BACHELOR PROGRAMME COURSE SYLLABUS

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

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1.Semester

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1.1. MAT103 – Calculus I

Course Details				
Code		**Academic Year**		**Semester**
MAT103		1		Fall
Title		**T**	**A**	**L**	**ECTS**
Calculus I		3	2	-	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	The students should • master the differential and integral calculus for functions of a variable as a prerequisite for dealing with mathematical models in engineering, • develop understanding and ability to work with functions in one-dimensional space, • master the vector calculation, • About the methodological basis for mathematical • have a solid foundation in the natural and engineering sciences, • Have a sound knowledge of the scientific and mathematical contents, principles and methods. • master basic terms and techniques and apply them to various (e.g. physical) problems, • Use digital technologies effectively to solve problems. Knowledge &Understanding: 70% Analysis &methodology: 30%					
Content	• Real numbers, number representations, difference, interval • Equations, inequalities, solution sets • Coordinates stems, straight line, slope • Functions, function graphs • Sequences of numbers, convergence and completeness • Limits of functions, continuity • Differences, rates of change, tangents • Differential calculation, derivation of functions • Applications of differential calculus • integral calculus, definite and indefinite integral • Fundamental theorem of analysis • Applications of integral calculus • Infinite series, Taylor series					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	Assist. Prof. Dr. İzzet Göksel					
Assistant(s)	Res. Assist. Mehmet Ali Taş					
Work Placement	--					

Recommended or Required Reading

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Books / Lecture Notes	Thomas, George B. , Analysis I. Pearson Deutschland, Hallbergmoos 2013. - Lothar, Papula, Mathematik für Ingenieure und Naturwissenschaftler, Band 1+2. Wiesbaden, 2011.
Other Sources	Single Variable Calculus [Online Kurs]. MIT Open CourseWare, 2010. URL: http://ocw.mit.edu/courses/mathematics/18-01sc-single-variable-calculus-fall-2010/ [16-03-2020]
Additional Course Material	
Documents	--
Assignments	--
Exams	--

Course Composition		
Mathematics und Basic Sciences	100	%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	40
Quiz		
Assignments		
Attendance		
Recitations		
Projects		
Final Exam	1	60
	Total	**100**

ECTS Point sand Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	3	42
Self-Study	1	62	62
Assignments	10	3	30
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations	14	2	28

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Laboratory			
Projects			
Final Exam	1	3	3
		Total Work Load	**168**
		ECTS Points(Total Work Load / Hour)	**6**

Learning Outcomes	
1	Understands the fundamental concepts of analysis: • Derivation as a “rate of change”, calculated as the limit of a difference quotient; • The integral as an infinite “sum”, calculated as a limit of Riemann sums.
2	Can analyze properties and behavior of functions and sketch function graphs (using asymptotes, critical points, derivation tests to determine slope and curvature behavior).
3	Can use differential calculus to solve application-related problems (e.g. optimization problems, related rates of change).
4	Can use the integral calculation among other things for the calculation of curve lengths, volumes and areas.
5	Can calculate definite and indefinite integrals using appropriate integration methods.
6	Can determine the convergence or divergence of improper integrals and solve convergent improper integrals.
7	Can determine the convergence or divergence of infinite series.
8	Can calculate the Taylor series of any function near a point.
9	
10	
11	
12	

Weekly Content	
1	Functions
2	Limits and Continuity
3	Differentiation
4	Differentiation
5	Applications of Derivatives
6	Applications of Derivatives Transcendental Functions
7	Transcendental Functions
8	Integrals
9	Midterm exam
10	Integrals
11	Techniques of Integration
12	Applications of Definite Integrals Improper Integrals

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13	Sequences and Series
14	Sequences and Series
15	Sequences and Series

Contribution of Learning Out comes to Program Objectives(1-5)

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

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Recep Özkan
Date of Compilation:	16.06.2022

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1.2. BAU109 - Statics

Course Details				
Code		**Academic Year**		**Semester**
BAU109		1		Fall
Title	**T**	**A**	**L**	**ECTS**
Statics	3	2	-	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	Basic terms and equations of mechanics for static systems.					
Content	The students learn the basic terms and equations of mechanics for static systems. You are made aware of the equilibrium conditions in various systems such as bearings, supporting structures and trusses. They are able to analytically calculate the bearing and reaction forces in a rigid body system. You know the relationships for calculating the cutting loads in a beam. In particular, complicated geometry such as the bent and curved beam is taught, so that the students are able to calculate practical examples. Based on what they have learned, the students are able to familiarize themselves independently with other areas of technical mechanics and to take the aspects of technical mechanics in to account in future projects.					
Prerequisites	-					
Coordinator						
Lecturer(s)	Assoc. Prof. Dr. Murat HAMDERİ					
Assistant(s)	Research Assist. Uğur GÜNAY, Research Assist. Ferit YARDIMCI					
Work Placement						
Recommended or Required Reading						
Books / Lecture Notes	-Wolfgang H. Müller, Ferdinand Ferber, Technische Mechanik für Ingenieure, 4. Auflage, Hanser Verlag / Fachbuch Verlag Leipzig. -Russell C. Hibbeler: Technische Mechanik/2 - Festigkeitslehre 8. Aktualisierte Aufl. München: Pearson Studium 2013 (insges. 3 Bände). -Martin Mayr: Technische Mechanik. Übungs Beispiele und Aufgaben. 2. starkerw. Auflage. München: Hanser 2000.					
Other Sources						
Additional Course Material						
Documents	-					
Assignments	-					
Exams	-					
Course Composition						

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Mathematics und Basic Sciences	100	%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	3	42
Self-Study	14	3	42
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations	14	2	28
Laboratory			
Projects			
Final Exam	1	2	15
		Total Work Load	**137**
		ECTS Points(Total Work Load / Hour)	**6**

Learning Outcomes

1	The students know the basic relationships of the technical mechanics of the rigid body (statics).
2	They are familiar with the interdependencies of forces, moments and load transfer in components and are able to carry out static analyzes on structures (bars and beams) themselves.

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3	Based on what they have learned, the students are able to familiarize themselves independently with other areas of technical mechanics and to take the aspects of technical mechanics into account in future projects.
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12	
WeeklyContent	
1	
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11	
12	
13	
14	
15	

Contribution of Learning Out comes to Program Objectives(1-5)

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

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5	5	4	4				
6							
7							
8							
9							
10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Uğur GÜNAY
Date of Compilation:	11.05.2022

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1.3. DEU121 - Technical German I

Course Details				
Code		**Academic Year**		**Semester**
DEU121		1		Fall
Title	**T**	**A**	**L**	**ECTS**
Technical German I	2	-	-	2

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	To make students understand technical and current terms related to Civil Engineering					
Content	Practices to expand technical vocabulary with practical and up-to-date examples, Understanding technical contents related to Civil Engineering and expressing text contents verbally and in written form					
Prerequisites	-					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	Current scientific articles and presentations in German
Other Sources	

Additional Course Material	
Documents	-
Assignments	-
Exams	-

Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences	100	%
Natural Sciences		%

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Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	2	28
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	1	1
Recitations			
Laboratory			
Projects			
Final Exam	1	2	2
		Total Work Load	**31**
		ECTS Points(Total Work Load / Hour)	**2**

Learning Outcomes

1	Learn presentation and reporting

Weekly Content

1	

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

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

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Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	16.03.2020

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1.4. BAU107 - Design Techniques

Course Details				
Code		**Academic Year**		**Semester**
BAU107		1		Fall
Title	**T**	**A**	**L**	**ECTS**
Design Techniques	1	2	1	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	Knowledge in the field of technical drawing. Understanding of dimensions, standards, tolerances of components. Independent familiarization with modeling using 3D CAD systems					
Content	• Fundamentals of technical drawing as a means of information for construction and manufacturing • Create lines, circles, hatching, dimensions, and text. • Information about drawing formats, scale lines and drawing head • Representation and dimensioning of components • Representation of parts using view sand sections • Use of tolerance information and fits • Information about surface marks and hardness information • Standard series • Introduction to standards ***Exercises:*** • Creation of a construction drawing by hand from given standard parts taking into account boundary and connection conditions ***Laboratory:*** • Modeling with a CAD system • Elaboration of a simple construction with all necessary drawings					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	Assoc. Prof. Dr. Enver Vural YAVUZ					
Assistant(s)	Res. Assist. Ozan SUBAŞI, Res. Assist. Uğur GÜNAY					
Work Placement	--					
Recommended or Required Reading						
Books / Lecture Notes	Frey, H. Herrmann, A. Kuhn, V. (1996). Bautechnik Technisches Zeichnen, Deutschland.					
Other Sources	--					
Additional Course Material						
Documents	--					

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Assignments	--	
Exams	--	
Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design	50	%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge	50	%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	40
Quiz		
Assignments		
Attendance		
Recitations		
Projects		
Final Exam	1	60
	Total	**100**

ECTS Points and Workload			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	15	1	15
Self-Study	15	5	75
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations	15	2	30
Laboratory	15	1	15
Projects			
Final Exam	1	2	15
		Total Work Load	**160**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

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1	Fundamentals of technical drawing as a means of information for construction and manufacturing
2	Representation and dimensioning of components
3	Introduction to three-dimensional computer-aided design
4	Procedure and methodical procedure for creating simple components
5	Application of engineering approaches and basic knowledge of work techniques to create simple designs
6	Use of tolerance information and fits
7	Technical Drawing Basics as Information Source of Design and Manufacturing
8	Ability to create and interpret technical drawings for simple designs.
9	Independent creation of a construction drawing according to given boundary conditions
Weekly Content	
1	Fundamentals of technical drawing as a means of information for construction and manufacturing
2	Fundamentals of technical drawing as a means of information for construction and manufacturing
3	Representation and dimensioning of components
4	Representation and dimensioning of components
5	Introduction to Design Hierarchy and Design Methodology in Production Process
6	Introduction to Design Hierarchy and Design Methodology in Production Process
7	Introduction to Standard / Norm Information
8	Introduction to Standard / Norm Information
9	**Midterm Exam**
10	Use of tolerance information and fits
11	Use of tolerance information and fits
12	Creating Manual Technical Drawings of the Given Elements Considering Boundary and Connection Conditions
13	Elaborating the Design with All Necessary Drawings
14	Modeling with 3D Computer Aided Design
15	Modeling with 3D Computer Aided Design

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

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

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8	5			4	3	5	5
9	5			4	3	5	5

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
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Compiled by:	Assoc. Prof. Dr. Enver Vural YAVUZ - Res. Assist. Ozan SUBAŞI
Date of Compilation:	17.05.2022

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1.5. PHY103 – Modern Physics

Course Details				
Code		**Academic Year**		**Semester**
PHY 103		1		Fall
Title		**T**	**A**	**L**	**ECTS**
Modern Physics		3	1	1	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Face to face					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	To present the students fundamentals of modern physics.					
Content	Oscillations, waves, interference and diffraction, special theory of relativity, quantum mechanics					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	Asst. Prof. A. Kazım Çamlıbel					
Assistant(s)	Res. Assist. Recep Özkan, Res. Assist. Uğur Yıldırım					
Work Placement	--					

Recommended or Required Reading	
Books / Lecture Notes	- Physik: Lehr- und Übungsbuch, Douglas C. Giancoli, 2019 - Halliday Physik, David Halliday, Robert Resnick, Jearl Walker, 2017
Other Sources	--

Additional Course Material	
Documents	--
Assignments	5 laboratory reports
Exams	1 midterm exam, 1 final exam

Course Composition		
Mathematics und Basic Sciences	50	%
Engineering	10	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences	40	%
Health Sciences		%
Expert Knowledge		%

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Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	30
Quiz		
Assignments	5	20
Attendance		
Recitations		
Projects		
Final Exam	1	50
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	14	3	42
Self-Study	14	4	56
Assignments	5	4	20
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations	14	1	14
Laboratory	5	6	30
Projects			
Final Exam	1	2	2
		Total Work Load	**166**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes	
1	Students learn the main concepts in modern physics.
2	Students learn the main laws in modern physics.
3	Students can solve complicated problems.
4	Students can conduct fundamental experiments of modern physics and report their results.
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6	
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9	
10	

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Weekly Content	
1	Introduction to modern physics
2	Oscillations
3	Waves and wave propagation
4	Sound waves
5	Kinetic theory of gases
6	Ray optics: reflection and refraction
7	Wave nature of light; interference
8	Diffraction und polarization
9	**Midterm exam**
10	Special theory of relativity
11	Special theory of relativity: energy and mass
12	Early quantum theory and atom models
13	Quantum mechanics
14	Atoms, molecules and solids
15	Nuclear physics and elementary particles

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

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

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Dr. Öğr. Üyesi A. Kazım Çamlıbel
Date of Compilation:	24.05.2021

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1.6. ENG101 – English l

Course Details				
Code		**Academic Year**		**Semester**
ENG101		1		Fall
Title		**T**	**A**	**L**	**ECTS**
English I		3	0	0	2

Language	English					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	This course helps the students build the technical English and business communication skills who need to succeed as an engineer. The lessons and quizzes in this course help them communicate effectively with co/workers, clients, or suppliers. Start with the technical language they need. The students will build the vocabulary and grammar that are common for engineers, giving them the ability to talk about all the parts of your job. They will also develop the business communication skills required for anyone in the global economy. This includes topics like delivering presentations, writing emails, or speaking in meetings. This gives them the ability to communicate across departments with a strong ability in reading, writing, speaking, and listening. They will also work on the common English functions for engineers, such as giving instructions or explaining a process. They will be prepared next time you need to complete a task in English. More than just language, they will develop strategies for polite communication. Learn how to work with others, including working in teams or managing conflict. It is especially important for engineers to learn to communicate with non-technical employees, which they will learn in this course.					
Content	This course gives you the language skills and strategies they need for professional success as an engineer. When they are done you will be more confident and more prepared to handle the challenges you face in the workplace. Below I have listed the target audience for this course which will be ENG101 students at Turkish-German University, • English Learners • Engineers Learning English • Technical Professionals • Engineering students					
Prerequisites	-					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	Ibbotson, M. (2008). Cambridge English for engineering.[1]. Student's book. Ernst Klett Sprachen. Riemer, M. J. (2002). English and communication skills for the global engineer. Global J. of Engng. Educ, 6(1), 91-100.

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	Teacher's supplementary materials and handouts	
Other Sources	-	
Additional Course Material		
Documents	-	
Assignments	-	
Exams	-	
Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences	100	%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	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	3	42
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	1	1
Recitations			
Laboratory			
Projects			
Final Exam	1	2	2

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Total Work Load	**45**
ECTS Points (Total Work Load / Hour)	**2**

Learning Outcomes	
1	Improving technical English and business communication skills
2	Making presentations, writing emails or speaking at meetings

Weekly Content	
1	Introduction to the course and description of the course outline
2	Numbers and Mathematics/ Measurements
3	Discussing Change/ Products and Inventory
4	Safety in the Workplace
5	Polite Business Language
6	Managing Conflict
7	Simplifying a Description
8	Communicating with a Non-Technical Audience
9	**Midterm Exam**
10	Email Writing Assignment / Telephone Skills
11	Giving Instructions/ Reporting Customer Needs
12	Explaining a Process
13	Presentation Skills/ Offers and Requests
14	Advice and Suggestions
15	Advice and Suggestions

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

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

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	16.03.2020

DEPARTMENT OF CIVIL ENGINEERING
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1.7. BAU091 – Introduction to Civil Engineering

Course Details				
Code	Academic Year			Semester
BAU091	1			Fall
Title	T	A	L	ECTS
Introduction to Civil Engineering	2	-	-	2

Language	German					
Level	Undergraduate	✓	Graduate		Postgraduate	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	Compulsory	✓	Elective			
Objectives	Get to know the different areas and methods of civil engineering					
Content	The students get to know different areas of civil engineering such as geotechnical engineering and hydraulic engineering. Introduction to computer-aided modeling in civil engineering. Working with different unit systems.					
Prerequisites	-					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	Harald Nahrstedt Excel + VBA für Ingenieure: Programmieren erlernen und technische Fragestellungen lösen, Springer Vieweg; Auflage: 5., überarb. u. erw. Aufl. 2017 (5. Mai 2017)
Other Sources	

Additional Course Material	
Documents	-

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Assignments	-	
Exams	-	

Course Composition

Mathematics und Basic Sciences		%
Engineering	50	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge	50	%

Assessment

Activity	**Count**	**Percentage (%)**
Midterm Exam	1	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	2	28
Self-Study	14	2	28
Assignments			

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Presentation / Seminar Preparation			
Midterm Exam	1	1	2
Recitations			
Laboratory			
Projects			
Final Exam	1	2	2
		Total Work Load	**60**
		ECTS Points (Total Work Load / Hour)	**2**

Learning Outcomes	
1	The students know the different areas of civil engineering.
2	Students are able to carry out basic physical calculations in metric and English units.
3	The students learn the basic concepts of software development for civil engineering.
4	Based on what they have learned, the students are able to familiarize themselves with other areas of civil engineering.

