

## COURSE CATALOG

<b>Course Code:</b> CE 332				<b>Course Name:</b> Foundation Engineering			
<b>Semester</b>	<b>T + P + L</b>	<b>Credits</b>	<b>ECTS</b>	<b>Language of Instruction</b>	<b>Course Type</b>	<b>Instruction Methods</b>	<b>Prerequisite(s)</b>
6	3 + 0 + 0	3	5	English	Required (D1)	Lecture	None
<b>Course Objectives</b>			To introduce students a fundamental knowledge of foundation types as well as analysis and design of foundations and earth retaining structures				
<b>Topics Covered</b>			Introduction. Foundations in civil engineering. Performance requirements. Review of soil mechanics. Shallow foundations: spread footings, mats, bearing pressures. Deep foundations: piles, shafts, caps, grade beams, axial and lateral load capacity. Earth retaining structures: lateral earth pressures, cantilever retaining walls, sheet pile walls.				
<b>Learning Outcomes of the Course</b>			<p>The students who pass this course should:</p> <ol style="list-style-type: none"> <li>1- gain basic knowledge of foundation engineering and develop analytical and mathematical skills to identify the foundation engineering problems [1, 2, 3, 4]</li> <li>2- be able to analyze, assess and manipulate laboratory and field data obtained by lab- and insitu – experiments for use in foundation engineering designs [4]</li> <li>3- develop skills for computer usage of packages such as word, excel, matlab [14]</li> <li>4- understand the practical applications of foundation engineering concepts used in geotechnical designs of engineering structures [12, 13, 14]</li> <li>5- gain a basic knowledge about various case studies of geotechnical engineering designs and state-of-the-art insitu experiments [8, 12, 13,14, 16]</li> <li>6- develop skills of conveying technical material through oral presentations and written papers/reports [6, 14]</li> </ol> <p>[Note that the numbers in brackets refer to the bullet numbers in the program outcomes list.]</p>				
<b>ISCED Category of the Course</b>			52 Engineering				
<b>Textbook</b>			Coduto, D. <i>Foundation Design: Principles and Practices</i> . 2nd Edition. Prentice Hall, 2001.				
<b>Recommended Sources</b>			Coduto, D. <i>Temel Tasarımı: İlkeler ve Uygulamalar</i> . 2. Baskı. Gazi Kitabevi, 2005. Çevirenler: Murat Mollamahmutoğlu, Kamil Kayabalı.				

### WEEKLY SCHEDULE

Week	Theoretical Topic	Applied / Laboratory Topics
1	Introduction. Foundations in civil engineering.	
2	Performance requirements.	
3	Review of soil mechanics.	
4	Shallow foundations: spread footings, mats, bearing pressures.	
5	Shallow foundations: analysis of spread footings.	
6	Shallow foundations: analysis of mats. Midterm 1.	
7	Deep foundations: piles, shafts, caps, grade beams.	
8	Deep foundations: axial load capacity.	
9	Deep foundations: axial load capacity.	
10	Deep foundations: lateral load capacity.	
11	Earth retaining structures	
12	Earth retaining structures: lateral earth pressures. Midterm 2.	
13	Earth retaining structures: cantilever retaining walls.	
14	Earth retaining structures: sheet pile walls.	

### COURSE ASSESSMENT POLICY

	Activities	Number	Contribution (%)
<b>Studies throughout the term</b>	<b>Quizes</b>	-	-
	<b>Term Homework/ Project</b>	-	-
	<b>Reports</b>	-	-
	<b>Graduation Thesis/ Project</b>	-	-

	<b>Seminar</b>	-	-
	<b>Homeworks</b>	5	30
	<b>Presentations</b>	-	-
	<b>Midterm Exams</b>	2	35
	<b>Project</b>	-	-
	<b>Laboratory</b>	-	-
	<b>Other (field work)</b>	-	-
<b>FINAL EXAM</b>		1	35
<b>Total</b>			100

### CONTRIBUTION OF THE COURSE TO CIVIL ENGINEERING PROGRAM OUTCOMES

	<b>Program Outcomes</b>	<b>1</b>	<b>2</b>	<b>3</b>
1	The ability to apply knowledge of mathematics, science, and engineering			X
2	The ability to identify, formulate, and solve engineering problems			X
3	The ability to design a system or component to meet desired needs with realistic constraints such as economic, environmental, social, ethical, health and safety, manufacturability and sustainability		X	
4	The ability to analyze and interpret data		X	
5	The ability to design and conduct experiments and apply experimental results to improve processes	X		
6	The ability to convey technical material through oral presentations and written papers/reports		X	
7	The ability to function within multidisciplinary teams	X		
8	The understanding of professional and ethical responsibilities		X	
9	The understanding of the impact of engineering on society	X		
10	The understanding of the necessity to engage in life-long learning	X		
11	The understanding of management and leadership principles and techniques	X		
12	The appreciation of the role of research in civil engineering problems		X	
13	A knowledge of contemporary issues in civil engineering		X	
14	The ability to use modern engineering techniques, skills, and tools		X	
15	The ability to understand and explain basic concepts in management, business, and leadership	X		
16	A commitment to quality, punctuality and continuous improvement		X	

Contribution Level: 1 low, 2 medium, 3 high

### ECTS-WORKLOAD TABLE

<b>ACTIVITIES</b>	<b>Number</b>	<b>Duration (Hour)</b>	<b>Workload(Hour)</b>
Lecture Time	14	3	42
Final Exam (Including Preparation Time)	1	25	25
Quizes	-	-	-
Term Homework / Project	-	-	-
Reports	-	-	-
Graduation Thesis/Project	-	-	-
Seminar	-	-	-
Study Time Outside the Class	14	1	14
Homeworks	5	4	20
Presentations	-	-	-
Midterm Exams (Including Preparation Time)	2	12	24
Project	-	-	-
Laboratory	-	-	-
<b>Total Workload</b>			125
<b>ECTS Credits of the Course (Total Workload / 25)</b>			5

<b>Last update on</b> 10.11.2013	<b>Coordinator / PREPARED BY</b> Cihan BAYINDIR	<b>APPROVED BY</b> Esin İnan
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