

College of Engineering

Department of Civil Engineering

جامعة
الملك سعود
King Saud University



CE 483 Foundation Engineering

Credit and Contact hours

2/ 2 (Lectures), 2 (Tutorials), 0 (Laboratory)

Required, or Elective

Required for a BSCE degree

Course Description

Site investigations. Bearing capacity of shallow foundations. Settlement of shallow foundations. Spread footings. Combined footings. Mat foundations. General overview of Saudi Building Code for soils and foundations.

Prerequisites or Co-requisites

Reinforced Concrete Design (CE 370) and Geotechnical Engineering-II (CE 481)

Course Learning Outcomes

Students completing this course successfully will be able to

Course Learning Outcomes	Related Student Outcomes (SO)
CLO1. Assess the soil properties by implementing different methods of site investigations.	SO4
CLO2. Select the suitable types of foundation systems for different soils and site conditions considering safety, environmental and economic aspects.	SO4
CLO3. Estimate the soil bearing capacity, settlement of shallow foundations based on different soil parameters and site conditions.	SO4
CLO4. Design different types of foundation including; spread footings, combined footings, and mat foundations to provide the best solution for different soil and site conditions by considering safety, environmental and economic aspects (through a project)	SO2
CLO5. Design of conventional gravity and cantilever retaining walls for different types of soils considering both safety and economic aspects (through a project)	SO2

Student Outcomes related to this Course	<p>SO2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. [ABET 2]</p> <p>SO4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts. [ABET 4]</p>																													
Topics Covered	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%; text-align: center;">List of Topics</th> <th style="width: 20%; text-align: center;">Related CLOs</th> </tr> </thead> <tbody> <tr> <td>1. Introduction of foundation systems.</td> <td style="text-align: center;">CLO2</td> </tr> <tr> <td>2. Site investigations.</td> <td style="text-align: center;">CLO1</td> </tr> <tr> <td>3. Types of foundation and foundation materials.</td> <td style="text-align: center;">CLO2</td> </tr> <tr> <td>4. Bearing capacity of spread footings.</td> <td style="text-align: center;">CLO3</td> </tr> <tr> <td>5. Design of spread footings</td> <td style="text-align: center;">CLO4</td> </tr> <tr> <td>6. Bearing capacity of combined footings.</td> <td style="text-align: center;">CLO3</td> </tr> <tr> <td>7. Design of combined footings.</td> <td style="text-align: center;">CLO4</td> </tr> <tr> <td>8. Bearing capacity of mat foundation and retaining walls</td> <td style="text-align: center;">CLO3</td> </tr> <tr> <td>9. Evaluate the settlement of the selected foundations.</td> <td style="text-align: center;">CLO3</td> </tr> <tr> <td>10. Design of retaining walls</td> <td style="text-align: center;">CLO5</td> </tr> <tr> <td>11. Saudi building code for foundations bearing capacity.</td> <td style="text-align: center;">CLO3</td> </tr> <tr> <td>12. Saudi building code for foundations settlement.</td> <td style="text-align: center;">CLO3</td> </tr> <tr> <td>13. Saudi building code for foundations design.</td> <td style="text-align: center;">CLO4</td> </tr> </tbody> </table>		List of Topics	Related CLOs	1. Introduction of foundation systems.	CLO2	2. Site investigations.	CLO1	3. Types of foundation and foundation materials.	CLO2	4. Bearing capacity of spread footings.	CLO3	5. Design of spread footings	CLO4	6. Bearing capacity of combined footings.	CLO3	7. Design of combined footings.	CLO4	8. Bearing capacity of mat foundation and retaining walls	CLO3	9. Evaluate the settlement of the selected foundations.	CLO3	10. Design of retaining walls	CLO5	11. Saudi building code for foundations bearing capacity.	CLO3	12. Saudi building code for foundations settlement.	CLO3	13. Saudi building code for foundations design.	CLO4
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Textbook(s) and Other Required Material	Principle of Foundation Engineering by Braja M Das, Latest Edition.																													
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Instructors	Dr. Abdullah H. Alsabhan (2A22/3), email; aalsabhan@ksu.edu.sa																													
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