Weekly Content	
1	Introduction
2	Introduction to civil engineering informatics
3	Introduction to programming with VBA
4	Loops and functions in VBA
5	Introduction to geotechnical engineering
6	Introduction to water engineering
7	Midterm exam
8	Structural analysis: Truss systems
9	**Structural analysis: Forces in 3D**
10	Presentation TU Berlin

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11	Working with the imperial and SI unit systems
12	Reinforced concrete structures: Introduction
13	Prestressed concrete: Introduction
14	Review
15	

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

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

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

2.Semester

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2.1. MAT108 – Calculus ll

Course Details				
Code		**Academic Year**		**Semester**
MAT108		1		Spring
Title		**T**	**A**	**L**	**ECTS**
Calculus II		3	2	0	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	At the end of this lecture, the students should • master the differential and integral calculus of functions with several real variables which are necessary for dealing with mathematical models of engineering sciences, • know basic theorems about functions of several variables and have an idea about the methods of proofs of these theorem • master basic concepts and techniques of calculus and apply them to various (physical) problems, Knowledge & Understanding: 60% Analysis & Methodology: 40%					
Content	• Functions of several variables • Partial differentiation and gradient of scalar functions • The total differential • Error bounds, approximation, applications • Extreme values • Multidimensional integration • Vector fields • Divergence and Curl of Vector fields • Integral theorems about vector fields					
Prerequisites	Recommended: MAT103					
Coordinator	--					
Lecturer(s)	Assoc. Prof. Dr. Haydar Uncu					
Assistant(s)	Res. Assist. Recep Özkan, Arş. Gör. Ali Ömer Baykar, Arş. Gör. Arda Çetiner, Arş. Gör. Osman Taha Kütük, Arş. Gör. Uğur Yıldırım					
Work Placement	--					

Recommended or Required Reading	
Books / Lecture Notes	- Şanal Ziya, Mathematik für Ingenieure, Vieweg+Teubner, Wiesbaden 2009 - Papula Lothar, Mathematik für Ingenieure und Naturwissenschaftler, Band 1+2, Wiesbaden 2011

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Other Sources	- Skriptum „Analysis I für Ingenieure“, Prof. Dr. Dirk Ferus - Skriptum „Analysis II für Ingenieure“, Prof. Dr. Dirk Ferus - http://ocw.mit.edu/courses/mathematics/18-01sc-single-variable-calculus-fall-2010/ - http://ocw.mit.edu/courses/mathematics/18-02sc-multivariable-calculus-fall-2010/ Will be disseminated to the students in digital form

Additional Course Material	
Documents	--
Assignments	--
Exams	--

Course Composition		
Mathematics und Basic Sciences	100	%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	3	42
Self-Study	14	7	98
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	3	3

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Recitations	14	2	28
Laboratory			
Projects			
Final Exam	1	3	3
		Total Work Load	**174**
		ECTS Points (Total Work Load / 28)	**6**

Learning Outcomes	
1	Can do calculations with multivariable functions and apply these calculations to the mathematical models in engineering .
2	Can do basic calculations about vectors, planes and surfaces in three dimensions.
3	Can solve optimization problems related with optimization problems.
4	Can take double and triple integrals and use these calculations to find volumes of objects and areas of surfaces
5	knows the meaning of scalar and vector fields and fundamental integral theorems about vector fields.
6	gets an idea about how the mathematical theorems are proved.
Weekly Content	
1	Parametric representation of curves and polar coordinates
2	Calculation of curve lengths and surface areas, conic sections
3	Vectors in three dimensions
4	Lines and planes in three dimension
5	Surfaces in three dimensions
6	Vector valued functions
7	Partial derivatives
8	Midterm
9	Maximum, minimum and saddle points of two variable functions
10	Double integrals
11	Triple integrals
12	Transformation of double and triple integrals between coordinate systems
13	Vector fields
14	Integral theorems of vector fields
15	Integral theorems of vector fields
Contribution of Learning Outcomes to Program Objectives (1-5)	

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

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=208	
Compiled by:	Recep Özkan
Date of Compilation:	17.06.2022

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2.2. MAT106 – Linear Algebra

Course Details				
Code		**Academic Year**		**Semester**
MAT106		1		Spring
Title	**T**	**A**	**L**	**ECTS**
Linear Algebra	2	2	1	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	This course covers matrix theory and linear algebra. Emphasis is given to topics that will be useful in other disciplines, including systems of equations, vector spaces, determinants and eigenvalues. After successfully completing this course, you will have a good understanding of the following topics and their applications: systems of linear equations, row reduction and echelon forms, matrix operations, linear dependence and independence, vector spaces and subspaces, orthogonal bases and orthogonal projections, determinants and their properties, Cramer's Rule, eigenvalues and eigenvectors, diagonalization of a matrix.					
Content	- Vectors, Matrices - Linear Equations, Gauss-Jordan - Vector Spaces, the four fundamental subspaces, Nullspace, Column Space - Dimension, Basis, Span - Orhogonal vectors and subspaces, projections - Determinants, Cramer’s rule - Eigenvalues, Eigenvectors, Diagonalization and Powers of A					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	Assist. Prof. Dr. İzzet Göksel					
Assistant(s)	Res. Assist. Fatma Sena Karal, Res. Assist. Recep Özkan, Res. Assist. Uğur Yıldırım, Res. Assist. Mustafa Hakan Sandık, Res. Assist. Mustafa Korkut Özarslan					
Work Placement	--					

Recommended or Required Reading	
Books / Lecture Notes	- Lineare Algebra: Einführung, Grundlagen, Übungen Howard Anton, Spektrum Akademischer Verlag, 1998
Other Sources	- Göllmann, Laurenz et.al. *Mathematik für Ingenieure: Verstehen, Rechnen, Anwenden*. Springer Vieweg,2017.

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	- Gilbert Strang. *18.06SC Linear Algebra.* Fall 2011. Massachusetts Institute of Technology: MIT OpenCourseWare,https://ocw.mit.edu. License:Creative CommonsBY-NC-SA. Accessed 2020-03-14.
Additional Course Material	
Documents	--
Assignments	--
Exams	--

Course Composition		
Mathematics und Basic Sciences	100	%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	50
Quiz		
Assignments		
Attendance		
Recitations		
Projects		
Final Exam	1	50
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	14	2	28
Self-Study	14	7	98
Assignments			
Presentation / Seminar Preparation			

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Midterm Exam	1	3	3
Recitations	14	2	28
Laboratory	14	1	14
Projects			
Final Exam	1	3	3
		Total Work Load	**174**
		ECTS Points (Total Work Load / 28)	**6**

Learning Outcomes	
1	Solving Ax = b for square systems by elimination (pivots, multipliers, back substitution, invertibility of A, factorization into A = LU)
2	Complete solution to Ax = b (column space containing b, rank of A, null space of A and special solutions to Ax = 0 from row reduced R)
3	Basis and dimension (bases for the four fundamental subspaces)
4	Least squares solutions (closest line by understanding projections)
5	Orthogonalization by Gram-Schmidt (factorization into A = QR)
6	Properties of determinants (leading to the cofactor formula and the sum over all n! permutations, applications to inv(A) and volume)
7	Eigenvalues and eigenvectors (diagonalizing A, computing powers A^k and matrix exponentials to solve difference and differential equations)
8	Linear transformations and change of basis (connected to the Singular Value Decomposition - orthonormal bases that diagonalize A)
9	Linear algebra applications (graphs and networks, Markov matrices, linear programming)

Weekly Content	
1	Systems of Linear Equations and Matrices
2	Multiplication, Properties of Matrix Operations
3	Special Matrices
4	Gaussian Elimination
5	Elementary Matrices, Inverse Calculation, Determinants by Cofactor Expansion
6	Determinant Calculation, Inversion Formula, Cramer's Rule
7	n-dimensional space, Vectors, Norm, Distance
8	Dot Product
9	Midterm Exam
10	Projection, Cross Product, Lines, Planes
11	Vector spaces, Subspaces, Linear Combinations, Spanning
12	Linear independence, Basis, Dimension

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13	Change Of Basis, Row Space, Column Space, Null Space, Rank, Nullity
14	Eigenvalues, Eigenvectors
15	Similarity, Diagonalization

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

	P1	P2	P3	P4	P5	P6	P7
1	5		3			4	5
2	5		3			4	5
3	5		3			4	5
4	5		3			4	5
5	5		3			4	5
6	5		3			4	5
7	5		3			4	5
8	5		3			4	5
9	5		3			4	5

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Recep Özkan
Date of Compilation:	16.06.2022

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2.3. BAU112 – Strength of Materials

Course Details				
Code		**Academic Year**		**Semester**
BAU112		1		Spring
Title	**T**	**A**	**L**	**ECTS**
Strength of Materials	3	2	-	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	The students are able to perform the stress analysis for beams of any cross section under normal and shear forces as well as bending and torsional moments. They know the relationships between cross-sectional geometry, normal and shear stresses. You are able to independently calculate the axial and polar surface moments of inertia and section modulus for simple and composite cross sections, or to evaluate them using approximate formulas. They know the relationships between the two-dimensional Mohr circle and the concept of the comparative stresses. Fundamentals of the finite elements of linear elastic bodies are taught and applied to the problems just mentioned. Based on what they have learned, the students are able to familiarize themselves independently with other areas of technical mechanics and to take the aspects of technical mechanics into account in future projects.					
Content	First half of the semester: • concept of tension; Shear and normal stresses; statically determined and undetermined rod systems; Bending stress; Steiner's theorem Second half of the semester: • The differential equation of the bending line; MOHR's analogy; Superposition principle; Twisting and torsion; Voltage tensor					
Prerequisites	BAU109					
Coordinator						
Lecturer(s)	Assoc. Prof. Dr. Murat HAMDERİ					
Assistant(s)	Research Assist. Uğur GÜNAY, Research Assist. Ferit YARDIMCI					
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	-Wolfgang H. Müller, Ferdinand Ferber, Technische Mechanik für Ingenieure, 4. Auflage, Hanser Verlag / Fachbuch Verlag Leipzig. -Russell C. Hibbeler: Technische Mechanik/2 - Festigkeitslehre 8. aktualisierte Aufl. München: Pearson Studium 2013 (insges. 3 Bände). -Martin Mayr: Technische Mechanik. Übungsbeispiele und Aufgaben. 2. stark erw. Auflage. München: Hanser 2000.

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Other Sources		
Additional Course Material		
Documents	-	
Assignments	-	
Exams	-	
Course Composition		
Mathematics und Basic Sciences	50	%
Engineering	50	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	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	3	42
Self-Study	14	3	42
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations	14	2	28
Laboratory			

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Projects			
Final Exam	1	2	15
		Total Work Load	**137**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes	
1	The students are able to perform the stress analysis for beams of any cross section under normal and shear forces as well as bending and torsional moments.
2	They know the relationships between cross-sectional geometry, normal and shear stresses.
3	They are able to independently calculate the axial and polar surface moments of inertia and section modulus for simple and composite cross sections, or to evaluate them using approximate formulas.
4	They know the relationships between the two-dimensional Mohr circle and the concept of the comparative stresses
5	Students are able to familiarize themselves independently with other areas of technical mechanics and to take the aspects of technical mechanics into account in future projects.

Weekly Content	
1	Introduction; Terms
2	Tensile and compressive stress and HOOKE's law
3	Tensile and compressive stress and HOOKE's law
4	Shear stress and HOOKE's law Exercise: internal forces, tension and compression in bars
5	Bending stress on the beam
6	Bending stress on the beam
7	The elastic line of the bending beam (bending line)
8	The elastic line of the bending beam (bending line) Exercise: calculation of the bending line
9	**Midterm Exam**
10	Axial rotation / torsion
11	Axial rotation / torsion Exercise: crooked bend, torsion
12	Compound stress
13	Compound stress
14	Repetition and exam preparation
15	Repetition and exam preparation

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

	P1	P2	P3	P4	P5	P6	P7

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1	5	4	4				
2	5	4	4				
3	5	4	4				
4	5	4	4				
5	5	4	4				

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Uğur GÜNAY
Date of Compilation:	11.05.2022

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2.4. ENG102 – English ll

Course Details				
Code		**Academic Year**		**Semester**
ENG102		1		Spring
Title		**T**	**A**	**L**	**ECTS**
English II		3	-	-	2

Language	English					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	Students will be read and understand level B1 Students will be able to interpret written and oral texts. Students will learn words B1 and above. Students will be able to use sentence structures such as requesting, rejecting, suggesting.					
Content	Reading texts compiled on various topics and reading comprehension, vocabulary, speaking and writing activities.					
Prerequisites	-					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	Hutchinson, T. & Sherman, K. (2012). Network 3. Oxford University Press: New York.
Other Sources	English Vocabulary in Use (Elementary and Pre-Intermediate) Graded Readers (Beginner, Elementary and Pre-intermediate) British Council sources

Additional Course Material	
Documents	-
Assignments	-
Exams	-

Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%

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Social Sciences		%
Educational Sciences	100	%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	3	42
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	1	1
Recitations			
Laboratory			
Projects			
Final Exam	1	2	2
		Total Work Load	**45**
		ECTS Points (Total Work Load / Hour)	**2**

Learning Outcomes

1	Students will be read and understand level B1
2	Students will be able to interpret written and oral texts.
3	Students will learn words B1 and above.
4	Students will be able to use sentence structures such as requesting, rejecting, and suggesting.

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Weekly Content	
1	Introduction
2	Guidelines on writing a CV; vocabulary items pertinent to the job application process
3	Talking about everyday jobs at home and at work ; asking for an explanation
4	Reviewing the present perfect tense and the past simple tense
5	Guidelines on summarizing a given text
6	Talking about past activities
7	Everyday expressing: Returning an item
8	Money and banking; talking about money problems
9	**Midterm**
10	Providing feedback concerning the students' written performances
11	Expressing agreement and disagreement; verbs and adjectives; quantity expressions
12	Talking about vacation plans; the first conditional
13	Modal verbs related to obligation
14	Giving advice; making suggestions
15	Revision and course evaluation

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

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

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

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2.5. DEU122 – Technical German ll

Course Details				
Code		**Academic Year**		**Semester**
DEU122		1		Spring
Title		**T**	**A**	**L**	**ECTS**
Technical German II		2	-	-	2

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	To help civil engineering students understand current techniques					
Content	Extending practices for the vocabulary of current examples, civil engineering technical interpreting related and writing with the expression in the content of understanding and the textual content, examining techniques and strategies in non-professional writing					
Prerequisites	-					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	German scientific articles and presentations
Other Sources	

Additional Course Material	
Documents	-
Assignments	-
Exams	-

Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%

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Educational Sciences	100	%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	2	28
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	1	1
Recitations			
Laboratory			
Projects			
Final Exam	1	2	2
		Total Work Load	**31**
		ECTS Points (Total Work Load / Hour)	**2**

Learning Outcomes

1	
2	
3	
4	
5	

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6	
7	
8	
9	
Weekly Content	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

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

	P1	P2	P3	P4	P5	P6	P7
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

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Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

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2.6. BAU092 - Scientific Research Methods

Course Details				
Code		**Academic Year**		**Semester**
BAU092		1		Spring
Title		**T**	**A**	**L**	**ECTS**
Scientific Research Methods		2			2

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	Participation in this course enables effective work with literature sources, in writing in general and especially in project and final papers. Preferably, this course will be combined with students writing their own thesis or comparable text. Specifically, the goals of the course are that students: - know the characteristics of scientific papers. - be able to work with software tools for researching and documenting sources. - be able to identify reliable sources. - know concepts of scientific work. - be able to effectively manage the writing process. To achieve this, the course is divided into a lecture part and small group exercises.					
Content	- How to write a student research project - Project Thesis - research methodology - research procedure - Documentation of scientific work					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	Assoc. Prof. Dr. Enver Vural YAVUZ					
Assistant(s)	Res. Assist. Ozan SUBAŞI					
Work Placement	--					

Recommended or Required Reading	
Books / Lecture Notes	Rules of the scientific work in the engineering sciences
Other Sources	Research methodology in engineering sciences

Additional Course Material	
Documents	Lecture notes
Assignments	--

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Exams	--	
Course Composition		
Mathematics und Basic Sciences	20	%
Engineering	20	%
Engineering Design	5	%
Social Sciences	5	%
Educational Sciences	25	%
Natural Sciences	5	%
Health Sciences	-	%
Expert Knowledge	20	%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	40
Quiz	-	-
Assignments	-	-
Attendance	-	-
Recitations	-	-
Projects	-	-
Final Exam	1	60
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	15	2	30
Self-Study	15	1	15
Assignments			
Presentation / Seminar Preparation			
Midterm Exam			
Recitations			
Laboratory			
Projects			
Final Exam	1	3	3
		Total Work Load	**48**
		ECTS Points (Total Work Load / Hour)	**2**

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Learning Outcomes	
1	Understand subject-specific problems and issues
2	Learn generally accepted scientific rules of study
3	To successfully plan and construct a paper of scientific nature
4	To present insights and results gained in the subject in an articulated, argumentative form
Weekly Content	
1	Introduction
2	Phase 1: Orientation and start of the project Study work.
3	Phase 2: Implementation of the project, documentation, and submission
4	Phase 3: Correction and feedback
5	Purpose of research methodology and quality of research
6	Types of research
7	Preparing the state of the art of research
8	Derive research objectives, questions, and hypotheses.
9	Descriptive studies
10	Elaboration of the solutions
11	Evaluation of the solutions
12	Requirements for good scientific texts
13	Structure
14	Basic rules of writing and language
15	Figures, tables and lists

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

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

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Assoc. Prof. Dr. Enver Vural YAVUZ - Res. Assist. Ozan SUBAŞI
Date of Compilation:	17.05.2022

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

2.7. BAU102 - Basics of Structural Theory, Design and Construction

Course Details				
Code		**Academic Year**		**Semester**
BAU102		1		2
Title	**T**	**A**	**L**	**ECTS**
Basics of Structural Theory, Design and Construction	3	1		6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	Qualification goals are, students a) in the history of civil engineering b) to introduce into the logic of the constructions. *a) History of civil engineering:* The aim of the course is to show the students the social role and responsibility of civil engineers right from the start of their studies, also taking sustainability issues, architectural values into account, and to provide an overview of the history of civil engineering. This is to strengthen the insight into the need to master the theoretical basics and the awareness that creativity and technology stand side by side in civil engineering. *b) Logic of construction:* The students are offered a cross-material insight into the load-bearing behavior of the buildings. The aim is to awaken an understanding of the power flow and load transfer of the most important types of structure and to enable simple dimensioning. In this module, students are taught the basics of structural engineering in such a way that the need to study the basic subjects of mathematics and mechanics is understood and the bachelor's degree begins with anticipation of the profession.					
Content	During a walk through the history of the structures, from the Greek temple to the modern skyscraper, the most important builders (formerly almost exclusively men) and their buildings are introduced to the students. It also becomes clear that the history of construction is also a history of the development of the materials, the calculation methods and the historical boundary conditions. It also creates awareness that sustainable building has always been a basic task of the building industry in terms of material consumption, durability and reusability. Parallel to the walk through history, the basics of the load-bearing behavior of arches, beams, ropes, bridge and surface structures are taught.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

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Recommended or Required Reading		
Books / Lecture Notes	Billington, Der Turm und Die Brücke Bill Addis, 3000 years	
Other Sources		
Additional Course Material		
Documents		
Assignments		
Exams		
Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	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	4	56
Self-Study	14	3	42
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	12

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Recitations			
Laboratory			
Projects			
Final Exam	1	2	15
		Total Work Load	**125**
		ECTS Points (Total Work Load / Hour)	**6 ECTS**

Learning Outcomes	
1	To introduce into the history of civil engineering and into the logic of construction.
2	To demonstrate to the students the social role of the civil engineer, and to provide an overview of the history of civil engineering. This is to strengthen the insight into the need to master the theoretical basics and the awareness that creativity and technology stand side by side in civil engineering
3	The students are given an insight into the structural behavior of the structures. The aim is to awaken an understanding of the power flow and load transfer of the most important types of structure and to enable simple dimensioning
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12	

Weekly Content	
1	Introduction Part 1
2	Introduction Part 1
3	Introduction Part 1
4	Introduction Part 1
5	Antiquity (up to 500)
6	Middle Ages (500 -1400)
7	Renaissance (1400 - 1630)
8	Enlightenment (1630-1750)

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9	Enlightenment (1630-1750)
10	Iron structures (1800-1900)
11	Rope bridges (1860 - today) part 1
12	Rope bridges (1860 - today) part 2
13	Reinforced concrete (1850-1960)
14	Concrete shells (1920 - today) and skeleton structures
15	

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

	P1	P2	P3	P4	P5	P6	P7
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

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COURSE SYLLABUS

3.Semester

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3.1. MAT201 - Differential Equations

Course Details				
Code		**Academic Year**		**Semester**
MAT201		2		Fall
Title		**T**	**A**	**L**	**ECTS**
Differential Equations		2	1	1	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	Upon successful completion of this course, a student will have comprehensive knowledge of below subjects; - Understand all of the concepts relating to the order and linearity of ODEs, analytic and computational solution methods for ODEs, and the real -world applications of ODEs. - Apply your understanding of the concepts, formulas, and problem solving procedures to thoroughly investigate relevant models. - Explain the concepts of linear systems, ODE solution methods, and related ideas at a fundamental level, as well as how and why we use the solution techniques that we use.					
Content	- First order differential equations - Linear differential equations - Series solutions of second order linear equations - The Laplace transform - First order systems (both linear and nonlinear)					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	Prof. Dr. Anatoli Makarov					
Assistant(s)	Res. Assist. Osman Taha KÜTÜK, Inst. Ali Korucu, Res. Assist. Mustafa Hakan Sandık					
Work Placement	--					
Recommended or Required Reading						
Books / Lecture Notes	- Edwards, C., and D. Penney. Elementary Differential Equations with Boundary Value Problems. 6th ed. Upper Saddle River, NJ: Prentice Hall, 2003.					
Other Sources	- Brannan, James R., and William E. Boyce. Differential equations: An introduction to modern methods and applications. John Wiley & Sons, 2015. - Boyce, William E., Richard C. DiPrima, and Douglas B. Meade. Elementary differential equations. John Wiley & Sons, 2017.					
Additional Course Material						
Documents	--					
Assignments	--					

