

Zarqa University

Faculty of Engineering

Department: Civil

Course title: Foundation Engineering



Prerequisite: 0902364,0902348

Instructor:

Lecture's time:

Semester:

Office Hours:

Course description:

Introduction (Geotechnical Properties of soil), Subsurface Exploration, Bearing Capacity (Shallow Foundation Ultimate bearing capacity), Shallow Foundation: Allowable Bearing capacity and settlement, Lateral Earth pressure and Retaining Walls, Factors Consider in foundation design, Spread footing design, special footing and beams on elastic foundations (combined footing and strap footing), Mat Foundation, pile foundation.

Aims of the course:

To provide the students with tools to understand the behavior of soil under different types of footings and retaining walls and to be able to analyze and design them

Intended Learning Outcomes (ILOs):

At the completion of this project management course, the students should be able to

1. Ability to calculate bearing capacity of the soil for shallow foundations.
2. Ability to determine bearing capacity according to settlement criteria
3. Ability to determine bearing capacity under mat foundations
4. Ability to design the foundation.
5. Ability to calculate lateral earth pressure
6. Ability to analyze and design retaining walls
7. Ability to find pile capacity
8. Ability to design pile foundation

Course structures:



Week	C. Hrs	ILOs	Topics	Teaching Procedure	Assessment methods
1	3	1	Bearing capacity under shallow foundation introduction, Terzaghi method	Lectures and tutorial	HW and quizzes
2	3	1	Bearing capacity under shallow foundation general failure method, local failure and shear failure	Lectures and tutorial	HW and quizzes
3	3	1	Bearing capacity under shallow foundation eccentric loads	Lectures and tutorial	HW and quizzes
4	3	2	Settlement under footings	Lectures and tutorial	HW and quizzes
5	3	3	Combined footings and mat foundation	Lectures and tutorial	HW and quizzes
6	3	4	Mid-term exam , structural analysis and design of shallow foundations	Lectures and tutorial	HW and quizzes
7	3	5	Lateral earth pressure	Lectures and tutorial	HW and quizzes
8	3	5	Lateral earth pressure	Lectures and tutorial	HW and quizzes
9	3	6	Analysis and design of retaining walls	Lectures and tutorial	HW and quizzes
10		6	Analysis and design of retaining walls	Lectures and tutorial	HW and quizzes
11	3	7	Deep foundation, piles	Lectures and tutorial	HW and quizzes
12	3	7	End bearing and friction on piles	Lectures and tutorial	HW and quizzes
13	3	8	Design of pile foundation	Lectures and tutorial	HW and quizzes
14	3	8	Design of pile foundation and final exam	Lectures and tutorial	HW and quizzes

References:

1. Principle of foundation engineering ,Baraja Das ,7th edition ,2014
2. Soil mechanics and foundations , 16th edition
Dr. B. C. Punimie, Ashok Kuman Jain, 2005, New Delhi.
3. Geotechnical Engineering: Foundation Design, John N.Cernica, 1995, published by John Wiley and sons Inc.
4. Reinforced Concrete Design, New-Delhi, 2008.

Assessment Methods:

Methods	Grade	Date
Quizzes+ Homeworks	10	
First exam	20	
Second exam	20	
Final exam	50	

