

DEPARTMENT OF CIVIL ENGINEERING

Course Details						
Code			Academic Year			Semester
BAU457			4			Fall
Title			T	A	L	ECTS
Construction Chemistry and Building Materials Testing			3	1	1	6
Language	German					
Level	Undergraduate	✓	Graduate		Postgraduate	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	Compulsory		Elective	✓		
Objectives	In the construction chemistry and building materials testing module, the learning results from the building materials and construction chemicals I and II modules are deepened in terms of content, especially from a chemical point of view. In addition, the students can put the theory-based learning content into practice in experiments in the laboratory.					
Content	<ul style="list-style-type: none">- Fundamentals of chemistry for civil engineers (structure of matter, atomic models, chemical bonds and reaction)- Elements and their connections with particular importance in construction (e.g. alkalis, alkaline earths, silicon, aluminum, ...)- Metals: manufacture, properties and corrosion- Acids and bases, pH calculation- Organic chemistry (simple basics)- Physical chemistry (reaction kinetics)- Practical work in the chemical laboratory: handling laboratory equipment, titration, filtration, simple detection reactions, ...- Building materials testing: Basics of destructive and non-destructive building materials testing- Practical work in the building materials laboratory: use of destructive and non-destructive building material tests with evaluation and interpretation of the test results					
Prerequisites	1.) Module building materials and construction chemistry I passed 2.) Building materials and construction chemicals module II Registered					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						
Recommended or Required Reading						
Books / Lecture Notes	Dietmar Stephan, Baustoffchemie, Beuth, 7. Auflage 2014, 224 S. Roland Benedix, Bauchemie (als e-book in der Bib) ZfP-Bau-Kompodium: www.bam.de/microsites/zfp_kompodium/verz/findex_abc.html					
Other Sources						
Additional Course Material						

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Documents			
Assignments			
Exams			
Course Composition			
Mathematics und Basic Sciences			%
Engineering	100		
Engineering Design			%
Social Sciences			%
Educational Sciences			%
Natural Sciences			%
Health Sciences			%
Expert Knowledge			%
Assessment			
Activity	Count		Percentage (%)
Midterm Exam	2		40
Quiz			
Assignments			
Attendance			
Recitations			
Projects			
Final Exam	1		60
Total			100
ECTS Points and Work Load			
Activity	Count	Duration	Work Load (Hours)
Lectures	14	5	70
Self-Study	13	3	42
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	2	1	10
Recitations			
Laboratory			
Projects			
Final Exam	1	2	15
Total Work Load			137
ECTS Points (Total Work Load / Hour)			6

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Learning Outcomes

1	The students are able to apply the basic relationships of chemistry to building material and chemical processes and to derive macroscopic building material properties from the microscopic properties and the atomic structure.
2	They master basic working techniques in the chemical laboratory and can summarize their practical laboratory tests in protocols. By briefly repeating the building material test, the students consolidate their knowledge of test methods and can also use them safely by working on them in laboratory internships. Specifically for a thesis in the field of building materials and construction chemistry, theoretical and practical skills for performing laboratory work are learned, which can be independently evaluated and interpreted from a scientific point of view.
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Weekly Content

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Contribution of Learning Outcomes to Program Objectives (1-5)							
	P1	P2	P3	P4	P5	P6	P7
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Contribution Level		1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High					
Compiled by:							
Date of Compilation:		17.03.2020					