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Exams	--	
Course Composition		
Mathematics und Basic Sciences	50	%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge	50	%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	40
Quiz		
Assignments	1	10
Attendance		
Recitations		
Projects		
Final Exam	1	50
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	14	2	28
Self-Study	1	66	66
Assignments	10	4	40
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations	14	1	14
Laboratory	14	1	14
Projects			
Final Exam	1	3	3
		Total Work Load	**168**
		ECTS Points (Total Work Load / Hour)	**6**

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Learning Outcomes	
1	Model a simple system to obtain a first order ODE. Visualize solutions using direction fields and approximatethem using Euler's method.
2	Solve a first order linear ODE by the method of integrating factors or variation of parameter.
3	Calculate with complex numbers and exponentials.
4	Solve a constant coefficient second order linear initial value problem.
5	Compute Fourier coefficients, and find periodic solutions of linear ODEs by means of Fourier series.
6	Solve constant coefficient linear initial value problems using the Laplace transform together with tables of standard values.
7	Calculate eigenvalues, eigenvectors, and matrix exponentials, and use them to solve first order li near systems. Relate first order systems with higher-order ODEs.
8	Recreate the phase portrait of a two-dimensional linear autonomous system from trace and determinant.
9	Determine the qualitative behavior of an autonomous nonlinear two-dimensional system by means of an analysis of behavior near critical points.
Weekly Content	
1	Differential equations, Direction fields, Linear differential equations of first order with variable coefficients, Linearsystems of equations;Definition of eigenvector and eigenvalue.
2	Review of complex numbers, Eigen values and eigen vector for matrices, Drawing phase portraits
3	Introduction to non-linear systems, Solutions and phase portraits for defective matrices and Wronskian
4	Similar matrices and matrix exponentials, Rewriting second order ODE as firs t order systems
5	Solving constant coefficient second order ODE, Mechanical vibrations
6	Forced vibrations and undetermined coefficients, Variation of parameters and fundamental matrix
7	Nonlinear ODE: bifurcation phenomenon in autonomous ODE
8	Linearization of systems; competing species, Existence and uniquness theory for ODE
9	Midterm Exam
10	Numerical methods: Euler's method as "connecting the dots" of a direction field, Runge-Kutta methods
11	Introduction to Laplace transform, Properties of Laplace transform
12	Inverse of Laplace transform, Solving ODE using Laplace transform
13	Review of power series, Ordinary points, regular singular and irregular singular points
14	Power series solutions to Airy equation, Fourier series; Even and odd functions
15	Laplace equation on a rectangle, Laplace equation on circle

Contribution of Learning Out comes to Program Objectives (1-5)

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

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3	5	4	3	1	1	4	5
4	5	4	3	1	1	4	5
5	5	4	3	1	1	4	5
6	5	4	3	1	1	4	5
7	5	4	3	1	1	4	5
8	5	4	3	1	1	4	5
9	5	4	3	1	1	4	5
Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High						
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=208							
Compiled by:	Recep Özkan						
Date of Compilation:	17.06.2022						

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3.2. BAU209 – Kinematic and Dynamics

Course Details				
Code		**Academic Year**		**Semester**
BAU209		2		1
Title		**T**	**A**	**L**	**ECTS**
Kinamatics and Dynamics		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	Students learn the basics of kinematics and dynamics. This basic mechanical knowledge is necessary for attending further courses in the Bachelor and Master studies. The knowledge imparted enables the students to further develop themselves later in their careers. The imparted theoretical knowledge enables the students to work on and solve practical engineering problems. Students can use the methods taught to model mechanical systems and assess the application limits of the derived models. The students are introduced to the basics of modeling. The imparted basic knowledge in mechanics enables students to recognize analogies to other subject areas and to apply this knowledge there as well.					
Content	First half of the semester: Dot mass: Kinematics and kinetics of the mass point, momentum set, energy set of the mechanics, angular momentum and moment set Dynamics of mass point systems Second half of the semester: Dynamics of the rigid body: movement of the rigid body (angular velocity, inertia tensor, basic terms of gyroscopic theory) Theory of vibrations: free and forced vibrations, damping, resonance Vibrations of systems with two degrees of freedom, dynamic stability					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	Wolfgang H. Müller, Ferdinand Ferber: Technische Mechanik für Ingenieure, 4. neu bearbeitete Auflage, Carl Hanser Verlag
Other Sources	

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Additional Course Material		
Documents		
Assignments		
Exams		
Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	2	50
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	14	3	42
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations			
Laboratory			
Projects			

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Final Exam	1	2	15
		Total Work Load	**137**
		ECTS Points (Total Work Load / Hour)	**6 ECTS**

Learning Outcomes	
1	Learning the basics of kinematics and dynamics
2	Mechanical system modeling skills
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Weekly Content	
1	Kinematics of the mass point: basic concepts
2	Kinematics and kinetics of the mass point: basic terms
3	Kinetics of the mass point: basic concepts
4	Pulse set The energy theorem of mechanics Angular momentum and momentum Kinematics of mass point systems Kinetics of mass point systems
5	Exercise: 1-5
6	Pulse and center of gravity for mass point systems Angular momentum for mass point systems The energy and work set for mass point systems
7	An application of the momentum and energy theorem: Centric collisions between spherical masses Body with time-varying mass
8	Rigid body kinematics: basic concepts Rigid body kinematics in the rigid body kinetics plane: 3D movement around a fixed axis
9	Rigid body kinetics: any movement in the plane, rigid body systems
10	Intermediate Exam-I/Exercise: 6-10

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11	Work set for rigid body movement in the plane Thematic conclusion of the rigid body movement; Vibrations: basic terms
12	Free undamped and damped vibrations with one degree of freedom
13	Intermediate exam-II/Exercise: 11-14
14	Thematic conclusion of the free damped vibrations with one degree of freedom Excited vibration with one degree of freedom
15	Excited vibrations with damping Vibrations with a finite number of degrees of freedom

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

	P1	P2	P3	P4	P5	P6	P7
1							
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10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

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COURSE SYLLABUS

3.3. ENG201 – English lll

Course Details						
Code				**Academic Year**		**Semester**
ENG201				2		1
Title				**T**	**A**	**L**	**ECTS**
English III				3			2

Language	English					
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 acquire skills to talk about future plans, talk about talents, give advice and respond to advice.					
Content	Students ... 1. At work, at school, during leisure time, etc. Understand the main points of the standard things that are explicitly stated in familiar topics that occur regularly. 2. will create simple texts about their personal experiences and share them in a mutual dialogue. 3. will be able to express the terms used in phone calls effectively. 4. Understand conditional sentences and use related expressions.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						
Recommended or Required Reading						
Books / Lecture Notes						
Other Sources						
Additional Course Material						
Documents						
Assignments						
Exams						
Course Composition						
Mathematics und Basic Sciences					%	

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Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	3	42
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	1	1
Recitations			
Laboratory			
Projects			
Final Exam	1	2	2
		Total Work Load	
		ECTS Points (Total Work Load / Hour)	

Learning Outcomes

1	
2	
3	

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Weekly Content	
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14	
15	

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

	P1	P2	P3	P4	P5	P6	P7
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2							
3							
4							
5							

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6							
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8							
9							
10							
11							
12							
Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High						
Compiled by:							
Date of Compilation:							

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3.4. AIT001 - Atatürk's Principles and History of Turkish Revolution I

Course Details				
Code		**Academic Year**		**Semester**
AIT001		2		1
Title		**T**	**A**	**L**	**ECTS**
Atatürk's Principles and History of Turkish Revolution I		2			2

Language	Turkish					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	Students learn Mustafa Kemal Ataturk Revolution and the principles and knowledge of the achievements of the Republic of Turkey.					
Content	Revolution, rebellion, overthrow, explanation of the concept of development and reform, structure and causes of the collapse of the Ottoman Empire, attempts at reform in the Ottoman Empire, Libertarianism movement in the Ottoman Empire, the Second Constitution Era Flow of ideas and ambitions for the Ottoman largest state in the early twentieth century, States, the narrowing of the borders of the Ottoman Empire before the war, the first world war situation of the large states and the causes of the war, the beginning of the war, the war and fronts of the Ottoman Empire, the end of the war and signed contracts to enter the end of the war to the Ottoman Empire: the Armistice, the professions that after the Armistice Armistice Entente begin and the Ottoman Empire, Mustafa Kemal Pasha, the Turkish War of Independence and the preparatory phase, the invasion of Izmir, Shaft positive and negative associations in battle.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

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Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	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	2	28
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	1	1
Recitations			
Laboratory			
Projects			
Final Exam	1	2	2
		Total Work Load	**31**
		ECTS Points (Total Work Load / Hour)	**2 ECTS**

Learning Outcomes

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12	
Weekly Content	
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14	
15	

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

	P1	P2	P3	P4	P5	P6	P7
1							

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2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

DEPARTMENT OF CIVIL ENGINEERING
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3.5. BAU201 - Construction Chemicals and Building Materials I

Course Details				
Code		**Academic Year**		**Semester**
BAU201		2		Fall
Title		**T**	**A**	**L**	**ECTS**
Construction Chemicals and Building Materials I		2	1	2	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	In the module Building Materials and Construction Chemistry I, the learning outcomes are deepened in terms of content specifically from a material perspective. In addition, the students can practically apply the learning content taught in theory in experiments in the laboratory. The students acquire basic knowledge of the structure of building materials and their mechanical behavior, acquire the ability to analyze a building material and define it in the context of the building process, are enabled to classify the extensive requirements and material tests professionally and are guided to independently develop and implement subject-related content.					
Content	- Sytematics of building material properties * Mass, weight, density, bulk density, bulk density * Density and porosity * Behavior of building materials against moisture * Mechanical properties * Deformation properties of building materials * Resistance * Thermal properties and thermal insulation * Acoustic properties and sound insulation - Statistical methods for the evaluation of building material properties - Natural building materials - Ceramic building materials - Wood and wood-based materials					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	Assoc. Prof. Dr. Enver Vural YAVUZ					
Assistant(s)	Res. Assist. Ozan SUBAŞI, Res. Assist. Uğur GÜNAY					
Work Placement	--					
Recommended or Required Reading						
Books / Lecture Notes	Wendehorst Baustoffkunde, 27. Auflage (2011), Vieweg+Teubner Verlag | Springer Fachmedien Wiesbaden GmbH					

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Other Sources	Vieweg+Teubner Verlag | Springer Fachmedien Wiesbaden GmbH.	
Additional Course Material		
Documents	Vorlesungsskript	
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	-	-
Assignments	3	15
Attendance	-	-
Recitations	1	5
Projects	-	-
Final Exam	1	50
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	15	2	30
Self-Study	15	3	45
Assignments	3	3	9
Presentation / Seminar Preparation	-	-	-
Midterm Exam	1	10	10
Recitations	15	2	30
Laboratory	15	1	15
Projects	-	-	-
Final Exam	1	15	15

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Total Work Load	**154**
ECTS Points (Total Work Load / Hour)	**6 ECTS**

Learning Outcomes	
1	Students will be able to apply the basic relationships of building materials and structure.
2	Students will be able to recognize the materials used in construction, estimate their properties, be familiar with the metrological methods used to determine the characteristic material properties discussed in the lecture in material testing.
3	After attending the lecture, students will be familiar with the range of materials used in the construction industry, will have mastered the basics with regard to characteristic
4	After attending the course, the students will know the spectrum of materials used in the construction industry, master the basics with regard to the characteristic material properties, recognize the relationship of these basic material properties to construction practice and be able to select the materials appropriately with regard to the service life and failure behavior as well as the durability of the structures created with them.
5	They learn basic working techniques in a laboratory and are able to summarize practical laboratory experiments in protocols.

Weekly Content	
1	Introduction
2	General building material properties
3	General building material properties
4	Behavior of building materials in relation to moisture
5	Mechanical properties of building materials
6	Mechanical properties of building materials
7	Deformation properties of building materials
8	Thermal properties and thermal protection
9	Acoustic properties and soundproofing
10	Statistical methods for assessing building material parameters
11	Statistical methods for assessing building material parameters
12	Natural building materials
13	Ceramic building materials
14	Wood and wood-based materials
15	Overview

Contribution of Learning Outcomesto Program Objectives (1-5)

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

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COURSE SYLLABUS

3	5	3		5	4	5	5
4	5	3		5	4	5	5
5	5	3		5	4	5	5

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
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Compiled by:	Assoc. Prof. Dr. Enver Vural YAVUZ - Res. Assist. Ozan SUBAŞI
Date of Compilation:	17.05.2022

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

3.6. BAU202 – Structural Analysis I

Course Details				
Code		**Academic Year**		**Semester**
BAU202		2		1
Title		**T**	**A**	**L**	**ECTS**
Structural Analysis I		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	The students learn the basics and working techniques of classical statics and use them for typical calculations of statically determined beam structures.					
Content	Elements for the modeling of beam structures are defined, static and geometrical properties of load-bearing systems are explained, the basic equations for calculation according to first order theory are derived under static influences. To calculate statically determined beam structures, the construction principle, the cutting principle and the working principles of mechanics as methods as well as the principle of virtual path variables and the principle of virtual force quantities are learned and applied. With these methods, students determine the state and influence lines of force and displacement variables as well as deformations of statically determined load-bearing systems.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						
Recommended or Required Reading						
Books / Lecture Notes						
Other Sources						
Additional Course Material						
Documents						
Assignments						
Exams						
Course Composition						

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COURSE SYLLABUS

Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	14	3	42
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations			
Laboratory			
Projects			
Final Exam	1	2	15
		Total Work Load	**137**
		ECTS Points(Total Work Load / Hour)	**6 ECTS**

Learning Outcomes

1	Basic principles and techniques of classical static, statically calculates specific rod structures.

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COURSE SYLLABUS

2	Future engineers gain the ability to grasp the basics of structural behavior, translate the min to static models, choose the right method for a static calculation, interpret and evaluate critically.
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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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2							

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COURSE SYLLABUS

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11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

3.7. TUR001 – Turkish 101

Course Details				
Code		**Academic Year**		**Semester**
TUR001		2		1
Title		**T**	**A**	**L**	**ECTS**
Turkish 101					

Language	Turkish					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	When classifying world languages, learning the Turkish and German languages, distinguishing between mother tongue and mother tongue, using the right communication rules in everyday life, learning Turkish academic writing techniques, and applying Turkish spelling and punctuation rules are among the main goals of the course					
Content	Language - mother tongue and mother tongue difference, language types - language and functions - language and society - language and culture - world languages and Turkish - Polish - Sive - Oral. Communication - sending emails, event weaving techniques based on the time of the event. Expression styles - Perspective and approximation styles. Oral expression types - diction - accent - rhythm - ezgi - intonation difference - techniques for prepared language and oral presentation studies. Academic writing techniques - planning in writing (prescribing, writing order, rewriting) - homework, project, presentation preparation techniques. Spelling rules, punctuation and use of spelling characters. Composition rules, plan, paragraph types, thoughts and main thoughts, topic. Subject, word, sentence, paragraph in the written expression. Articles that convey thoughts and information (clause, article, review, essay, reminder, diary, travelogue, letter). Official formal writings (petition, record, resume). Review of scientific writings (articles and papers). Grammar I: Types of Words. Grammar II: Structure of the Word. Grammar III: sentence elements. Grammar IV: Types of sentences.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	Demir ve Yılmaz (2009). Türk Dili Yazılı ve Sözlü Anlatım. Ankara: Nobel Yayın Dağıtım. Aktaş ve Gündüz (2009). Yazılı ve Sözlü Anlatım. Ankara: Akçağ Yayınları. Ercilasun, A.B. (2015). Başlangıçtan Yirmi Yüzyıla Türk Dili Tarihi. Ankara: Akçağ Yayınları.
Other Sources	

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COURSE SYLLABUS

Additional Course Material		
Documents		
Assignments		
Exams		
Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	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	2	28
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	1	1
Recitations			
Laboratory			
Projects			

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Final Exam	1	2	2
		Total Work Load	**31**
		ECTS Points (Total Work Load / Hour)	**2 ECTS**

Learning Outcomes	
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Weekly Content	
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COURSE SYLLABUS

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Contribution of Learning Outcomes to Program Objectives (1-5)							
	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**
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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

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COURSE SYLLABUS

4.Semester

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COURSE SYLLABUS

4.1. AIT002 - Atatürk's Principles and History of Turkish Revolution II

Course Details				
Code		**Academic Year**		**Semester**
AIT002		2		4
Title		**T**	**A**	**L**	**ECTS**
Atatürk's Principles and History of Turkish Revolution II		2			2

Language	Turkish					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	Students learn Mustafa Kemal Ataturk Revolution and the principles and knowledge of the achievements of the Republic of Turkey.					
Content	Mustafa Kemal Pasha arrival in Samsun, National Organization, circulars and congresses, the collection of the last Ottoman Parliament, the invasion and the spread of the Chamber of Deputies in Istanbul, Turkey The beginning of the Grand National Assembly period, the press and the national struggle, the Parliament reaction and internal revolts, east and political developments and the end of the war, Mudanya armistice, Lausanne peace treaty, revolution movements in the political arena, education, culture, law and social revolution movements, Ataturk period Turkish foreign policy Ataturk's principles; Republicanism, nationalism, Ataturk's principles; populism, secularism, Ataturk's principles; Statistical revolutionism and complementary principles.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

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COURSE SYLLABUS

Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	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	2	28
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	1	1
Recitations			
Laboratory			
Projects			
Final Exam	1	2	2
		Total Work Load	**31**
		ECTS Points (Total Work Load / Hour)	**2 ECTS**

Learning Outcomes

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COURSE SYLLABUS

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WeeklyContent	
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Contribution of Learning Outcomesto Program Objectives (1-5)

	P1	P2	P3	P4	P5	P6	P7
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COURSE SYLLABUS

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Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

4.2. ENG202 - English IV

Course Details				
Code		**Academic Year**		**Semester**
ENG202		2		4
Title		**T**	**A**	**L**	**ECTS**
English IV		3			2

Language	English					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	In addition to developing students' academic writing skills, the aim is to develop essay writing skills in the form of paraphrases and abstracts, teach essay writing types and improve their skills on the subject					
Content	Transition from paragraph to article, article sections (introduction, development, conclusion), explanatory article (description); quoting and citing, explanatory article (classification), explanatory article (cause-effect), explanatory article (comparison), writing an article with discussion method					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	New Headway Pre-Intermediate New English File Pre-Intermediate Language Leader Pre-Intermediate
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences		%
Engineering		%

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COURSE SYLLABUS

Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	3	42
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	1	1
Recitations			
Laboratory			
Projects			
Final Exam	1	2	2
		Total Work Load	**45**
		ECTS Points (Total Work Load / Hour)	**2 ECTS**

Learning Outcomes

1	The development of students' academic writing skills
2	Develop essay writing skills in the form of paraphrases and abstracts
3	Teach types of essay writing, and improve their skills on the subject
4	

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COURSE SYLLABUS

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

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12							
Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High						
Compiled by:							
Date of Compilation:							

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COURSE SYLLABUS

4.3. BAU203 - Building Construction I

Course Details				
Code		**Academic Year**		**Semester**
BAU203		2		2
Title		**T**	**A**	**L**	**ECTS**
Building Construction I		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	The main goal is to enable students to design cross-sections and connections made of the materials steel, wood and reinforced concrete.					
Content	Continuation of the design principles for steel, timber and reinforced concrete structures Consideration of materials in the context of design and standards Treatment of rod-shaped components with regard to the design of cross-sections for bending, compression and tension, shear force and torsion Consideration of simple connections and connecting means					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences		%

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Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	14	3	42
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations			
Laboratory			
Projects			
Final Exam	1	2	15
		Total Work Load	**137**
		ECTS Points (Total Work Load / Hour)	**6 ECTS**

Learning Outcomes

1	This course, embedded in the general material teaching approach, teaches the basics of dimensioning and structural design of the elements.
2	The main purpose is to enable students to design cross sections and joints made of steel, wood and reinforced concrete.

