

DEPARTMENT OF CIVIL ENGINEERING

Course Details				
Code		Academic Year		Semester
BAU 207		2		Spring
Title		T	A	L
Building Materials and Chemistry II		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	The aim of this course is to provide civil engineering students with basic knowledge about mortar and concrete materials, enabling them to understand the properties of these materials, their areas of application, and how they are used in structural engineering. Students will learn about the types and properties of aggregates, concrete mix calculations, and the fresh and hardened properties of concrete, while also gaining comprehensive knowledge about concrete durability and quality control methods. Furthermore, the course aims to equip students with the ability to make informed decisions regarding material selection and mix design.			
Content	This course will examine the types and properties of aggregates for mortar and concrete, addressing aggregate requirements as well as particle size distribution. The properties of fresh concrete hardened concrete properties, concrete mix design calculations, and concrete quality control tests will be covered in a hands-on laboratory setting, and factors affecting concrete durability will be explained. Additionally, masonry, bituminous materials, and fibres will also be included in the course content.			
Prerequisites	BAU201			
Coordinator	Assoc. Prof. Dr. Ahmet Onur Pehlivan			
Lecturer(s)	Assoc. Prof. Dr. Ahmet Onur Pehlivan			
Assistant(s)	Res. Assist. Ali Barış Katrancı			
Work Placement	None			
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				

DEPARTMENT OF CIVIL ENGINEERING

Assignments	--		
Exams	--		
Course Composition			
Mathematics und Basic Sciences	10		%
Engineering	50		%
Engineering Design	5		%
Social Sciences	-		%
Educational Sciences	5		%
Natural Sciences	15		%
Health Sciences	5		%
Expert Knowledge	10		%
Assessment			
Activity	Count	Percentage (%)	
Midterm Exam	1	30	
Quiz	1	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 Workload	168	
	ECTS Points (Total Workload / Hour)	6	
Learning Outcomes			

DEPARTMENT OF CIVIL ENGINEERING

1	They recognize the types, properties, and requirements of aggregates used for mortar and concrete.
2	They identify the physical and mechanical properties of fresh and hardened concrete and establish the relationship between these properties and concrete quality.
3	They perform concrete mix calculations and apply the necessary methods to optimize the properties of different concrete mixes.
4	They acquire theoretical and practical skills for laboratory work on building materials.

Weekly Content

1	Introduction
2	Aggregates for Mortar and Concrete (Aggregate Types and Properties - Aggregate Requirements)
3	Aggregates for Mortar and Concrete (Particle Size Distribution and Grading Curves)
4	Fresh Concrete Properties 1
5	Fresh Concrete Properties 2
6	Hardened Concrete Properties 1
7	Hardened Concrete Properties 2
8	Midterm Exam
9	Durability 1
10	Durability 2
11	Concrete Mix Design Calculations
12	Concrete Quality Control Tests and Statistical Studies
13	Bituminous Materials
14	Masonry and Masonry Structures
15	Fibers
16	Final Exam

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

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

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