

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Course Details				
Code		Academic Year		Semester
BAU201		2		Fall
Title		T	A	L
Construction Chemicals and Building Materials I		2	1	2
ECTS		6		
Language	German			
Level	Undergraduate	✓	Graduate	Postgraduate
Department / Program	Civil Engineering			
Forms of Teaching and Learning	Formal			
Course Type	Compulsory	✓	Elective	
Objectives	This course aims to provide students with fundamental knowledge of material classification, properties, and the production of binding materials such as cement. The course's goal is to teach the basic principles of material science, help students understand the chemical and physical properties of cement, and provide comprehensive information about the cement production process. Additionally, it seeks to enable students to grasp the role of material properties in engineering applications and to make informed decisions in material selection while considering environmental impacts.			
Content	The course begins with the classification and properties of materials, then explores atomic structure, mechanical properties of materials, and elastic-plastic deformation. An introduction to cement and binding materials will be given, covering cement types, production processes, chemical and mineralogical structures, and physical properties. The hydration process of cement and its environmental impacts will be discussed, along with information on alternative binders. The effects of chemical additives and fundamental concepts in material science will also be covered.			
Prerequisites	--			
Coordinator	--			
Lecturer(s)	Associate Prof.Dr. Ahmet Onur PEHLİVAN			
Assistant(s)	Research Assist. Ali Barış KATRANCI			
Work Placement	--			
Recommended or Required Reading				
Books / Lecture Notes	Concrete: Microstructure, Properties and Materials, McGraw-Hill Professional, Third Edition, 2005, Kumar Mehta Materials for Civil and Construction Engineers: Micheal S. Mamlouk and John P. Zaniewski Pearson Education Inc. (2011) Properties of Concrete, Prentice Hall, Fourth Edition, London, 2000, A. M. Neville			
Other Sources				
Additional Course Material				
Documents	Vorlesungsskript			

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Assignments	--		
Exams	--		
Course Composition			
Mathematics und Basic Sciences	10		%
Engineering	60		%
Engineering Design	10		%
Social Sciences	-		%
Educational Sciences	-		%
Natural Sciences	10		%
Health Sciences	-		%
Expert Knowledge	10		%
Assessment			
Activity	Count	Percentage (%)	
Midterm Exam	1	30	
Quiz	3	20	
Assignments	3	10	
Attendance	-	-	
Recitations	-	-	
Projects	-	-	
Final Exam	1	40	
		Total	100
ECTS Points and Work Load			
Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study	14	5	70
Assignments	3	7	21
Presentation / Seminar Preparation	-	-	-
Midterm Exam	1	3	3
Recitations	14	1	14
Laboratory	14	2	28
Projects	-	-	-
Final Exam	1	4	4
		Total Work Load	154
		ECTS Points (Total Work Load / Hour)	6 ECTS
Learning Outcomes			
1	Understands the basic relationships between building materials and structure.		

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2	Identifies construction materials, evaluates their properties, and demonstrates proficiency in metrological methods used in material testing
3	Recognizes the range of materials used in construction and understands their basic characteristics.
4	Identifies material properties, evaluates their relationship with construction practices, and selects appropriate materials.
5	Learns basic working techniques in the laboratory and summarizes laboratory experiments in protocols.

Weekly Content

1	Introduction
2	Classification of Materials, Properties of Materials
3	Atomic structure, Atomic Arrangement
4	Mechanical properties of materials
5	Stress-deformation, elasticity
6	Elastic and plastic deformation, ductility, hardness, toughness, resilience
7	Dislocations
8	Midterm Exam
9	Introduction to Cement and Binding Materials
10	Cement Types and Production Process
11	Chemical and Mineralogical Structure of Cement
12	Physical Properties of Cement
13	Hydration Process of Cement
14	Environmental Impacts of Cement and Alternative Binders
15	Chemical Additives
16	Final Exam

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

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

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

<https://obs.tau.edu.tr/oibs/bologna/proqLearnOutcomes.aspx?lang=en&curSunit=5728>

Compiled by: Associate Prof.Dr. Ahmet Onur PEHLİVAN - Research Assist. Ali Barış KATRANCI

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TÜRK-ALMAN ÜNİVERSİTESİ
TÜRKISCH-DEUTSCHE UNIVERSITÄT

MÜHENDİSLİK FAKÜLTESİ
FAKULTÄT FÜR INGENIEURWISSENSCHAFTEN

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