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COURSE SYLLABUS

3	Students often engage in simple design tasks on rod-shaped structural elements, and then can determine section sizes and provide power proofs.
4	Parallel transfer of various design approaches for individual building materials follows an overlapping teaching approach.
5	The use of different building materials with specific features in terms of optimum use in buildings is particularly emphasized for creativity, engineering design and laying the foundations of the building.
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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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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

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4.4. BAU204 - Structural Analysis II

Course Details				
Code		**Academic Year**		**Semester**
BAU204		2		Spring
Title		**T**	**A**	**L**	**ECTS**
Structural Analysis II		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	To learn the theoretical basics and calculation methods of classical statics with regard to statically in determinate bar structures.					
Content	The force sizing method and the displacement sizing method in the classical context are presented and applied as method store duce the static in determinacy of beam structures in dual ways either with forces or with paths. In detail it is learned how to calculate state and influence lines of force and displacement quantities with the force and displacement method and the rotation angle method.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						
Recommended or Required Reading						
Books / Lecture Notes	Baustatik 2: Berechnung statisch unbestimmter Tragwerke5. Oktober 2015von Raimond Dallmann					
Other Sources						
Additional Course Material						
Documents						
Assignments						
Exams						
Course Composition						

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Mathematics und Basic Sciences	50	%
Engineering	50	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam		
Quiz		
Assignments		
Attendance		
Recitations		
Projects		
Final Exam		
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	5	70
Self-Study	14	3	42
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations			
Laboratory			
Projects			
Final Exam	1	2	15
		Total Work Load	**137**
		ECTS Points(Total Work Load / Hour)	**6**

Learning Outcomes

1	The aim of the qualification is to master the theoretical principles and calculation methods of classical statics with regard to statically in determinate bar structures in order to be able to

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	determine stresses and deformations for different types of structures with one manual calculation. Future engineers acquire the ability to grasp the essential aspects of load-bearing behaviour, to convert these in to static models, to select the correct procedures for a static calculation, to interpret the calculation results professionally and to evaluate them critically.
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Weekly Content	
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Contribution of Learning Outcomes to Program Objectives(1-5)	

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	P1	P2	P3	P4	P5	P6	P7
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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

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COURSE SYLLABUS

4.5. BAU205 – Fluid Mechanics

Course Details				
Code		**Academic Year**		**Semester**
BAU205		2		Spring
Title		**T**	**A**	**L**	**ECTS**
Fluid Mechanics		2	2	1	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	This module imparts the basic knowledge of fluid mechanics necessary for the civil engineer as well as the ability to implement it in simple practical engineering application examples.					
Content	Fluid properties, hydrostatics, kinematics and kinetics of spatial flow, conservation laws (at the control volume, Euler, Navier-Stokes, Reynolds), pipe and channel flows, flow forces, potential, groundwater and boundary layer flows, similarity theory.					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	Prof. Dr. R. HINKELMANN, Dr. Ö.F. AYDIN					
Assistant(s)	F. TÜGEL, L. STEFFAN, R. ÖZKAN					
Work Placement	--					
Recommended or Required Reading						
Books / Lecture Notes	Strömungsmechanik: Eine kompakte Einführung für Physiker und Ingenieure (Pearson Studium - Physik)1. Januar 2014 von Hendrik Kuhlmann; Vorlesungsskript Strömungsmechanik für Bauingenieure, R. Hinkelmann, 2006.					
Other Sources						
Additional Course Material						
Documents	Lecture slides, script exercises, script formula collection					
Assignments						
Exams	Midterm Exam, Final Exam					
Course Composition						
Mathematics und Basic Sciences					20 %	
Engineering					30 %	

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

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	14	5	70
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	6	6
Recitations	14	2	28
Laboratory			
Projects			
Final Exam	1	6	6
		Total Work Load	**180**
		ECTS Points(Total Work Load / Hour)	**6**

Learning Outcomes

1	Student learns the flow movement.
2	Students can apply fluid mechanics in simple engineering-practical structures.
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COURSE SYLLABUS

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Weekly Content	
1	Presentation FG, introduction, fluid properties
2	Hydrostatics
3	Hydrostatics, kinematics I
4	Conservation equations KR
5	Tube flows
6	Tube flows
7	Channel flows
8	Channel flows
9	Flow forces
10	Kinematics II, mass conservation equations, Euler
11	Conservation equations Navier-Stokes, Reynolds
12	Groundwater Flows
13	Potential and Boundary Layer Flows
14	Similarity Theory
15	

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

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

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10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
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Compiled by:	Dr. Ömer Faruk Aydın
Date of Compilation:	17.05.2022

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5.Semester

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COURSE SYLLABUS

5.1. BAU301 – Structural Engineering ll

Course Details				
Code		**Academic Year**		**Semester**
BAU301		3		Fall
Title	**T**	**A**	**L**	**ECTS**
Structural Engineering II	4	2	0	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	The main goal is to enable students to design components and connections made of the classic materials steel and reinforced concrete.					
Content	- Stability problems of components under compression (buckling, flexural buckling, torsional flexural buckling and model support methods) - Principles of pre-stress - Ultimate load capacity of composite steel girders - Design of typical steel construction connections (welded and bolted connections) - Theory of plate structures, solid cover plates - Plates, theory of beam models and their application to complex situations (D areas) such as frame corners, brackets and recesses					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	Grundlagen der Tragwerklehre, Band 226. September 2011 von Franz Krauss und Wilfried Führer
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

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Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam		
Quiz		
Assignments		
Attendance		
Recitations		
Projects		
Final Exam		
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**WorkLoad (Hours)**
Lectures	14	6	84
Self-Study	14	2	28
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations			
Laboratory			
Projects			
Final Exam	1	2	15
		Total Work Load	**137**
		ECTS Points(Total Work Load / Hour)	**6**

Learning Outcomes

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1	Embedded in the approach of the cross-material teaching and based on the module Structural Engineering I, this module continues the basic knowledge of dimensioning and structural design of components. The students are introduced to more complex design tasks on rod-shaped and flat structural elements and are then able to determine the required cross-sectional dimensions, perform the essential ultimate limit state design checks, also considering stability problems, and constructively implement connection points. The structural design is intensified in steel and reinforced concrete construction. In addition, an overview of the principle of pre-stressing and the design of composite girders is given.
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Weekly Content	
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COURSE SYLLABUS

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Contribution of Learning Outcomes to Program Objectives(1-5)							
	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**
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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

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COURSE SYLLABUS

5.2. BAU302 - Soil Mechanics and Foundation Engineering I

Course Details				
Code		**Academic Year**		**Semester**
BAU302		3		Fall
Title	**T**	**A**	**L**	**ECTS**
Soil Mechanics and Foundation Engineering I	2	2	1	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	The students learn to physically describe the building material soil, which is used in almost all construction projects, and to correctly assess its mechanical behavior as building ground. For this purpose, the basic procedures for investigating the subsoil are explained in more detail using various methods. The understanding of stresses in the subsoil and the determination of settlements are brought closer to the students. Building on these fundamentals, the relevant foundations and supporting structures for buildings and engineering structures are dealt with in terms of their design, the load assumptions and the foundation engineering proof of stability. In this context, settlement calculation methods will also be presented. The students are then able to plan shallow foundations and retaining walls and to demonstrate and assess their stability. A semester-long, voluntary project aims to train these skills for practical use.					
Content	Physical and mechanical properties of the soil and their determination in the laboratory, geotechnical soil investigations, stresses in the subsoil, shearing and deformation behavior of soils, potential and groundwater flows, structural design, static calculation and proof of stability of shallow foundations and retaining walls, determination of the time-settlement behavior.					
Prerequisites	BAU112					
Coordinator	--					
Lecturer(s)	Prof. Dr. -Ing. F. RACKWITZ; Assoc. Prof. Dr. M. HAMDERİ; Assoc. Prof. Dr. C. T. AKDAĞ					
Assistant(s)	Res. Assist. O. ŞUBAŞI; Res. Assist. R. ÖZKAN					
Work Placement	--					

Recommended or Required Reading	
Books / Lecture Notes	-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

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	-Schmidt, H.; Buchmaier, R.; Vogt-Breyer, C. (2014) Grundlagen der Geotechnik – Geotechnik nach Eurocode. Wiesbaden: Springer	
OtherSources	-Lecture notes	
Additional Course Material		
Documents	--	
Assignments	--	
Exams	--	
Course Composition		
Mathematics und Basic Sciences		%
Engineering	50	%
Engineering Design	10	%
Social Sciences	10	%
Educational Sciences		%
Natural Sciences	30	%
Health Sciences		%
Expert Knowledge		%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	40
Quiz		
Assignments	6	10
Attendance		
Recitations		
Projects		
Final Exam	1	50
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	14	2	28
Self-Study	14	5	70
Assignments	6	5	30
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations	14	2	28

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Laboratory	14	1	14
Projects			
Final Exam	1	3	3
		Total Work Load	**176**
		ECTS Points(Total Work Load / Hour)	**6**

Learning Outcomes	
1	The students learn to physically describe the building material soil, which is used in almost all construction projects, and to correctly assess its mechanical behavior as building ground.
2	The stresses in the subsoil can be understood by the students and the settlements can be determined.
3	The methods of settlement calculation in civil engineering structures are learned.
4	The students are then able to plan shallow foundations and retaining walls and to demonstrate and assess their stability.
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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 I**
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

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12	Basics of geotechnical design
13	Geotechnical report and standards
14	Stability Control
15	Static failure and failure theories

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

	P1	P2	P3	P4	P5	P6	P7
1	5	5	3	4	3	5	5
2	5	5	3	4	3	5	5
3	5	5	3	4	3	5	5
4	5	5	3	4	3	5	5
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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Recep ÖZKAN
Date of Compilation:	08.06.2022

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5.3. BAU303 - Transportation

Course Details				
Code		**Academic Year**		**Semester**
BAU303		3		Fall
Title		**T**	**A**	**L**	**ECTS**
Transportation		2	2	-	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	To teach the basics of transportation engineering.					
Content	As part of the course, the students learn the basics of designing road traffic systems. Basic content on usage claims and drainage as well as immission control are dealt with. In addition, the driving dynamics and the routing of country roads are treated and calculated. This includes the adhesion between the vehicle and the road. Road construction with the basics of design calculation and material use as well as the duration of stress on a road due to the structure of the superstructure is taught in lectures and exercises.					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	Prof. Dr.-Ing. T. RICHTER, Dr. Öğr. Üyesi S. ULUSOY					
Assistant(s)	Dr. Ö.F. AYDIN					
Work Placement	--					

Recommended or Required Reading	
Books / Lecture Notes	Thomas Richter Electronic Lecture Notes
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	Midterm exam, Final exam

Course Composition		
Mathematics und Basic Sciences	20	%
Engineering	40	%

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Engineering Design	40	%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	2	28
Self-Study	14	8	112
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	6	6
Recitations	14	2	28
Laboratory			
Projects			
Final Exam	1	6	6
		Total Work Load	**180**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

1	After successfully passing the module, the students know the basics of the usage requirements in road space within built-up areas, the routing elements for out-of-town roads and the associated elements of noise protection and drainage. You can calculate the coefficient of adhesion and braking distance under different circumstances and determine the stress and duration of a road due to weather conditions and traffic composition.
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Weekly Content	
1	Introduction
2	Transportation Fundamentals
3	Network Planning
4	Usage Rights
5	Driving Dynamics
6	Introduction to Methodology
7	Design Flow
8	Templates
9	Nodes
10	Design Elements in Site Plan
11	Design elements in elevation plan and cross section
12	Routing
13	Road Construction
14	
15	

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

	P1	P2	P3	P4	P5	P6	P7
1	3	5	3	5			5
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Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Dr. Ömer Faruk AYDIN
Date of Compilation:	24.05.2022

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6.Semester

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6.1. BAU304 - Soil Mechanics and Foundation Engineering II

Course Details				
Code		**Academic Year**		**Semester**
BAU304		3		Spring
Title	**T**	**A**	**L**	**ECTS**
Soil Mechanics and Foundation Engineering II	2	2	1	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	In this module, the relevant wall and base constructions are presented and the corresponding proof for these constructions is learned.					
Content	Structural design, static calculation and stability proof of construction pit soles and usual wall constructions as well as of special constructions like diaphragm walls and underpinnings. Fundamentals and dimensioning of water holdings and their impact on the environment. In the accompanying tutorial, examples of the integrated event are worked on in small groups, laboratory exercises are carried out and support is given for the project to be worked on.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						
Recommended or Required Reading						
Books / Lecture Notes	Grundbau: Teil 2 Baugruben und Gründungen (German Edition)4. November 2014von Konrad Simmer					
Other Sources						
Additional Course Material						
Documents						
Assignments						
Exams						
Course Composition						
Mathematics und Basic Sciences					%	

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Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam		
Quiz		
Assignments		
Attendance		
Recitations		
Projects		
Final Exam		
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	5	70
Self-Study	14	3	42
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations			
Laboratory			
Projects			
Final Exam	1	2	15
		Total Work Load	**137**
		ECTS Points(Total Work Load / Hour)	**6**

Learning Outcomes

1	In the course of infrastructure measures, the excavation of inner-city construction pits with the help of special designs of special civil engineering is essential. In this module, the elevating wall and base constructions are therefore to be presented and the corresponding evidence for these constructions is learned. In addition, the basics of water conservation in construction projects and

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	their impact on the environment are dealt with. The students are then able to plan inner-city construction pits and to determine and assess their stability. A project that accompanies the semester should train these skills for practice.
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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:	

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6.2. BAU3305 – Stochastic Systems

Course Details				
Code		**Academic Year**		**Semester**
BAU305		3		Spring
Title	**T**	**A**	**L**	**ECTS**
Stochastic Systems	3	2		6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	This course provides statistics, the probability theory that students need, and the basics of random processes. The goal of this course is to use a strict theoretical approach to address probability problems. Random variables, moments, joint distributions, multivariate random variables, conditional expectation and variance, posterior distributions, probability generation function, moment generation function, characteristic function, random sum, types of convergence and Poisson processes are highlighted.					
Content	This course focuses on probability sets, random variables and higher-order statistics (limit value sets) as well as on stochastic processes at the graduate level. It offers the introduction of stochastic processes and limit value sets. Definition of stochastic processes, statistics of stochastic processes, narrow and largely stationary stochastic processes, ergodic processes, discrete and continuous time processes, autocorrelation and cross-correlation functions, Wiener-Khinchin theorem, power spectrum density, spectral cross-power density, linear time with stochastic inputs unchanged systems, Wiener-Lee relationship, white noise, system identification and matched filter completed.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	A. Papoulis and S. Pillai, Probability, Random Variables and Stochastic Processes; 4th edition, McGraw-Hill Europe, 2002 R. D. Yates and D. J. Goodman, Probability and Stochastic Processes, Wiley, 1999. A. Leon-Garcia, Probability, Statistics, and Random Processes for Electrical Engineering; 3rd Edition, Prentice-Hall, 2008.
Other Sources	
Additional Course Material	

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Documents		
Assignments		
Exams		
Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam		
Quiz		
Assignments		
Attendance		
Recitations		
Projects		
Final Exam		
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	14	5	70
Self-Study	14	3	42
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations			
Laboratory			
Projects			
Final Exam	1	2	15

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Total Work Load	**137**
ECTS Points(Total Work Load / Hour)	**6**
Learning Outcomes	
1	Students understand moment generation and characteristic functions.
2	Students will understand the approximation in the distribution of the random variable sequence.
3	Students understand and apply the filtering and prediction concepts of a random process.
4	The students acquire basic knowledge of continuous Markov chains.
5	Students understand moment generation and characteristic functions.
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Weekly Content	
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15							
Contribution of Learning Outcomes to Program Objectives(1-5)							
	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**
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12							
Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High						
Compiled by:							
Date of Compilation:							

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COURSE SYLLABUS

7.Semester

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7.1. ENG341 - Technical English

Course Details				
Code		**Academic Year**		**Semester**
ENG341		4		Fall
Title		**T**	**A**	**L**	**ECTS**
Technical English		3			2

Language	English					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	To provide students with reading and writing skills, to provide the ability to read the main part of a reading part and vocabulary extraction, to gain reading ability by understanding fluently, to provide students with the ability to read and write, to provide the ability to read the actual part and vocabulary of a reading part, to gain reading ability by understanding fluently.					
Content	Developing terminology about practice with real and current examples, making translations that need scientific and technological perspective and expressing skills in writing					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	„Englisch für Ingenieure“, N. Pritchard und Kurt Simon
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics / Basic Sciences		%
Engineering		%

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Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam		
Quiz		
Assignments		
Attendance		
Recitations		
Projects		
Final Exam		
	Total	**100**

ECTS PointsandWorkLoad

Activity	Count	Duration	WorkLoad (Hours)
Lectures	14	3	42
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	1	1
Recitations			
Laboratory			
Projects			
Final Exam	1	2	2
		Total Work Load	**45**
		ECTS Points(Total Work Load / Hour)	**2**

Learning Outcomes

1	Learning of technical terms related to civil engineering
2	
3	

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Weekly Content	
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Contribution of Learning Outcomesto Program Objectives(1-5)

	P1	P2	P3	P4	P5	P6	P7
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5							

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Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

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COURSE SYLLABUS

7.2. BSP201 – Internship in Site

Course Details				
Code		**Academic Year**		**Semester**
BSP201		4		Fall
Title	**T**	**A**	**L**	**ECTS**
Internship in Site				4

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	To practice at a construction site and learn the basics of application of a construction project at the site; to experience, to support and appraise the theoretical engineering knowledge gained during the lectures					
Content	This internship provides a comprehensive introduction to some fundamental aspects of type of works civil engineers do, a recognition to a construction project site, and links theoretical knowledge with the practice.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%

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Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam		
Quiz		
Assignments		
Attendance		
Recitations		
Projects		
Final Exam		
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	WorkLoad (Hours)
Lectures			
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam			
Recitations			
Laboratory			
Projects			
Final Exam			
		Total Work Load	**100**
		ECTS Points(Total Work Load / Hour)	**4**

Learning Outcomes

1	describe a civil engineering activity, its performance indicators and point out problematic issues based on an analysis of related data/information;
2	describe, explain and evaluate composition, organization, and performance of a team
3	Explain professional and ethical responsibilities of engineers
4	Organize and deliver effective written, virtual, and graphical communication in a self-contained report

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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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5							
6							

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COURSE SYLLABUS

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10							
11							
12							
Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High						
Compiled by:							
Date of Compilation:							

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COURSE SYLLABUS

7.3. ISG001 - Occupational Health and Safety I

Course Details				
Code		**Academic Year**		**Semester**
ISG001		4		Fall
Title		**T**	**A**	**L**	**ECTS**
Occupational Health and Safety I		2			2

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	Students gain an understanding of the basic terms relating to occupational safety, the duties of the engineer and the manager. The ability to communicate with a specialist for occupational safety is trained.					
Content	The module is based on practical examples in occupational safety introduced. The following topics are particularly relevant: 1) Basic terms of occupational safety 2) Risk factors 3) Accident prevention procedures 4) Health protection 5) Fire and explosion protection					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	Dipl.-Ing. J. KUNTZE, Arş. Gör. Dr. Ö. F. AYDIN					
Assistant(s)	--					
Work Placement	--					

Recommended or Required Reading	
Books / Lecture Notes	„Praxishandbuch Arbeitssicherheit: Rechtliche und technische Grundlagen, Praktische Umsetzung, 60 Checklisten“, Christian Mag. (FH) Bayer und Andrea Mag. Schwarz-Hausmann MBA LL.M
Other Sources	Lecture Notes

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Mathematics und Basic Sciences		%
Engineering	30	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences	30	%
Health Sciences		%
Expert Knowledge	10	%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	2	28
Self-Study	14	2	28
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations			
Laboratory			
Projects			
Final Exam	1	3	3
		Total Work Load	**62**
		ECTS Points(Total Work Load / Hour)	**2**

Learning Outcomes

1	Students gain an understanding of the basic terms relating to occupational safety, the duties of the engineer and the managerial staff.

