

DEPARTMENT OF CIVIL ENGINEERING  
COURSE SYLLABUS

Course Details				
<b>Code</b>		<b>Academic Year</b>		<b>Semester</b>
BAU302		3		Fall
<b>Title</b>		<b>T</b>	<b>A</b>	<b>L</b>
Soil Mechanics and Foundation Engineering I		2	2	1
<b>ECTS</b>		6		
<b>Language</b>	German			
<b>Level</b>	<b>Undergraduate</b>	✓	<b>Graduate</b>	<b>Postgraduate</b>
<b>Department / Program</b>	Department of Civil Engineering (German)			
<b>Forms of Teaching and Learning</b>	Formal Education			
<b>Course Type</b>	<b>Compulsory</b>	✓	<b>Elective</b>	
<b>Objectives</b>	The course aims to define and assess the physical and mechanical properties of soil as a foundation material. It seeks to teach fundamental soil investigation procedures and methods for analyzing stresses and settlements in soil. The course also addresses the design, load assumptions, and stability verification of foundations and supporting structures for buildings and engineering projects. Additionally, a voluntary semester-long project is intended to help students develop practical skills in these areas.			
<b>Content</b>	The course includes the physical and mechanical properties of soil and their determination in laboratory settings. It covers geotechnical soil investigations, stresses in soil, and the shear and deformation behavior of soils. Additionally, it addresses potential and groundwater flows, structural design, and static calculations. The course also incorporates stability verification of shallow foundations and retaining walls, as well as the assessment of settlement-time behavior.			
<b>Prerequisites</b>	(BAU112)			
<b>Coordinator</b>	Prof. Dr. Murat Hamderi			
<b>Lecturer(s)</b>	Prof. Dr. Murat Hamderi			
<b>Assistant(s)</b>	Research Assist. Recep Özkan Research Assist. Ozan Subaşı			
<b>Work Placement</b>	No			
Recommended or Required Reading				
<b>Books / Lecture Notes</b>	Lang, H. J., Huder, J., Amann, P., & Puzrin, A. M. (2011). Bodenmechanik und Grundbau: Das Verhalten von Böden und Fels und die wichtigsten grundbaulichen Konzepte (9. bearbeitete Auflage). Springer. Kolymbas, D. (2016). Geotechnik: Bodenmechanik, Grundbau und Tunnelbau (4. Auflage). Springer Schmidt, H.; Buchmaier, R.; Vogt-Breyer, C. (2014) Grundlagen der Geotechnik – Geotechnik nach Eurocode. Wiesbaden: Springer			
<b>OtherSources</b>	Lecture Notes and Lecture Presentations			
Additional Course Material				
<b>Documents</b>	--			

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Assignments	--		
Exams	--		
<b>Course Composition</b>			
Mathematics und Basic Sciences			%
Engineering	50		%
Engineering Design	10		%
Social Sciences	10		%
Educational Sciences			%
Natural Sciences	30		%
Health Sciences			%
Expert Knowledge			%
<b>Assessment</b>			
<b>Activity</b>	<b>Count</b>	<b>Percentage (%)</b>	
Midterm Exam	1	40	
Quiz			
Assignments	6	10	
Attendance			
Recitations			
Projects			
Final Exam	1	50	
		<b>Total</b>	<b>100</b>
<b>ECTS Points and Work Load</b>			
<b>Activity</b>	<b>Count</b>	<b>Duration</b>	<b>Work Load (Hours)</b>
Lectures	14	2	28
Self-Study	14	4	56
Assignments	6	6	36
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations	14	2	28
Laboratory	14	1	14
Projects			
Final Exam	1	3	3
		<b>Total Work Load</b>	<b>168</b>
	<b>ECTS Points(Total Work Load / Hour)</b>		<b>6</b>
<b>Learning Outcomes</b>			

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1	Students learn to describe the physical properties of soil and assess its mechanical behavior as a building ground.
2	Students can understand soil stresses and determine settlements.
3	Students learn and apply settlement calculation methods in civil engineering structures.
4	Students can design shallow foundations and retaining walls, analyze their stability, and assess their performance.
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12	

**Weekly Content**

1	Introduction, formation of rocks and soil
2	Physical properties of the soil
3	Water in the subsoil
4	Stresses in the soil
5	Stress transformation and representation in Mohr's stress circle
6	Settlement calculation
7	Pressure and time-settlement behavior
8	Midterm Exam
9	Shear strength
10	Introduction to earth pressure and earth pressure theories
11	Distribution of the earth pressure and graphical methods of determining the earth pressure
12	Basics of geotechnical design
13	Geotechnical report and standards
14	Stability Control
15	Static failure and failure theories
16	Final Exam

**Contribution of Learning Outcomes to Program Objectives**

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

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2	5	3	1	3	2	5	4
3	5	4	2	3	2	5	4
4	5	5	2	4	3	5	4
5							
6							
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10							
11							
12							
<b>Contribution Level</b>	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High						
<a href="https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&amp;curSunit=5728">https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&amp;curSunit=5728</a>							
<b>Compiled by:</b>	Recep ÖZKAN						
<b>Date of Compilation:</b>	20.03.2025						