

CE482

Foundation Engineering

(Required for a BSCE degree)

Instructor : Prof. Abdullah I. Al-Mhaidib

Room # : 2A56

Phone # : 4677033

Prerequisite

CE 480 (Soil Mechanics), CE 471 (REINFORCED CONCRETE I)

Topics Covered

1. Site Investigations(3 hrs)
2. Types of foundation and foundation materials. (3 hrs)
3. Bearing capacity of shallow foundation. (15 hrs)
4. Bearing capacity of deep foundations. (12 hrs)
5. Pile foundations and caissons. (6 hrs)
6. Sheet piling. (3 hrs)
7. Retaining walls(3 hrs)

Course learning Objectives

Students completing this course successfully will be able to

- a. Understand the methods of site investigations and determine the site characteristics.
- b. Understand the types of foundations and retaining structures.
- c. Understand the types of loads to be applied to foundations and retaining structures.
- d. Understand suitability, feasibility, and desirability of each type of foundations and retaining structure.
- e. Understand the aims of using the foundations and retaining structure.
- f. Select the proper type of foundation and retaining structure according to the site and structure characteristics.
- g. Evaluate the settlement of the selected foundations.
- h. Understand and apply specification requirements.
- i. Use computer software to design foundations and retaining structures.
- j. Improve the communication skills, including reading, writing, oral presentations.

Class/ tutorial Schedule

Three lecture sessions and one tutorial session per week (50 minute each session)

Computer Applications

Commercial and educational Geotechnical software are encouraged to be used during the course.

Contribution of Course to Meeting the Professional Component

1. Students learn how to make a site investigation plane and the required field and laboratory tests to be used for characterizing the site of construction.
2. Students learn the analysis process to be involved in designing both types of foundations (i.e. shallow and deep foundations) and retaining structures.
3. Students improve their writing, communication and presentation skills.
4. Students recognize the role of professional societies in developing specification requirements.

Relationship of Course to Program Outcomes

1. Students apply principles of soil and rock mechanics.
2. Students are able to apply knowledge in mathematics, physics, and engineering science to civil and engineering problems.
3. Students are able to design experiments and analyze data.
4. Students are able to identify and formulate an engineering problem and to develop a solution.
5. Students recognize the importance of analysis in selecting the type of foundation and the type of retaining structure.
6. Students are able to understand and apply specification requirements.
7. Students recognize the importance of reading and understanding technical contents in English in order to achieve life-long learning and be able to carryout their responsibilities.
8. Students recognize the important role of computers in facilitating analysis and design of dewatering of excavation.
9. Students are encouraged to improve their writing, communication and presentation skills.

Textbook(s) and/or Other Required Material

1. Introduction to Foundation Engineering by Das.
2. Foundation Engineering by Bowels.

Grade Distribution

Mid Term Exam	35%
Homework	10%
Quizzes and Attendance	5%
Final Exam	50%
Total	100%