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

2	Ability to communicate with an occupational safety specialist.
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Weekly Content	
1	Introduction to Legal Basics, work safety organization, accident preconditions, risk-factors, statistics.
2	Risk avoidance, avoidance hierarchy, machine safety manipulation, Machine directive 2006/42/EC, standardisation: cable colours, pipe colours, electrical installation zones.
3	Skin, sample danger factors, mechanical dangers, TS EN ISO 7010 warnings mechanical dangers, mechanical designs avoiding squeeze EN 349.
4	Forklifts, traffic separation, labelling & communication.
5	Free moving material, internal logistics, electrical factors, IP protection, RCD (FI Schutzschalter).
6	Principles electric protection, electric competencies D-TR, 5 electric safety rules, work in increased electric risk environment, choosing electric tools, plugs & sockets, obligatory electric safety check intervals, loop impedance Zs & triggering fuses.
7	Noise & vibration factors.
8	Thermal & climatic factors.
9	Midterm Exam
10	Radiation factors: Ionization Radiation, Laser radiation, Hazardous materials 1.
11	Illumination.
12	Hazardous Materials 2.
13	Ladders, Scaffolds.
14	Fire Protection.
15	

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

	P1	P2	P3	P4	P5	P6	P7

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

1					4	5	5
2					4	5	5
3							
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7							
8							
9							
10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Dr. Ömer Faruk Aydın
Date of Compilation:	17.05.2022

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

7.4. BAU401 – Project ll

Course Details				
Code		**Academic Year**		**Semester**
BAU401		4		1
Title		**T**	**A**	**L**	**ECTS**
Project II		1		4	8

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	The central qualification goal is the central qualification goal is the application of the knowledge acquired in previous studies in a multidisciplinary design team and the joint acquisition and testing of communication skills, teamwork and presentation techniques. The application of the knowledge acquired in previous studies in a multidisciplinary design team and the joint acquisition and testing of communication skills, teamwork and presentation techniques.					
Content	The topics are announced at the beginning of the semester and are worked on independently in groups. The basic project consists of a course during the semester, which forms the framework for the project. Contents of this course are among others: - Introduction to the project (tasks, boundary conditions etc.) - Basics of project management - Communication in the project (working with the project communication system) The students present the results of their work and the project-specific problems in presentations. In these lectures, project-specific problems are to be dealt with. Excursions will also take place as required. The actual project work takes place in groups. The size of the groups depends on the tasks. It must be ensured that communication takes place both within the group working on a sub-project and between the superordinate teams/groups. For communication, i.e. the exchange of information (e-mail or other documents, drawings etc.), a computer-supported project workspace is provided. The results of the project work are presented in final presentations.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	
Other Sources	

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Additional Course Material		
Documents		
Assignments		
Exams		
Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	20
Quiz		
Assignments		
Attendance		
Recitations		
Projects	1	30
Final Exam	1	50
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	14	5	70
Self-Study	14	4	56
Assignments			
Presentation / Seminar Preparation	14	3	42
Midterm Exam			
Recitations			
Laboratory			
Projects			

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COURSE SYLLABUS

Final Exam	1	2	20
		Total Work Load	**188**
		ECTS Points (Total Work Load / Hour)	**8 ECTS**

Learning Outcomes	
1	In this module students are introduced to the tasks of civil engineering practice in a multidisciplinary and holistic way
2	The central qualification goal is to apply the knowledge acquired in previous studies in a multidisciplinary design team and to jointly learn and test communication skills, teamwork and presentation techniques.
3	On the basis of concrete building plans and construction projects (e.g. industrial hall as a timber, steel or reinforced concrete structure), they gain an overview of the people involved in construction, their tasks and forms of organization, the distribution of decision-making authority and responsibility, the diverse relationships between the design, execution and use of buildings and natural systems, the technical, social, economic, legal and financial aspects of construction - including gender aspects - as well as the relationships to other disciplines.
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WeeklyContent	
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COURSE SYLLABUS

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14	
15	

Contribution of Learning Outcomesto Program Objectives (1-5)

	P1	P2	P3	P4	P5	P6	P7
1							
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4							
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6							
7							
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9							
10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

7.5. BUP403 - Civil Engineering Practice in Office

Course Details				
Code		**Academic Year**		**Semester**
BUP403		4		Fall
Title	**T**	**A**	**L**	**ECTS**
Civil Engineering Practice in Office				6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	To practice at a construction site and learn the basics of application of a construction project at the site; to experience, to support and appraise the theoretical engineering knowledge gained during the lectures.					
Content	This internship provides a comprehensive introduction to some fundamental aspects of type of works civil engineers do, a recognition to a construction project site, and links theoretical knowledge with the practice.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%

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COURSE SYLLABUS

Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam		
Quiz		
Assignments		
Attendance		
Recitations		
Projects		
Final Exam		
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures			
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam			
Recitations			
Laboratory			
Projects			
Final Exam			
		Total Work Load	**150**
		ECTS Points(Total Work Load / Hour)	**6**

Learning Outcomes

1	describe a civil engineering activity, its performance indicators and point out problematic issues based on an analysis of related data/information;
2	describe, explain and evaluate composition, organization, and performance of a team;
3	explain professional and ethical responsibilities of engineers;
4	organize and deliver effective written, virtual, and graphical communication in a selfcontained report;

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COURSE SYLLABUS

5	explain impacts of civil engineering solutions/activities in a global, economic, environmental, and societal context;
6	identify and explain additional knowledge, skills, and attitudes that would be appropriate for professional practice as a sign of recognition of need for and an ability to engage in lifelong learning;
7	analyze contemporary issues related to the future of the industry (selected problem/process/system).
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Weekly Content	
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14	
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Contribution of Learning Outcomes to Program Objectives(1-5)

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

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COURSE SYLLABUS

7							
8							
9							
10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

8.Semester

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COURSE SYLLABUS

8.1. BAU402 – Final Project

Course Details				
Code		**Academic Year**		**Semester**
BAU 402		4		2
Title		**T**	**A**	**L**	**ECTS**
Final Project					8

Language	German					
Level	**Undergraduate**	*	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	*	**Elective**			
Objectives	Graduates are able to work independently on a problem from the bachelor's degree in civil engineering under the guidance of scientific methods.					
Content	The work should be done during the semester. The submission must take place no later than 15 weeks after the issue of the topic. The Examination Board decides on exceptions.					
Prerequisites	Desirable requirements for participation in the courses: For the application for admission to the bachelor thesis, the following evidence must be submitted to the responsible office of the central university administration: a.) Evidence of successfully passed module examinations for all compulsory modules b.) Proof of the successfully completed 180 ECTS within the modules offered in semesters 1, 2, 3, 4, 5, 6, 7. c.) Proof of internship. Mandatory requirements for registering for module exams: 1.) Module structural analysis I passed 2.) Module foundation engineering and soil mechanics I passed 3.) Module basics of road design and road construction passed 4.) Basic internship - civil engineering 5.) Module construction engineering I passed 6.) Statics module passed 7.) Passed strength module 8.) Fluid mechanics module passed 9.) Technical drawing and CAD passed					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	
Other Sources	

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COURSE SYLLABUS

Additional Course Material		
Documents		
Assignments		
Exams		
Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam		
Quiz		
Assignments		
Attendance		
Recitations		
Projects	1	100
Final Exam		
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures			
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam			
Recitations			
Laboratory			
Projects	1	224	224

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COURSE SYLLABUS

Final Exam			
		Total Work Load	**224**
		ECTS Points (Total Work Load / Hour)	**8**

Learning Outcomes	
1	Graduates are able to work independently on a problem from the bachelor's degree in civil engineering under the guidance of scientific methods.
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12	

Weekly Content	
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13	

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COURSE SYLLABUS

14	
15	

Contribution of Learning Outcomes to Program Objectives (1-5)							
	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

8.2. ISG002 - Occupational Health and Safety II

Course Details				
Code		**Academic Year**		**Semester**
ISG002		4		Fall
Title		**T**	**A**	**L**	**ECTS**
Occupational Health and Safety II		2			2

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	Students gain an understanding of the basic terms relating to occupational safety, the duties of the engineer and the manager. The ability to communicate with a specialist for occupational safety is trained.					
Content	The module is based on practical examples in occupational safety introduced. The following topics are particularly relevant: 1) Basic terms of occupational safety 2) Risk factors 3) Accident prevention procedures 4) Health protection 5) Fire and explosion protection					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	Dipl.-Ing. J. KUNTZE, Arş. Gör. Dr. Ö. F. AYDIN					
Assistant(s)	--					
Work Placement	--					

Recommended or Required Reading	
Books / Lecture Notes	„Praxishandbuch Arbeitssicherheit: Rechtliche und technische Grundlagen, Praktische Umsetzung, 60 Checklisten“, Christian Mag. (FH) Bayer und Andrea Mag. Schwarz-Hausmann MBA LL.M
Other Sources	Lecture Notes

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition

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COURSE SYLLABUS

Mathematics und Basic Sciences		%
Engineering	30	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences	30	%
Health Sciences		%
Expert Knowledge	10	%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	30
Quiz		
Assignments	1	30
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	2	28
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations			
Laboratory			
Projects			
Final Exam	1	3	3
		Total Work Load	**62**
		ECTS Points(Total Work Load / Hour)	**2**

Learning Outcomes

1	Students gain an understanding of the basic terms relating to occupational safety, the duties of the engineer and the managerial staff.

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

2	Ability to communicate with an occupational safety specialist.
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12	
Weekly Content	
1	Fire Protection.
2	Fire Protection.
3	Explosion Protection: Gas/vapor, Dust.
4	Explosion Protection: Gas/vapor, Dust.
5	Personal Protection Equipment.
6	Personal Protection Equipment.
7	Ladders, steps, scaffolds.
8	Midterm Exam.
9	Hoisting equipment.
10	Reserve.
11	Risk Analysis.
12	Health & Safety signs.
13	Medical exams obligatory and voluntary, hints for first aid.
14	Medical exams obligatory and voluntary, hints for first aid.
15	

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

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

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COURSE SYLLABUS

3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Dr. Ömer Faruk Aydın
Date of Compilation:	17.05.2022

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

8.3. TUR002 – Turkish ll

Course Details						
Code			**Academic Year**			**Semester**
TUR002			4			Spring
Title			**T**	**A**	**L**	**ECTS**
Turkish II			2			2
Language	Turkish					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	This lesson; It aims to eliminate the deficiencies in written and oral expression and to improve the skills of using Turkish language.					
Content	This course is a written and oral expression lesson. In the written expression section, firstly, the concepts of method and plan and their applications are emphasized. Literary genres are examined through scientific research articles and official writings. In the verbal lecture section, general information about verbal communication is given; then oral literature types are discussed.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						
Recommended or Required Reading						
Books / Lecture Notes						
Other Sources						
Additional Course Material						
Documents						
Assignments						
Exams						
Course Composition						
Mathematics und Basic Sciences					%	
Engineering					%	

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COURSE SYLLABUS

Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam		
Quiz		
Assignments		
Attendance		
Recitations		
Projects		
Final Exam		
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	1	1
Recitations			
Laboratory			
Projects			
Final Exam	1	2	2
		Total Work Load	**31**
		ECTS Points(Total Work Load / Hour)	**2**

Learning Outcomes

1	Can convey his thoughts orally and in writing within a plan.
2	Can create scientific and official texts.
3	Can evaluate literary genres.

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4	Can make prepared / unprepared speech.
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Weekly Content	
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14	
15	

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

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

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COURSE SYLLABUS

6							
7							
8							
9							
10							
11							
12							
Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High						
Compiled by:							
Date of Compilation:							

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.Compulsory Elective Field

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COURSE SYLLABUS

9.1. BAU206 - Building Materials and Chemistry II

Course Details				
Code		**Academic Year**		**Semester**
BAU 206		2		Spring
Title	**T**	**A**	**L**	**ECTS**
Building Materials and Chemistry II	2	1	2	2

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	✓		
Objectives	Since in the past faulty or incorrectly used building materials have led to extensive structural damage that can often only be repaired at great financial expense, a precise knowledge of the properties of the building materials used is necessary for the successful planning and erection of building structures. In addition, rapid changes in the technology of manufacture and the rapid development of new building materials and combinations of materials require all students of construction more than ever to deepen their knowledge of the relationships between the properties of building materials on the one hand and their behavior in the structure on the other. Increasingly, however, issues of durability, environmental compatibility, recyclability, etc. must also be considered in the selection of building materials. Therefore, learning objectives In the module Construction Chemistry and Building Materials II, the content is specifically deepened from a building materials perspective. In addition, the learning content that is taught theoretically by the students is carried out practically in the laboratory.					
Content	- Aggregates for mortar and concrete - Mineral binders - Concrete - Mortar - Bituminous building materials					
Prerequisites	BAU201					
Coordinator	--					
Lecturer(s)	Assoc. Prof. Dr. Enver Vural YAVUZ					
Assistant(s)	Res. Assist. Ozan SUBAŞI, Res. Assist. Uğur GÜNAY					
Work Placement	--					
Recommended or Required Reading						
Books / Lecture Notes	- Wendehorst Baustoffkunde (Grundlagen – Baustoffe)					
Other Sources	- Aufgabensammlung Werkstoffkunde_ Fragen – Antworten- (2011)					
Additional Course Material						

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COURSE SYLLABUS

Documents	- Vorlesungsskript	
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	25
Quiz		
Assignments	3	10
Attendance		
Recitations	1	10
Projects		
Final Exam	1	55
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	15	2	30
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	-	-	-
Recitations	15	1	15
Laboratory	15	2	30
Projects	-	-	-
Final Exam	1	2	2

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Total Work Load	**77**
ECTS Points (Total Work Load / Hour)	**2**

Learning Outcomes	
1	Precise knowledge of the properties of the building materials.
2	The connections between the building material properties and the behavior in the construction
3	The successful planning and construction of constructions in terms of building materials
4	Theoretical and practical skills for laboratory applications are learned, particularly in the field of building materials.

Weekly Content	
1	Introduction
2	Aggregates for mortar and concrete (Types and properties of aggregates - requirements for aggregates)
3	Aggregates for mortar and concrete (Particle size distribution and grading curves)
4	Mineral binders (gypsum building materials – building lime)
5	Mineral binders (cement – magnesia binder)
6	Mineral binders (cement – magnesia binder)
7	Concrete (Definition of terms – concrete components)
8	Concrete (Quality properties of fresh concrete - composition of concrete)
9	Concrete (Properties of hardened concrete - concrete additives)
10	Concrete (Concretes with special properties - lightweight concrete)
11	Mortar (masonry mortar – plaster mortar)
12	Mortar (screed mortar – grout mortar)
13	Building materials containing bitumen (bitumen – asphalt)
14	Building materials containing bitumen (Building materials containing bitumen in building protection)
15	Laboratory works

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

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

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Assoc. Prof. Dr. Enver Vural YAVUZ - Res. Assist. Ozan SUBAŞI
Date of Compilation:	17.05.2022

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.2. BAU350 – Project I

Course Details				
Code		**Academic Year**		**Semester**
BAU350		3		Fall
Title		**T**	**A**	**L**	**ECTS**
Project I		2	-	2	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Face to face					
Course Type	**Compulsory**		**Elective**	✓		
Objectives	The central competence goal is to apply what they learned in the previous work in a multidisciplinary design team and to learn and test communication skills, teamwork skills and presentation techniques together.					
Content	The topics are announced at the beginning of the semester and are worked on independently in groups. The basic project consists of a course during the semester, which forms the framework for the project. Contents of this course are among others: - Introduction to the project (tasks, boundary conditions etc.) - Basics of project management - Communication in the project (working with the project communication system) The students present the results of their work and the project-specific problems in presentations. In these lectures, project- specific problems are to be dealt with. Excursions will also take place as required. The actual project work takes place in groups. The size of the groups depends on the tasks. It must be ensured that communication takes place both within the group working on a sub-project and between the superordinate teams/groups. For communication, i.e. the exchange of information (e-mail or other documents, drawings etc.), a computer-supported project workspace is provided. The results of the project work are presented in final presentations.					
Prerequisites	(BAU202 or BAU203)					
Coordinator	--					
Lecturer(s)	Assist. Prof. Dr. Murat Cenk ERDURAK					
Assistant(s)	Res. Assist. Recep ÖZKAN					
Work Placement	--					
Recommended or Required Reading						
Books / Lecture Notes	Construction Project Management: A Complete Introduction First Edition by Alison Dykstra					
Other Sources	Lecture notes					
Additional Course Material						

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Documents	--	
Assignments	--	
Exams	--	
Course Composition		
Mathematics und Basic Sciences	25	%
Engineering	25	%
Engineering Design	25	%
Social Sciences	25	%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam		
Quiz		
Assignments		
Attendance		
Recitations		
Projects	2	60
Final Exam	1	40
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	14	2	28
Self-Study	14	8	112
Assignments			
Presentation / Seminar Preparation			
Midterm Exam			
Recitations			
Laboratory			
Projects	14	2	28
Final Exam	1	12	12

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Total Work Load	**180**
ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes	
1	Application of the previous knowledge in a disciplined design team is the major aim. The students gain practice in team work, communication and presentation skills.
2	Students gain knowledge of project management.
3	Students get the basics of project management.
4	Students gain communication skills in the project.
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Weekly Content	
1	Description of the course, information about its operation
2	Introduction to the project
3	Determination of project topics
4	Presentation of students' project proposals
5	Project Progress Report
6	Project Progress Report
7	Project Progress Report
8	Midterm Report Presentation
9	Project Progress Report
10	Project Progress Report
11	Project Progress Report
12	Project Progress Report
13	Project Progress Report
14	Project Progress Report

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COURSE SYLLABUS

15	Project Progress Report

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

	P1	P2	P3	P4	P5	P6	P7
1	5	5	5	5	5	3	4
2	5	5	5	5	5	3	4
3	5	5	5	5	5	3	4
4	5	5	5	5	5	3	4
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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Recep ÖZKAN
Date of Compilation:	07.06.2022

