lecture：65% 分組討論 Group discussion：15% 案例研討 Case study：10% 操做練習 Practical exercises：10% 講授 Lecture：N/A%
教科書： Textbooks	N/A

參考書目： References	1. Coduto, D. P. (2014). Foundation design: principles and practices. Pearson Education Limited. 2. Murthy, V. N. S. (2007). Advanced Foundation Engineering, Geotechnical Engineering Series, India. 3. Ou, C.-Y.et al. (2023). Fundamentals of Foundation Engineering (1st ed.). CRC Press. 4. Tomlinson, M., & Woodward, J. (2014). Pile Design and Construction Practice (6th ed.). CRC Press. ISBN: 9781466592636 5. Das, B. M., & Sivakugan, N. (2018). Principles of foundation engineering. Cengage learning
修課須知： Notice	1. Assignments will be assigned and typically due one week later. Assignments must be uploaded to Moodle before class commences. 2. Assignments and final report: These documents should be submitted electronically as a PDF file, and a hard copy should be delivered in class. 3. Late submission of the assignment and final report is not allowed.
評量方式： Grading	Participation in in-class discussions: 10% Homework: 30% Midterm exam: 20% Term project (report and presentation): 20% Final exam: 20% Total of 100
備註說明： Notes	A prior understanding of the following subjects is required to fully grasp the advanced theories and methods covered in this class: Soil Mechanics, Engineering Mathematics, Foundation Engineering, and Mechanics of Materials.