

College of Engineering

Department of Civil Engineering

جامعة
الملك سعود
King Saud University



CE 582 Advanced Shallow Foundation Engineering

Credit and Contact hours	3/ 3 (Lectures), 0 (Tutorials), 0 (Laboratory)	
Required, or Elective	Required for a MSCE degree	
Course Description	Development of design skills in foundation engineering for upnormal soil type and condition, such as foundation on layered soil , sabkha soil ,expansive soil , collapsing soil , weathered and fractured rock material.	
Prerequisites or Co-requisites	None	
Course Learning Outcomes	Students completing this course successfully will be able to	
	Course Learning Outcomes	Related Program Outcomes
	CLO1: Recognize and identify the distribution of the type of the up-normal soils in the Kingdom of Saudi Arabia, and method of analysis.	K1
	CLO2: Perform necessary experimental lab work for the determination of the soil design parameters	S1
	CLO3: Develop design criteria for the up-normal soil behavior	S1
	CLO4: Perform Characterization of the up-normal soil types.	S1
	CLO5: Explain and analyze alternative methods of treatment for up-normal soils	S1
	CLO6: Design and evaluate alternative methods and design procedures of foundation of the up-normal soils using available design programs in addition to manual design procedure methods	C2
Student Outcomes related to this Course	K1. Recognize advanced engineering knowledge, concepts and techniques to identify, interpret and analyze complex and real-life engineering problems.	

	<p>S1. Provide solution for complex and real-life engineering problems through critical thinking and using modern engineering tools and identify its impact on social and ethical issues.</p> <p>C2. Design novel advanced Civil Engineering systems and evaluate its performance and effectiveness for engineering practice and its impact on society.</p>	
Topics Covered	List of Topics	
	1. Review of the geotechnical soil exploration	CLO1
	2. Studying the sabkha soil and design methods	CLO3
	3. Studying the expansive soil and design criteria.	CLO5
	4. Studying the collapsing soil and foundation methods	CLO4
	5. Foundation on layered soil and comparison with single layered methods	CLO6
	6. Studying the weathered and fractured rock formation	CLO2
Textbook(s) and Other Required Material	<ul style="list-style-type: none"> An Introduction to Geotechnical Engineering by Robert D. Holtz, William D. Kovacs, Thomas C. Sheahan, 2nd Edition. 	
Grading System	Assignments and Lab Reports	20%
	Project Work	20%
	Midterm Exam	20%
	Final Exam	40%
Instructors	Dr. Abdullah Abdulrahman A Almajid (2A101), e-mail: alabduallah@ksu.edu.sa	
Date of Review	February, 2021	