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.3. BAU351 – System Technology

Course Details				
Code		**Academic Year**		**Semester**
BAU 351		3		**W.S-S.S**
Title	**T**	**A**	**L**	**ECTS**
System Technology	2	2	0	6

Language	German					
Level	**Undergraduate**	*	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	*		
Objectives	System technology I: In this part, students acquire the theoretical fundamentals of system technology, in particular system theory and stochastics. System technology II: System technology II provides knowledge of technical systems that are required for planning, building and operating structural systems. The aim is to acquire a basic understanding of the interaction between the complex systems of structural systems in and with their environment. For this purpose, basic knowledge about the control and assessment of technical plants and systems is imparted. Their interaction, their effects on the environment and their interactions with the environment are explained. This takes place against the background of a life cycle assessment in which structural systems are viewed as complete systems.					
Content	- Random events in construction, random variables, random vectors, distributions - Descriptive statistics - Deciding on construction problems with certainty, uncertainty and risk - Systems theory - Classification of technical systems: structure, building technology, facade, expansion, etc. - Control of technical systems - Characteristic values for assessing technical systems - Interaction and dependencies of technical systems - Life cycle considerations of technical systems					
Prerequisites	-					
Coordinator	-					
Lecturer(s)	Dr.-Ing. Timo Hartmann					
Assistant(s)						
Work Placement	-					

Recommended or Required Reading	
Books / Lecture Notes	

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COURSE SYLLABUS

Other Sources		
Additional Course Material		
Documents		
Assignments		
Exams		
Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	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	4	56
Self-Study	14	8	112
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	4	4
Recitations			
Laboratory			
Projects			

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COURSE SYLLABUS

Final Exam	1	2	4
		Total Work Load	**176**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes	
1	Students acquire the theoretical basics of systems engineering, in particular systems theory and stochastics.
2	This course provides knowledge of technical systems that are required for planning, building and operating structural systems.
3	The aim is to acquire a basic understanding of the interaction between the complex systems of structural systems in and with their environment.
4	For this purpose, basic knowledge about the control, assessment and assessment of technical plants and systems is imparted. Their interaction, their effects on the environment and their interactions with the environment are explained.
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Weekly Content	
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COURSE SYLLABUS

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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:	

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.4. BAU352 - Construction Management 1

Course Details				
Code		**Academic Year**		**Semester**
BAU 352		3		Fall
Title		**T**	**A**	**L**	**ECTS**
Construction Management 1		3	2		6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	✓		
Objectives	In the module, students acquire knowledge of the construction industry as part of the economic system and of the market players typical of the industry.					
Content	- Construction industry as part of the economic system - Structures of the construction industry - Tendering, awarding and billing - Construction engineering - Construction planning - Construction management - Building contract law					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	Prof. Dr. -Ing. M. SUNDERMEIER, Dr. Öğr. Üyesi M. C. ERDURAK					
Assistant(s)	P. BEIDERSANDWISCH					
Work Placement	--					

Recommended or Required Reading	
Books / Lecture Notes	Grundlagen der Baubetriebslehre Bd. 1-3; Fritz Berner, Bernd Kochendörfer, Rainer Schach, Teubner
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences	10	%

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

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	14	5	70
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	6	6
Recitations	14	2	28
Laboratory			
Projects			
Final Exam	1	6	6
		Total Work Load	**180**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

1	Technical, economic and legal knowledge is conveyed about workflows and processes in construction companies from the acquisition to the settlement of construction contracts.
2	

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Weekly Content	
1	Subject Information:Part 1a: economic situation and market participants - Part a1: economic classification, products, manufacturers - Part a2: Construction industries and those who demand construction services Subject BB I (Videos): Part 1: Economic fundamentals
2	Topic Information:Chapter 1a: Economic position and market participants- Part a3: Value-based registration of construction activity Market structures of the construction sector- Part a4: 'Value' scope of construction activity - wastes from the construction labor market Subject BB I:Part 2: Production planning in the construction sector- Part a1: economic basis of production planning- Part a2: Reference: contractual starting point of production planning.
3	Subject Information:Part 1b: Production systems of the construction industry- Part b1: Fundamentals of production systems Real estate differentiation and the construction industrySubject area BB I:Part 2: Production planning in the construction industry- Part b1: Approach to production-oriented production planningConstruction breakdown- Part b2: Reference 'building structure' ' - sample project construction process planning
4	Topic Information:Chapter 1b: Production systems of the construction industry - Part b2: Fundamentals of production systems Differentiation between real estate and real estate and the construction industrySubject area BB I:Part 2: Production planning in the construction industry- Part c1: Construction sequence configuration - sample project 'girder bridge'. - Part c2: reference: construction process planning and construction sequence structure - sample project. 'Beam Bridge' Resource Distribution Planning Resource Distribution Planning.
5	Topic Information:Chapter 1b: Construction industry production systems- Part b3: Objectives and constraints of construction projects Project characteristics 'project production' Topic BB I:Part 3: Fundamentals of costing/contract accounting- Part a: Tasks, components and procedures of costing- Part b1: Application: Basic Information for Costing structure and procedure ECT-. Determination of cost formation and allocation
6	Topic Information:Part 2: Project organization - Part a1: Fundamentals of organizational structure, direct planning and parties involved in the construction work Subject area BB I:Part 3: Fundamentals of costing/construction contract accounting- Part b2: Material and labor costs, sample calculations and implementation overhead cost table - Part b3: External service and equipment costs, sample calculations and implementation of the overhead cost table
7	Subject Information:Chapter 2: Project organization - Part a2: Fundamentals of organizational structure - indirectly cont'd Planning and Civil Works Role of Project Management Subject area BB I:Part 4: Production plan. in concrete in situ and reinforced concrete structures- Part a1: Reinforced concrete structures,

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	reinforced concrete - structural foundations,Foundations of in-situ concrete construction- Part a2: Building structure - structuring the construction process
8	Subject area BW: Chapter 5: Project sequence planning Subject area BB I: Chapter 4: Production plan. in reinforced concrete structures with in situ concrete- Part b1: Formwork technology and use of formwork - technical and economic fundamentals-Basic information- Part b2: Formwork technology, formwork planning - formwork components for horizontal components (floor and horizontal beam formwork systems)
9	Topic BB I: Chapter 4: Production plan. in reinforced concrete structures with concrete in situ- Part b3: formwork for vertical structural members - civil/structural engineering.Basic information (wall formwork systems).- Part b4: column/column formwork - conventional formwork for special components, technical and economic parameters, bulkhead and calculation parameters for column formworkcolumn formwork
10	Topic BB I: Chapter 4: Production plan. in reinforced concrete structures with in situ concrete (reinforcement technology, reinforcement work) - Part c1: structural engineering foundations, construction process engineering and quality assurance
11	Subject area BB I:Part 4: Production plan (reinforcement technology, reinforcement work) in concrete-in-situ and reinforced concrete structures- Part c2: calculation, ECT determination, technical-economic parameters
12	Subject area BB I:Part 4: Production plan for concrete-in-situ and reinforced concrete structures (concrete technology, concreting work)- Part d1: structural engineering foundations, construction part for production
13	Topic BB I:Part 4: Production plan for reinforced concrete construction with concrete in situ (concrete technology, concreting work)- Part d2: construction process planning, technical-economic parameters
14	Topic BB I: Exam preparation (live event)
15	

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

	P1	P2	P3	P4	P5	P6	P7
1	4	5	2	4			5
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Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Dr. Ömer Faruk AYDIN
Date of Compilation:	20.05.2022

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9.5. BAU353 – Construction Law

Course Details				
Code		**Academic Year**		**Semester**
BAU 353				W.S-S.S
Title		**T**	**A**	**L**	**ECTS**
Construction Law		2	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 module, students acquire knowledge of the construction industry as part of the economic system and of the market players typical of the industry.					
Content	- Construction industry as part of the economic system - Structures of the construction industry - Tendering, awarding and billing - Construction engineering - Construction planning - Construction management - Building contract law					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	Grundlagen der BaubetriebslehreBd. 1-3; FritzBerner, BerndKochendörfer, RainerSchach, Teubner
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences		%

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Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	14	3	42
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations			
Laboratory			
Projects			
Final Exam	1	2	15
		Total Work Load	**137**
		ECTS Points(Total Work Load / Hour)	**6**

Learning Outcomes

1	Technical, economic and legal knowledge is conveyed about work flows and processes in construction companies from the acquisition to the settlement of construction contracts.
2	

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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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4							

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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.6. BAU354 – Structural Analysis lll

Course Details				
Code		**Academic Year**		**Semester**
BAU354				
Title	**T**	**A**	**L**	**ECTS**
Structural Analysis III	3	1	1	

Language	German					
Level	**Undergraduate**	*	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	*		
Objectives	The aim of the qualification is to acquire competence in the non-linear methods for the static calculation of structures. Basics in theory and application are taught in detail in order to calculate beam structures according to second order theory and plastic hinge theory and to determine the load capacity in the failure state. Students learn to correctly interpret the geometrically and physically non-linear load-bearing behavior, including stability behavior, and to critically evaluate the results of non-linear static calculations.					
Content	Failure states of beam structures are discussed and the formulation of stress and stability problems of the statics derived from them. The basic equations of the second-order theory of rods are derived and the manual calculations in the course of the path size method for geometrically nonlinear problems are learned, in particular the determination of buckling loads and buckling shapes for rod structures using the angle of rotation method. With the flexible hinge theory, the influence of the inelastic material behavior on the load-bearing capacity of rod structures is recorded and the non-linear calculation of load capacities is learned manually by using the load capacity sets and the process of successively increasing the load. The determination of the moment-curvature relationship for rectangular cross-sections of reinforced concrete beams is explained and their application for the load capacity calculation is learned. Subsequently, the basics of the computer-oriented path variable method are explained using the example of the direct stiffness method for beam structures and applied as an example.					
Prerequisites	Structural Analysis I and Structural Analysis II					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	„Baustatik - einfach und anschaulich“, Eddy Widjaja
Other Sources	

Additional Course Material

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Documents		
Assignments		
Exams		
Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	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	6	84
Self-Study	14	2	28
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations			
Laboratory			
Projects			
Final Exam	1	2	15

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Total Work Load	
ECTS Points (Total Work Load / Hour)	
Learning Outcomes	
1	Students learn to correctly interpret the geometrically and physically non-linear load-bearing behavior, including stability behavior, and to critically evaluate the results of non-linear static calculations.
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Weekly Content	
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14	
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Contribution of Learning Outcomes to Program Objectives (1-5)							
	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**
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10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

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9.7. BAU355 - Geodesy and Geoinformatics

Course Details				
Code		**Academic Year**		**Semester**
BAU355		3		W.S-S.S
Title		**T**	**A**	**L**	**ECTS**
Geodesy and Geoinformatics		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	Learning the spatial concepts that are important for the planning, construction and operation of civil engineering projects and activities, the concepts and principles of the location and arrangement of points on the surface of the three-dimensional earth to solve the problem of the transformation of the curved earth surface on a flat map or a computer screen, modern measuring and positioning systems such as GPS and GNSS, the basics and types of GIS.					
Content	Physical earth, coordinate systems, projection and map information, measurement concept and errors, satellite-based measurement methods such as terrestrial and GNSS and remote sensing methods as well as modern measuring instruments used in these methods, height measurements, sections as well as area and volume calculations, concept of the geographic information system and its areas of application , Photogrammetric measurement methods, deformation measurements, It includes basic information such as reading classic map information and related field and laboratory applications.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	Anderson, J.M., Mikhail, E.M., “Surveying: Theory and Practice”, WCB/McGraw-Hill, Boston, c1998
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

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Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	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	14	3	42
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations			
Laboratory			
Projects			
Final Exam	1	2	15
		Total Work Load	**137**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

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1	Discussion and explanation of the survey concept, the causes and types of errors in the survey
2	Calculate errors and solve basic calculations in the survey
3	Recognize the use of 3D locations in civil engineering
4	Describe the concept of GPS and organize the use of GPS in different applications
5	Define the concept, components and data types of GIS
6	Prove basic skills and knowledge in geo-data production
7	Develop maps with spatial analysis using GIS.
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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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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.8. BAU356 – Geology for Civil Engineers

Course Details				
Code		**Academic Year**		**Semester**
BAU 356		3		Spring
Title	**T**	**A**	**L**	**ECTS**
Geology for Civil Engineers	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	To teach Civil Engineering students the basic structure of the earth, geological formations, mineral and rock types, to inform them about the material properties of soil and rocks, to gain experience in preparing geological mapping in the context of topographic mapping and technical applications.					
Content	Fields of Construction Geology. Fundamentals of geology, Structure of the Earth. Geotechnical, Exogenous and endogenous Dynamics. Historical Geology and Geomorphology. Rock and rock assemblages. Stress in mountainous areas. Material properties of soil, rocks and mountainous areas. Groundwater in Soils and Rocks. Evaluation criteria in Soil and Rocks. Reporting and documentation in Construction Geology.					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	Assoc. Prof. Dr. Enver Vural YAVUZ					
Assistant(s)	Res. Assist. Ozan SUBAŞI					
Work Placement	--					

Recommended or Required Reading	
Books / Lecture Notes	Baugeologie (Edwin Fecker) - Springer Spektrum (2019)
Other Sources	--

Additional Course Material	
Documents	--
Assignments	--
Exams	--

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Course Composition		
Mathematics und Basic Sciences	15	%
Engineering	25	%
Engineering Design	20	%
Social Sciences	--	%
Educational Sciences	--	%
Natural Sciences	25	%
Health Sciences	--	%
Expert Knowledge	15	%

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

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	15	3	45
Self-Study	15	3	45
Assignments	1	10	10
Presentation / Seminar Preparation	--	--	--
Midterm Exam	1	2	15
Recitations	15	1	15
Laboratory	15	1	15
Projects	--	--	--
Final Exam	1	2	20
		Total Work Load	**165**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

1	Gain knowledge about geological events, determine the structure of the earth and geological time, and apply the principles of relative dating.
2	Identify metamorphic, igneous, sedimentary processes and compare corresponding common minerals and rock types.
3	Understands the decomposition processes of the soil according to the particle size, the formation of the soil.
4	Understands the differences between ground and rock, creates information about the structure of rock and mountainous areas.
5	Interprets topographic maps and simple geological maps, uses information from geological and topographic maps to develop geological sections, and identifies basic geological structures in sections.
6	Discusses the concepts of groundwater and surface water in geology, relates surface water to the ground, relates geological concepts to technical applications;
7	Acts effectively as a member of a group to relate geology to one of its technical applications and to communicate in both written report and presentation formats.
Weekly Content	
1	Introduction
2	Fundamentals of Geology
3	Fundamentals of Geology
4	Rock science
5	Structure of Rocks and Mountainous Areas
6	Stress in Mountainous Areas
7	Stress in Mountainous Areas
8	Collection and Presentation of Construction Geology data
9	Material Properties of Soil, Rock and Mountainous Areas
10	Material Properties of Soil, Rock and Mountainous Areas
11	Groundwater in Ground and Rock
12	Groundwater in Ground and Rock
13	Evaluation Criteria in Soil and Rock
14	Collection and Presentation of Construction Geology Data
15	Reporting and Documentation in Construction Geology(

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

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

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

7	5	3	3	4	4	5	5

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Assoc. Prof. Dr. Enver Vural YAVUZ - Res. Assist. Ozan SUBAŞI
Date of Compilation:	17.05.2022

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.9. BAU357 - Computer Applications in Civil Engineering

Course Details				
Code		**Academic Year**		**Semester**
BAU357		3		W.S-S.S
Title		**T**	**A**	**L**	**ECTS**
Computer Applications in Civil Engineering		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	The students learn the basics of solving civil engineering problems with the computer and acquire skills to be able to independently solve smaller tasks in civil engineering with the computer.					
Content	- Object-oriented concepts for the description of civil engineering tasks - Implementation of object-oriented concepts in an object-oriented programming language - algorithms - Data structures in civil engineering - organizational structures - Sorting and search algorithms - Basics of graphical user interfaces - Exemplary application on civil engineering tasks					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	
Other Sources	

Additional Course Material	
Documents	Informations verarbeitung in Bau unternehmen Struktur der Informationen zur Bearbeitung betriebswirtschaftlicher und baubetrieblicher Aufgaben Autoren: Huhnt, Wolfgang
Assignments	
Exams	

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	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		84
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	2		7
Recitations	28		56
Laboratory	7		
Projects			
Final Exam			
		Total Work Load	**168**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

1	The students learn the basics of solving civil engineering problems with the computer and acquire skills to be able to independently solve smaller tasks in civil engineering with the computer. These basic skills are necessary on the one hand for understanding the software tools used in civil engineering, on the other hand, these basics are necessary for those engineers who want to work in the development and expansion of application programs for civil engineering.
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Weekly Content	
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DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Contribution of Learning Outcomes to Program Objectives (1-5)							
	P1	P2	P3	P4	P5	P6	P7
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12							
Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High						
Compiled by:							
Date of Compilation:							

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.10. BAU425 – Experimental Soil Mechanics

Course Details				
Code		**Academic Year**		**Semester**
BAU425		4		Spring
Title	**T**	**A**	**L**	**ECTS**
Experimental Soil Mechanics		2		2

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**	✓	**Elective**			
Objectives	This module conveys the experimental knowledge of soil mechanics required for civil engineers and the ability to apply this knowledge in the laboratory.					
Content	Preparation of the soil sample for the test, setup of the testing equipment, finding the internal friction angle and cohesion of the soil by shear box test, obtaining the void ratio-pressure graph of the soil by consolidation test.					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	Assoc. Prof. Dr. M. HAMDERİ					
Assistant(s)	--					
Work Placement	--					

Recommended or Required Reading	
Books / Lecture Notes	Bardet, J.P., 1997, Experimental Soil Mechanics, Prentice Hall, USA.
Other Sources	

Additional Course Material	
Documents	Lecture slides, script exercises, script formula collection
Assignments	
Exams	Midterm Exam, Final Exam

Course Composition		
Mathematics and Basic Sciences		%
Engineering		50 %
Engineering Design		20 %

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		30 %

Assessment

Activity	Count	Percentage (%)
Midterm Exam		
Quiz		
Assignments	2	40
Attendance		
Recitations		
Projects		
Final Exam	1	60
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures			
Self-Study			
Assignments			
Presentation / Seminar Preparation			
Midterm Exam			
Recitations	2	2	4
Laboratory	14	4	56
Projects			
Final Exam			
		Total Work Load	**60**
		ECTS Points(Total Work Load / Hour)	**2**

Learning Outcomes

1	Student learns to find and use soil parameters by experimenting.
2	Student learns and applies laboratory processes before and after the experiment.
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DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

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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
1	4	2	1	1	3	5	2
2	4	2	1	1	3	5	2
3							
4							
5							
6							

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COURSE SYLLABUS

7							
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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=tr&curSunit=5728	
Compiled by:	Assoc. Prof. Dr. Murat Hamderi, Res. Asst. Eren Kaya
Date of Compilation:	01.06.2022

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.11. BAU451 – Water Resources

