

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Course Details				
Code		Academic Year		Semester
BAU304		3		Spring
Title		T	A	L
Soil Mechanics and Foundation Engineering II		2	2	1
ECTS		6		
Language	German			
Level	Undergraduate	✓	Graduate	Postgraduate
Department / Program	Civil Engineering			
Forms of Teaching and Learning	Direct Instruction Method, Demonstration Method			
Course Type	Compulsory	✓	Elective	
Objectives	To learn about the types and purposes of different foundation systems and structures. Additionally, evaluating the applicability of foundation solutions in changing soil conditions is among the objectives of the course. In addition, it is aimed to create the necessary theoretical background for the design and construction of foundation and retaining systems and to develop the ability to analyze the stability of slopes.			
Content	The course includes the execution and evaluation of lab tests. It covers the design of retaining structures and foundation systems. It addresses foundation design processes and slope stability analyses. Additionally, it incorporates the design and assessment processes of pile foundation systems.			
Prerequisites	(BAU302)			
Coordinator	Prof.Dr. Murat Hamderi			
Lecturer(s)	Prof.Dr. Murat Hamderi			
Assistant(s)	Research Assist. Recep Özkan Research Assist. Ozan Subaşı			
Work Placement	Yok			
Recommended or Required Reading				
Books / Lecture Notes	Braja M. Das, 2014. Principles of Geotechnical Engineering, 5th ed., PWS Publishing Company, Boston. Budhu, M., 2010. Soil Mechanics and Foundations. 3rd ed. John Wiley & Sons Inc.			
Other Sources	Grundbau und Bodenmechanik II Skript Prof. Dr.-Ing. F. Rackwitz Fellin, W. (2007). Bodenmechanik und Grundbau Übung.			
Additional Course Material				
Documents				
Assignments				
Exams				
Course Composition				
Mathematics and Basic Sciences	10		%	

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Engineering	50	%
Engineering Design	30	%
Social Sciences		%
Educational Sciences		%
Natural Sciences	10	%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	30
Quiz		
Assignments	3	10
Attendance		
Recitations		
Projects	1	10
Final Exam	1	50
Total		100

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study	14	2	28
Assignments	3	7	21
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations	14	2	28
Laboratory	14	1	14
Projects	1	17	17
Final Exam	1	2	2
Total Work Load			168
ECTS Points(Total Work Load / Hour)			6

Learning Outcomes

1	Understands the importance and methodologies of soil investigations, analyzes, and explains soil investigation data for foundation design.
2	Formulates and solves settlement problems due to loading and calculates the bearing capacity of a foundation base soil.
3	Designs shallow foundations by considering defined requirements and constraints and addressing uncertainties in the design process.

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4	Designs deep foundations by considering defined requirements and constraints and addressing uncertainties in the design process.
5	Selects and applies appropriate techniques and tools to design retaining structures.
6	Analyzes and evaluates slope stability.
7	Develops and demonstrates self-learning skills
8	Identifies, formulates, and evaluates solutions for geotechnical engineering problems; explains the impact of engineering solutions on contemporary issues.

Weekly Content

1	Introduction to foundation engineering, geotechnical properties of soil
2	Subsoil investigation, laboratory and in-situ testing, synthesis of laboratory and field data
3	Bearing capacity analysis
4	Stresses in the soil due to loading and settlement analysis of shallow foundations
5	Design of shallow foundations and mat foundations, rigid methods, non-rigid methods
6	Deep foundation types and definitions, load transfer
7	External and internal stabilized systems, lateral earth pressures
8	Midterm Exam
9	Retaining wall systems
10	Sheet pile walls, Supported Cuts
11	Slope stability analysis
12	Slope stability analysis
13	Axial load capacity and elastic settlement of piles
14	Pile group efficiency, settlement of pile groups, drilled shaft foundations
15	Soil Improvements
16	Final Exam

Contribution of Learning Outcomes to Program Objectives(1-5)

	P1	P2	P3	P4	P5	P6	P7
1	5	3	2	3	2	5	4
2	5	3	1	3	2	5	4
3	5	5	2	4	3	5	4
4	5	5	2	4	3	5	4
5	5	5	2	4	3	5	4
6	5	4	1	3	2	5	4
7	4	2	3	3	2	3	5
8	5	5	3	5	3	4	4

Contribution Level 1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High



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Compiled by:	Recep zkan
Date of Compilation:	20.03.2025