Course Details				
Code		**Academic Year**		**Semester**
BAU451		4		Fall
Title		**T**	**A**	**L**	**ECTS**
Water Resources		3	2	-	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	✓		
Objectives	Teaching the basics of hydrology and rural water management and related practical applications in various fields of water resources engineering					
Content	Hydraulic engineering: hydrology, river engineering, dams, hydropower plants, hydraulic engineering, coastal engineering Engineering hydrology: water cycle and household, precipitation, evaporation, infiltration, groundwater, runoff, basics of river basin modeling, runoff formation models, system hydrology, unit gait processes, translation and retention models, watercourse models, physically based hydrological models, agricultural hydraulic engineering Water management projects, interaction of urban water management, hydrological and hydraulic engineering aspects					
Prerequisites	"Fluid Mechanics"					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	„Hydraulik für Bauingenieure: Grundlagen und Anwendungen", Robert Freimann „Hydrologie und Wasserwirtschaft – Eine Einführung für Ingenieure", Ulrich Maniak
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences		%

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Engineering	100	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	26
Quiz		
Assignments	8	24
Attendance		
Recitations		
Projects		
Final Exam	1	50
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	3	42
Self-Study	14	2	28
Assignments	8	4	32
Presentation / Seminar Preparation			
Midterm Exam	1	1	2
Recitations	14	2	28
Laboratory			
Projects			
Final Exam	1	2	10
		Total Work Load	**142**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

1	Hydraulic engineering: scientific basics and their application in the planning, calculation and dimensioning of simple hydraulic engineering systems
2	Engineering hydrology: scientific foundations and their implementation for the planning, calculation and measurement of simple hydrological systems in rural and urban areas. Examples of applications from the water sector: Independent processing of simple engineering projects from the water sector

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COURSE SYLLABUS

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Weekly Content	
1	Fundamentals of hydrology, laws used in hydrology, water cycle
2	Precipitation, evapotranspiration, infiltration, groundwater hydraulics
3	Runoff and surface flow, surface drainage, well hydraulics
4	River flow, measurements and analysis, hydrograph theory
5	Unit hydrograph theory and applications
6	River morphology, sediment motion in rivers
7	Flood protection, structural measures and design
8	Dams and reservoirs.
9	Dams, stability
10	Weirs and regulators, watertightness, weir hydraulics
11	Hydropower, navigation channels
12	Physical and numerical modeling in water resources engineering
13	Environment-structure-hydrology interaction in water resources
14	Fundamentals of coastal engineering, coastal morphology, water wave mechanics and practical applications
15	Breakwaters and shore protection structures

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

	P1	P2	P3	P4	P5	P6	P7
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COURSE SYLLABUS

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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	M. Adil Akgul, PhD.
Date of Compilation:	26.09.2022

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.12. BAU452 - Basics of Urban Water Management

Course Details				
Code		**Academic Year**		**Semester**
BAU452		4		Spring
Title		**T**	**A**	**L**	**ECTS**
Basics of Urban Water Management		3	2	-	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	✓		
Objectives	Designed and planed simple residential water management systems					
Content	Hydraulic engineering: hydrology, river engineering, dams, hydroelectric power plants, waterway engineering, coastal engineering Engineering hydrology: water cycle and balance, precipitation, evaporation, seepage, groundwater, runoff, basics of river basin modelling, runoff formation models, system hydrology, unit hydrograph method, translation and retention models, river models, physically based hydrological models, agricultural hydraulic engineering Application examples from water management: independent processing of simple engineering practice Water management projects, interaction of urban water management, hydrological and hydraulic engineering aspects.					
Prerequisites	BAU205 Fluid Mechanics					
Coordinator	--					
Lecturer(s)	Prof. Dr.-Ing. M. Barjenbruch, Dr. Ö.F. AYDIN					
Assistant(s)	M.Sc., C. Eichholz					
Work Placement	--					
Recommended or Required Reading						
Books / Lecture Notes	„Taschenbuch der Wasserwirtschaft“, Lecher, Kurt; Lühr, Hans-Peter; Zanke, Ulrich					
Other Sources						
Additional Course Material						
Documents	Weekly provision via "Google G Suite for Education", processing according to the weekly semester schedule					
Assignments						
Exams	Midterm exam, oral final exam					
Course Composition						

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

Mathematics und Basic Sciences		%
Engineering	60	%
Engineering Design	40	%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	3	42
Self-Study	14	5	70
Assignments			
Presentation / Seminar Preparation	12	2	24
Midterm Exam	1	2	2
Recitations	14	2	28
Laboratory			
Projects			
Final Exam	1	2	2
		Total Work Load	**168**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

1	Education, gives students the scientific basis for water management in urban areas.

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

2	Students can measure and plan simple water management systems.
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Weekly Content	
1	Introduction urban water management, water demand, - production
2	Water transport, quality, treatment
3	Water storage and distribution
4	Water demand and single well
5	Water reservoirs
6	Sewer system, rainwater I
7	Sewer system, rainwater II
8	Time coefficient
9	Mechanical cleaning
10	Mechanical cleaning
11	Biological cleaning
12	Biological cleaning
13	
14	
15	

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

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

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Dr. Ömer Faruk AYDIN
Date of Compilation:	17.05.2022

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.13. BAU453 - Calculation for 3D Civil Engineering Application

Course Details				
Code		**Academic Year**		**Semester**
BAU453		4		1-2
Title		**T**	**A**	**L**	**ECTS**
Calculation for 3D Civil Engineering Application		1	2	2	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 the course is to develop the students' ability to model 3D thinking and applications in civil engineering					
Content	Create 3D design Creation of soil models with computer programs One-dimensional models Two-dimensional models Three-dimensional models					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%

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COURSE SYLLABUS

Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	14	3	42
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations			
Laboratory			
Projects			
Final Exam	1	2	15
		Total Work Load	**137**
		ECTS Points (Total Work Load / Hour)	**6 ECTS**

Learning Outcomes

1	The students can model two and three dimensions.
2	Students can use finite element programs.
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DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

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WeeklyContent	
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Contribution of Learning Outcomesto Program Objectives (1-5)

	P1	P2	P3	P4	P5	P6	P7
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DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.14. BAU454 – Structural Engineering lll

Course Details				
Code		**Academic Year**		**Semester**
BAU454		4		Fall
Title		**T**	**A**	**L**	**ECTS**
Structural Engineering III		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	This module completes the cross-material teaching of the basics of design and construction that started in modules KI I and KI II.					
Content	- Local failure of steel cross sections (dents) - Stability problems mainly due to the bending of stressed components (bending twist) - Stability problems of pressure-stressed components (buckling of multi-part rods) - Serviceability of solid components, verification of crack widths - Fatigue strength, basics and evidence					
Prerequisites	Desirable requirements for participation in the courses: Structural engineering, I and II Mandatory requirements for registering for module exams: no					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	Grundlagen der Tragwerklehre, Band 226. September 2011 von Franz Krauss und Wilfried Führer
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences		%

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

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**

Learning Outcomes

1	The result is the mastery of further basics of essential topics in constructive engineering. The module is indispensable for all those who want to dedicate themselves to the tasks of "constructive engineering" or who choose the focus on "design and construction" in the master's program.
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DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

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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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3							
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DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

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11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	Research Assist. Dr. ÖmerFaruk Aydın
Date of Compilation:	17.03.2020

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.15. BAU456 – Construction Management ll

Course Details				
Code		**Academic Year**		**Semester**
BAU456		4		Fall
Title		**T**	**A**	**L**	**ECTS**
Construction Management II		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	Understanding the basics of construction management and overseeing the project lifecycle as well as the corresponding phases. Comprehending and applying the fundamental principles of project management, including the use of resource planning methods, CPM, PERT, project crashing, and EVA for evaluating project progression.					
Content	• Understanding the Fundamentals of Construction Management: To comprehend the principles of construction management, including the different types of construction projects, project execution models, construction contracting models, the sequencing of construction processes, and the interaction between various construction phases. • Knowledge about Project Phases: The students are expected to develop a comprehensive understanding of the project lifecycle and its individual phases, from ideation, planning, and execution, through to project closure and post-project evaluation. • Application of Resource Planning Methods: Students should have the ability to identify, utilize, and optimize methods for planning and controlling resources in projects, including scheduling, cost control, and quality management. • Basic Understanding of Project Management in Construction: Students should develop a basic understanding of the significance and application of project management in construction. They should emphasize the role that scheduling plays in project coordination and control. • Understanding of CPM (Critical Path Method): Students should be able to explain the CPM methodology, including the determination of float, and identification of the critical path in a project. • Application of PERT (Program Evaluation and Review Technique): Students should understand the PERT technique and its application in risk estimation and evaluation. They should be able to create and interpret PERT charts and calculate the expected project timeline considering uncertainties. • Understanding of Crashing: Students should understand the method of crashing, where resources are increased to shorten the project duration. They should be able to evaluate the effects of crashing on costs and workload. • Application of Earned Value Analysis (EVA): Students should understand what EVA is and how it is used to assess project progress and forecast project performance. • The role of formwork systems in construction projects and formwork system selection criteria					

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COURSE SYLLABUS

Prerequisites	"Construction Management I"	
Coordinator		
Lecturer(s)	Dr.-Eng. Taylan Terzioğlu	
Assistant(s)		
Work Placement		
Recommended or Required Reading		
Books / Lecture Notes	Grundlagen der Baubetriebslehre Bd. 1-3; Fritz Berner, Bernd Kochendörfer, Rainer Schach, Teubner	
Other Sources		
Additional Course Material		
Documents		
Assignments		
Exams		
Course Composition		
Mathematics und Basic Sciences	25	%
Engineering	25	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge	50	%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	35
Quiz		
Assignments		
Attendance	1	5
Recitations		
Projects	1	20
Final Exam	1	40
	Total	**100**
ECTS Points and Work Load		

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COURSE SYLLABUS

Activity	Count	Duration	Work Load (Hours)
Lectures	14	+/- 4	60
Self-Study	14	+/- 4	60
Assignments	0	0	0
Presentation / Seminar Preparation	0	0	0
Midterm Exam	1	1,5	1,5
Recitations	14	+/- 2	30
Laboratory	0	0	0
Projects	0	0	0
Final Exam	1	3,5	3,5
		Total Work Load	**155**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes	
1	Fundamentals of the Construction Economy and the Construction Industry
2	Project Participants and Project Life Cycle
3	Introduction to Project Management
4	Knowledge Areas in Project Management
5	Project Management in Construction and Construction Management
6	Project Delivery Methods
7	Construction Contracting Methods
8	Introduction to Scheduling
9	Development of a Network Model
10	Scheduling Technique: Critical Path Method (CPM)
11	Scheduling Technique: Performance Evaluation & Review Technique (PERT)
12	Project Crashing
13	Resource Management in Construction
14	Earned Value Analysis (EVA)
15	The role of Formwork Systems in the Construction Industry
16	Selection Criteria for Formwork Systems in Construction Projects
Weekly Content	
1	**Part 1a:** Basics of Construction Economics and Industry **Part 1b:** Project Participants and Project Chronology

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COURSE SYLLABUS

2	**Part 2a:** Introduction to Project Management **Part 2b:** Knowledge Areas in Project Management
3	**Part 3a:** Project Management in Construction and Construction Management **Part 3b:** Project Delivery Methods
4	**Part 4a:** Construction Contracting Models **Part 4b:** Project Scheduling
5	**Part 5a:** Development of a Network Model **Part 5b:** Scheduling Technique: Critical Path Method (CPM)
6	**Part 6:** Scheduling Technique: Critical Path Method (CPM)-Applied Examples
7	**Part 7a:** Performance Evaluation & Review Technique (PERT) **Part 7b:** Performance Evaluation & Review Technique (PERT)- Applied Examples
8	**Midterm exam – 90 Min. (Written)**
9	**Part 9:** Project Crashing
10	**Part 10:** Crashing – Applied Examples
11	**Part 11a:** Resource Management **Part 11b:** Resource Management - Applied Examples
12	**Part 12a:** Earned Value Analysis (EVA) **Part 12b:** Earned Value Analysis (EVA) - Applied Examples
13	**Part 13a:** The Role of Formwork Systems in the Construction Industry **Part 13b:** Selection Criteria for Formwork Systems in Construction Projects
14	Final Exam Preparation
15	**Final Examination (FE) – 210 Min. (Written)**

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

	P1	P2	P3	P4	P5	P6	P7
1	3	2	4	5	5	4	5
2	3	2	5	5	5	5	5
3	3	2	5	5	5	5	4
4	3	2	4	5	5	4	5
5	3	2	4	4	4	4	4
6	3	2	5	5	5	5	5
7	3	2	4	4	4	4	4
8	3	2	5	5	5	5	5
9	3	2	5	5	4	5	5
10	3	2	5	4	5	5	4
11	3	2	5	5	5	5	5
12	3	2	5	5	5	5	5
13	3	2	4	4	4	4	4
14	3	2	5	5	5	5	5
15	3	2	5	4	4	5	4
16	3	2	5	5	4	5	4
Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High						

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COURSE SYLLABUS

https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Dr.-Eng. Taylan Terzioğlu
Date of Compilation:	19.09.2023

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.16. BAU457 - Construction Chemistry and Building Materials Testing

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	- 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-Kompendium: www.bam.de/microsites/zfp_kompendium/verz/findex_abc.html
Other Sources	

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COURSE SYLLABUS

Additional Course Material		
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			

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Final Exam	1	2	15
		Total Work Load	**137**
		ECTS Points (Total Work Load / Hour)	**6**

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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COURSE SYLLABUS

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

	P1	P2	P3	P4	P5	P6	P7
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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	17.03.2020

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.17. BAU458 – Building Dynamics l

Course Details				
Code		**Academic Year**		**Semester**
BAU458		4		Fall
Title		**T**	**A**	**L**	**ECTS**
Building Dynamics I		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	The aim of the qualification is to introduce students to classic and numerical methods for the dynamic calculation of structures. In detail, principles of dynamic modeling as well Fundamentals in theory and application imparted to calculate dynamic stress conditions according to first order theory. Students learn to interpret the results of simple dynamic calculations in an engineering manner and to evaluate them critically.					
Content	Fundamentals of dynamic behavior and basic equations, classification of dynamic models, simple and generalized single-mass vibrators, structural models as single-mass vibrators, harmonics, periodic and arbitrary excitation, solution methods in the frequency and time domain, vibration resonances and vibration isolation, basics of vibration measurements, Fourier analysis, discrete Fourier transformation , Discrete systems with several degrees of freedom, modal analysis, natural frequencies and modes of vibration, modal equations of motion, Rayleigh method for determining the first natural frequency, practical examples					
Prerequisites	Module "Kinematics and Dynamics", "Structural Analysis I" and "Structural Analysis II"					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						
Recommended or Required Reading						
Books / Lecture Notes	„Baudynamik-Praxis: Mit zahlreichen Anwendungsbeispielen (Bauwerk)“, Björn Haag und Lothar Stempniewski					
Other Sources						
Additional Course Material						
Documents						
Assignments						
Exams						
Course Composition						

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COURSE SYLLABUS

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**

Learning Outcomes

1	Students learn to interpret the results of simple dynamic calculations in an engineering manner and to evaluate them critically.

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COURSE SYLLABUS

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

	P1	P2	P3	P4	P5	P6	P7
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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	17.03.2020

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.18. BAU459 – Basic Principles of Rail Transport

Course Details				
Code		**Academic Year**		**Semester**
BAU 459		4		**W.S-S.S**
Title	**T**	**A**	**L**	**ECTS**
Basic Principles of Rail Transport	2	2	0	6

Language	German					
Level	**Undergraduate**	*	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	*		
Objectives	Knowledge: After successfully passing the module, the students have the basic knowledge as well as the system-specific advantages and disadvantages of the railway. This includes both constructive and operational knowledge. The students are therefore able to give qualified assessments of the railway system. This includes the subject areas of routing and design, railway operation, construction, control and safety technology as well as planning and financing. The special features of urban lane-guided traffic are also dealt with. Skills: Students are able - correctly assess the scope of solutions for rail-specific issues - Carry out elementary route and timetable calculations - present the safety requirements for railway systems They have the necessary skills to assess fundamental rail-specific problems					
Content	Lecture parts: - System features, historical development (beginnings, rail reform, regionalization, current European development) - Basics of planning (mobility, competition with other modes of transport, planning process, federal transport route planning, important rail projects) - Basics of rail operations (braking, driving dynamics, safety philosophy, safety technology) - Basics of track construction (wheel-rail system, ballast superstructure, slab track, switches) - Basics of the design (routing elements, stations) Exercise parts: Basic railway-specific calculations (travel times, cant, sinusoidal run, blocking times)					
Prerequisites	-					
Coordinator	-					
Lecturer(s)						

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COURSE SYLLABUS

Assistant(s)		
Work Placement	-	
Recommended or Required Reading		
Books / Lecture Notes		
Other Sources		
Additional Course Material		
Documents		
Assignments		
Exams		
Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	4	56
Self-Study	14	8	112
Assignments			
Presentation / Seminar Preparation			

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Midterm Exam	1	4	4
Recitations			
Laboratory			
Projects			
Final Exam	1	4	4
		Total Work Load	**176**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes	
1	Students are able correctly assess the scope of solutions for rail-specific issues.
2	Students are able carry out elementary route and timetable calculations.
3	Students are able present the safety requirements for railway systems.
4	They have the necessary skills to assess fundamental rail-specific problems.
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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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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.19. BAU460 - Building Information Modeling

Course Details				
Code		**Academic Year**		**Semester**
BAU 460		4		**W.S-S.S**
Title		**T**	**A**	**L**	**ECTS**
Building Information Modeling		2	2	0	6

Language	German					
Level	**Undergraduate**	*	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	*		
Objectives	The students learn the basics of Building Information Modeling. You acquire basic knowledge about the structure of parameterized building models. You will develop skills to create and check independently selected models, to use exchange formats with the aim of the continuity of the flow of information and to evaluate the models you have created yourself. Professional competence: 35% Methodological competence: 35% System competence: 25% Social competence: 5%					
Content	- Basics of geometric modeling with parameterized objects - Basics of semantic modeling - Forms of cooperation - Exemplary creation of models - Exemplary evaluation of models					
Prerequisites	-					
Coordinator	-					
Lecturer(s)						
Assistant(s)						
Work Placement	-					

Recommended or Required Reading	
Books / Lecture Notes	
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

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COURSE SYLLABUS

Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	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	4	56
Self-Study	14	2	28
Assignments	3	30	90
Presentation / Seminar Preparation			
Midterm Exam	1	4	4
Recitations			
Laboratory			
Projects			
Final Exam	1	4	4
		Total Work Load	**176**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

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COURSE SYLLABUS

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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
1							

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10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.20. BAU461 – Masonry Construction

Course Details				
Code		**Academic Year**		**Semester**
BAU461		3		Winter/Spring
Title	**T**	**A**	**L**	**ECTS**
Masonry Construction	3	2	-	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	✓		
Objectives	The students acquire the basics of engineering masonry construction. The aim is for the students to gain a basic understanding of the design and execution of engineered masonry structures. After completing the lecture, the students are able to provide the necessary proof of load-bearing capacity and to plan construction details correctly.					
Content	- Stress (dead load, traffic load, wind load, etc.) - Safety Theory - Basics of design (simplified / more precise procedure) - Verification (wall-ceiling node, shear, buckling, basement walls, load application, etc.) - Deformation and crack resistance - Stiffening of buildings against horizontal loads - Construction details					
Prerequisites	--					
Coordinator	--					
Lecturer(s)	--					
Assistant(s)	--					
Work Placement	--					

Recommended or Required Reading	
Books / Lecture Notes	--
Other Sources	--

Additional Course Material	
Documents	--
Assignments	--
Exams	--

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COURSE SYLLABUS

Course Composition		
Mathematics und Basic Sciences		%
Engineering	40	%
Engineering Design	30	%
Social Sciences		%
Educational Sciences		%
Natural Sciences	30	%
Health Sciences		%
Expert Knowledge		%

Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	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	3	42
Self-Study	14	7	98
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations	14	2	28
Laboratory			
Projects			
Final Exam	1	3	3
		Total Work Load	**174**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

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COURSE SYLLABUS

1	The students acquire the basics of engineering masonry construction.
2	The students acquire a basic understanding of the design and application of engineering masonry construction.
3	The students can demonstrate the required load-bearing capacity and plan construction details precisely.
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Weekly Content	
1	Introduction
2	Stress (dead load, traffic load, wind load, etc.)
3	Stress (dead load, traffic load, wind load, etc.)
4	Safety Theory
5	Safety Theory
6	Basics of design (simplified / more precise procedure)
7	Basics of design (simplified / more precise procedure)
8	Basics of design (simplified / more precise procedure)
9	**Midterm**
10	Verification (wall-ceiling node, shear, buckling, basement walls, load application, etc.)
11	Verification (wall-ceiling node, shear, buckling, basement walls, load application, etc.)
12	Deformation and crack resistance
13	Stiffening of buildings against horizontal loads
14	Construction details
15	Construction details

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

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

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COURSE SYLLABUS

2	5	5	4	5	4	4	5
3	5	5	4	5	4	4	5
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12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	Recep Özkan
Date of Compilation:	01.06.2022

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.21. INF101 - Introduction to Computer Science and Programming

Course Details				
Code		**Academic Year**		**Semester**
INF101		3		Fall
Title		**T**	**A**	**L**	**ECTS**
Introduction to Computer Science and Programming		2	0	2	6

Language	German					
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	**X**		
Objectives	After successfully completing this module, students are able to describe elementary concepts and methods of computer science. You have knowledge of imperative programming and basic knowledge of basic data structures. They are able to algorithmically convert problems into programs and use the programming languages C and C ++.					
Content	Introduction to Computer Science -data representation in computers -coding theory Introduction to Programming -algorithm, specification, program -data types, variables, operators -logical expressions, flow control, loops -functions, areas of validity -pointers -enumerations, structures, fields -microprocessor programming with Arduino (optional for interested students) Students deal with these concepts by independently solving, programming and handing in predetermined, relevant programming tasks.					
Prerequisites	None					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement	None					

Recommended or Required Reading	
Books / Lecture Notes	-Hartmut Ernst, Jochen Schmidt, Gerd Beneken. Grundkurs Informatik. Springer Viewek, 2016
Other Sources	-Helmut Erlenkötter. C: Programmieren von Anfang an. RowohltTaschenbuchVerlag, 1999.

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COURSE SYLLABUS

Additional Course Material		
Documents	-	
Assignments	-	
Exams	-	
Course Composition		
Mathematics und Basic Sciences	20	%
Engineering	20	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge	60	%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	40
Quiz		
Assignments	6	10
Attendance		
Recitations		
Projects		
Final Exam	1	50
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	14	2	28
Self-Study	1	60	60
Assignments	6	9	54
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations			
Laboratory			
Projects			
Final Exam	1	10	10

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COURSE SYLLABUS

Total Work Load	**155**
ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes	
1	Know how different types of data are displayed in computers
2	Knowledge of number arithmetic in computers
3	Knowledge of fault-tolerant, compressing and encrypting coding methods
4	Independent development of algorithms in pseudo code and implementation in the programming language C

Weekly Content	
1	Introduction to computer science, history, data display in computers
2	Number systems and binary arithmetic
3	Programming in C (basic terms: algorithm, flowchart)
4	Programming in C (datatypes, variables)
5	Programming in C (mathematical and logical operators)
6	Programming in C (if statements, flow control)
7	Programming in C (gotoloop construction)
8	Programming in C (loops)
9	Midterm exams
10	Coding and encryption
11	Programming in C (arrays and structures)
12	Programming in C (functions and scope of variables)
13	Programming in C (recursive functions)
14	Programming in C (functions, call-by-value, call-by-reference)
15	Programming in C (pointer)

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

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

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

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COURSE SYLLABUS

Date of Compilation:	12.03.2020

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COURSE SYLLABUS

9.22. INF102 - Object Oriented Programming

Course Details				
Code		**Academic Year**		**Semester**
INF102		3		Spring
Title		**T**	**A**	**L**	**ECTS**
Object Oriented Programming		2	0	2	6

Language	German					
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	**X**		
Objectives	After completing this module, the students have knowledge of object-oriented programming and basic knowledge of basic data structures. They can name and apply elementary structuring and processing mechanisms (object orientation, modularization, and recursion).					
Content	The following concepts are introduced using an object-oriented programming language (Java): - Object-oriented data modeling with UML - encapsulation - inheritance and polymorphism - abstract classes and interfaces - exception handling - genericity Students deal with these concepts by independently solving, programming and handing in predetermined, relevant programming tasks.					
Prerequisites	INF101					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement	None					

Recommended or Required Reading	
Books / Lecture Notes	Ullenboom C. Java ist auch eine Insel. Galileo Computing, 2014. - Grundkurs Programmieren in Java. D. Ratz, J. Scheffelt, D. Seele, J. Wiesenberber. Hanser Verlag, 2006.
Other Sources	Concepts of Programming Languages, Robert W. Sebesta, Pearson Education, 2012.

Additional Course Material

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Documents	-	
Assignments	-	
Exams	-	
Course Composition		
Mathematics und Basic Sciences		%
Engineering	40	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge	60	%

Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	40
Quiz		
Assignments	6	0
Attendance		
Recitations		
Projects		
Final Exam	1	60
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	14	2	28
Self-Study	1	60	60
Assignments	6	10	60
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations			
Laboratory			
Projects			
Final Exam	1	10	10
		Total Work Load	**159**

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ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes	
1	Ability to analyze problems, taking into account the required and generated data.
2	Ability to perform object-oriented modeling with UML elements.
3	Knowledge of principles of object-oriented programming.
4	Ability to perform object-oriented programming in Java.

Weekly Content	
1	Introduction to object-oriented programming (explanation of the advantages in terms of quality and reusability)
2	Introduction to object-oriented data modelling, class diagrams in UML
3	Introduction to object-oriented data modelling, class diagrams in UML
4	Creation of classes and objects, constructor methods
5	Inheritance and polymorphism
6	Method overloading
7	Type queries and conversions
8	Repetition
9	Midterm exams
10	Genericity
11	Abstract classes and interfaces
12	Interface programming
13	Exception handling
14	Introduction to GUI programming with Java (Java Swing, JavaFX)
15	Repetition

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

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

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	12.03.2020

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9.23. ING404 - Entrepreneurship

Course Details				
Code		**Academic Year**		**Semester**
ING404		4		Spring
Title		**T**	**A**	**L**	**ECTS**
Entrepreneurship		2	0	0	2

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Face-to-Face, Group Study, Individual Study.					
Course Type	**Compulsory**		**Elective**	✓		
Objectives	Upon successful completion of this course, a student will have comprehensive knowledge of below subjects, - Describe and explain the general process and the roles that are involved in developing an idea and starting a new technology-based company - Analyse and evaluate company organisation and projects, customers, markets, finance and personnel issues when starting up a new technology-based company - Describe and critically review a product and process development process					
Content	- Conceptual phase: introduction to thematic topic, case selection, project teams, first discussions - Business phase (elaboration of business model, branding, market structure, venture process and finance)					
Prerequisites	None					
Coordinator	DI Dr. Ahmet Yıldız					
Lecturer(s)	DI Dr. Ahmet Yıldız					
Assistant(s)	--					
Work Placement	None					
Recommended or Required Reading						
Books / Lecture Notes	- McGourty, Jack. "Technology Ventures: From Idea to Enterprise." (2009)					
Other Sources	- Bolton, Bill K., and John Thompson. Entrepreneurs: Talent, temperament, technique. Routledge (2004)					
Additional Course Material						
Documents	--					
Assignments	--					
Exams	--					
Course Composition						

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Mathematics und Basic Sciences		%
Engineering		%
Engineering Design	50	%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge	50	%

Assessment

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

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study	1	10	10
Assignments	3	4	12
Presentation / Seminar Preparation	1	6	6
Midterm Exam			
Recitations			
Laboratory			
Projects			
Final Exam			
		Total Work Load	**56**
		ECTS Points (Total Work Load / 28)	**2**

Learning Outcomes

1	Identify and evaluate an idea; assess the market

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2	Leverage experiments to validate your idea and refine your business strategy
3	Appreciate the risks and rewards of entrepreneurship
4	Discover the key financial decisions any entrepreneur must make in the early stages of a new venture
5	Effectifely pitch a business idea to a potential investor
Weekly Content	
1	"Entrepreneur" and Lean Start-Up
2	Business Idea and Evaluation
3	Building a Team
4	Customer segmentation
5	Assignment in teamwork
6	Lean Canvas
7	Competition and Customer Feedback
8	Assignment in teamwork
9	Midterm Exam Week
10	Business Plan
11	Business Plan
12	Success Story
13	Assignment in teamwork
14	Techniques and Tipps for a good Pitch
15	Presentation

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

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

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&curSunit=5728	
Compiled by:	Arş. Gör. Nihal Zuhal Kayalı
Date of Compilation:	01.06.2022

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9.24. ING406 – Law for Engineering

Course Details				
Code		**Academic Year**		**Semester**
ING406		4		Spring
Title	**T**	**A**	**L**	**ECTS**
Law for Engineering	1	3	-	6

Language	German					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	✓		
Objectives	Introduction to the most important legal elements					
Content	Characteristics of the legal rules and legal system, sources, application, historical development, social and moral aspect of law, intellectual rights and patent rights					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences		%
Engineering		%
Engineering Design		%
Social Sciences	100	%
Educational Sciences		%

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Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	1	2	10
Recitations			
Laboratory			
Projects			
Final Exam	1	2	15
		Total Work Load	**137**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

1	Understand the legal rules and legal system
2	Understand how law works
3	Understand the historical, social and moral aspects of law
4	Understand the legal elements of the engineering profession such as intellectual property and patent rights
5	Understand the framework of relevant legislation and international treaties to protect industrial property right holders
6	

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Weekly Content	
1	Introduction
2	Legal system and legal rules
3	Functions and functioning of law
4	Branches and sources of public law
5	Branches and sources of civil law
6	Legal developments in the world and Turkey
7	Law and society
8	Law and justice
9	Introduction to intellectual and commercial rights
10	Protection of intellectual and industrial property rights holders
11	Brand
12	Patent
13	Industrial Design
14	Useful models and other industrial property rights
15	

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

	P1	P2	P3	P4	P5	P6	P7
1							
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9							

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10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	17.03.2020

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COURSE SYLLABUS

9.25. MAT204 - Statistical Methods for Data Analysis

Course Details				
Code		**Academic Year**		**Semester**
MAT204		2		SS
Title	**T**	**A**	**L**	**ECTS**
Statistical Methods for Data Analysis	2	2	1	6

Language	German					
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Face-to-Face study course					
Course Type	**Compulsory**	**X**	**Elective**			
Objectives	This module aims to provide students with the knowledge of how to summarize and analyze data, the probability and stochastic independence, statistical methodologies for testing hypotheses, and using statistical software.					
Content	Understanding the role of statistical methodologies in data science, Descriptive statistics, Introduction to probability, Random variables and their distributions, Statistical inference, Hypothesis tests, Regression.					
Prerequisites						
Coordinator	-					
Lecturer(s)	Dr.-Ing. Sanam Moghaddamnia					
Assistant(s)	M.Sc. Salih NİŞANCI, M.Sc. Cihan Katar					
Work Placement	-					

Recommended or Required Reading	
Books / Lecture Notes	- J. Hedderich und L. Sachs, Angewandte Statistik, Springer Spektrum, Berlin, Heidelberg, 2016. - D. C. Montgomery and G. C. Runger, Applied Statistics and Probability for Engineers, Wiley, 2014. - Prem S. Mann, Introductory Statistics, Wiley, 2012.
Other Sources	-

Additional Course Material	
Documents	Lecture Slides
Assignments	
Exams	1 Midterm Exam, 1 Final Exam

Course Composition		
Mathematics und Basic Sciences		50%

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

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	2	28
Self-Study	24	4	96
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations	14	2	28
Laboratory	14	1	14
Projects	1	52	40
Final Exam	1	2	2
		Total Work Load	**170**
		ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes

1	Awareness of the role of numerical evidence in data engineering
2	Understanding the fundamentals of Statistics including distribution theory, statistical inference, and models
3	Ability to utilize Matlab for a range of statistical applications

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Weekly Content	
1	An Introduction to data analysis and the application of statistical methodologies
2	Descriptive statistics – Introduction
3	Descriptive statistics – Tabular and graphical methods
4	Descriptive statistics – Numerical methods
5	Introduction to probability – Part 1
6	Introduction to probability – Part 2
7	Midterm exam
8	Theory of statistics - Random variables – Part 1
9	Theory of statistics - Random variables – Part 2
10	Theory of statistics - discrete and continuous distributions – Part 1
11	Theory of statistics - discrete and continuous distributions – Part 2
12	Parameter estimation – deductive inference
13	Parameter estimation – Inductive inference
14	Hypothesis Tests
15	

Contribution of Learning Outcomes to Program Objectives (1-5)												
	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**	**P11**	**P12**
1	5											
2	5	5										
3		5										

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6												
7												
8												
9												
10												
11												
12												

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	Sanam Moghaddamnia
Date of Compilation	26.10.2021

DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

9.26. MAT302 – Numerical Mathematics

Course Details				
Code		**Academic Year**		**Semester**
MAT302		3		Fall
Title		**T**	**A**	**L**	**ECTS**
Numerical Mathematics		3	1	1	6

Language	German					
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	**X**		
Objectives	Upon successful completion of this course, a student will have comprehensive knowledge of below subjects; - Introduction to typical numerical questions - Use numerical algorithms and numerical software - Principles and methods for the numerical solution of mathematical problems - Apply the general methods and principles to particular classes of problems - Develop approaches to extracting practically useful solutions with appropriately chosen numerical software					
Content	-Basic error concepts: condition of mathematical problems, data error, discretization error, round-off error. - Numerical solution of linear and nonlinear systems of equations - Numerical differentiation and integration - Polynomial interpolation and approximation - Numerical solution of differential equation					
Prerequisites	None					
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement	None					

Recommended or Required Reading	
Books / Lecture Notes	- Quarteroni, A., R. Sacco, and F. Saleri. "Numerische Mathematik Springer-Verlag." (2002).
Other Sources	- Dahmen, Wolfgang, and Arnold Reusken. Numerik für Ingenieure und Naturwissenschaftler. Springer-Verlag, 2006. - Deuflhard, Peter, andFolkmar Bornemann. "Numerische Mathematik. II." (1994). - Hanke-Bourgeois, Martin. Grundlagen der numerischen Mathematik und des wissenschaftlichen Rechnens. Wiesbaden: Vieweg+ Teubner, 2009

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Additional Course Material		
Documents	-	
Assignments	-	
Exams	-	
Course Composition		
Mathematics und Basic Sciences	50	%
Engineering		%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge	50	%
Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	40
Quiz		
Assignments	1	10
Attendance		
Recitations		
Projects		
Final Exam	1	50
	Total	**100**

ECTS Points and Work Load			
Activity	**Count**	**Duration**	**Work Load (Hours)**
Lectures	14	2	28
Self-Study	1	66	66
Assignments	10	4	40
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations	14	2	28
Laboratory			
Projects			
Final Exam	1	10	10

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Total Work Load	**168**
ECTS Points (Total Work Load / Hour)	**6**

Learning Outcomes	
1	Discussion about principles and methods for the numerical solution of mathematical problems
2	The ability to investigate mathematical problems using a scientific programming language
3	An awareness of fundamental numerical algorithms which are used to solve mathematical problems
4	The ability to create well formatted scientific programming language functions
5	The ability to communicate the principles and purposes of scientific computer codes.

Weekly Content	
1	Computer Arithmetic
2	Solution of linear systems of equations and condition number
3	Gaussian elimination with partial pivoting
4	Polynomial Interpolation, Approximation of the First Derivative by Interpolation
5	Solving Systems of Equations for Periodic Splines, Hermite Interpolation, Trigonometric Interpolation
6	Condition of the Newton-Cotes Formulas, Integral Representation of the Interpolation Error
7	Quadrature, Tschebyscheff polynomials
8	Composite Trapezoidal Rule with Non-Uniform Grid , Quadrature Rule Based on Interpolation, Adaptive Quadrature
9	Midterm Exam
10	Error of Simpson's Rule and Gaussian Quadrature, Gauss-Hermite Quadrature
11	Fixed-point Iteration in 1D , Gauss Quadrature Over General Interval, Fixed-point Iteration in 2D
12	Computing an Important Function using Newton's Method, Newton's Method for the Eigenvalue Problem,
13	Convergence of Newton's Method, Conjugate Gradient Iteration Error
14	Conjugate Gradient Method: Number of Iterations, Newton and Conjugate Gradient
15	Computer Implementation

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

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

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

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Compiled by:	
Date of Compilation:	12.03.2020

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9.27. TUR009 – Academic Turkish

Course Details				
Code		**Academic Year**		**Semester**
TUR009		4		Fall
Title		**T**	**A**	**L**	**ECTS**
Academic Turkish		2	2	-	4

Language	Turkish					
Level	**Undergraduate**	✓	**Graduate**		**Postgraduate**	
Department / Program	Civil Engineering					
Forms of Teaching and Learning	Formal					
Course Type	**Compulsory**		**Elective**	✓		
Objectives	The aim of lesson; To understand the similar and different aspects of teaching Turkish as a mother tongue and a foreign language, to have an idea about the history of teaching Turkish as a foreign language, to show how to use the methods, techniques and strategies used in foreign language teaching in practice in teaching Turkish to foreigners and to apply the Common Languages Teaching European Language to make them have an idea about the competencies in the related text.					
Content	The content of the course; The basic principles of teaching Turkish to foreigners, the use of the staging rate system in teaching Turkish to foreigners, exams applied in this field and the competencies in AOBM, the methods and techniques used in language teaching, and the study of textbooks.					
Prerequisites						
Coordinator						
Lecturer(s)						
Assistant(s)						
Work Placement						

Recommended or Required Reading	
Books / Lecture Notes	Kara, M. (2011) Avrupa Dilleri Öğretimi Ortak Çerçeve Metni Doğrultusunda Türkçe Öğrenen Yabancılara A1-A2 Seviyesinde Türkçe Öğretim Programı Örneği, Zeitschrift für die Welt der Türken, Vol. 3, No. 3, 157 – 195. Özdemir, O. (2012). Avrupa Dilleri Öğretimi Ortak Çerçeve Metni B1
Other Sources	

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition

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Mathematics und Basic Sciences		%
Engineering	100	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	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	4	56
Self-Study	14	1	14
Assignments			
Presentation / Seminar Preparation			
Midterm Exam	1	1	5
Recitations			
Laboratory			
Projects			
Final Exam	1	2	10
		Total Work Load	**85**
		ECTS Points (Total Work Load / Hour)	**4**

Learning Outcomes

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Weekly Content	
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13	
14	
15	

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

	P1	P2	P3	P4	P5	P6	P7
1							
2							

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5							
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7							
8							
9							
10							
11							
12							

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
Compiled by:	
Date of Compilation:	17.03.2020