DEPARTMENT OF CIVIL ENGINEERING
COURSE SYLLABUS

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	This course aims to enable students to understand the theoretical foundations of statically indeterminate structures and learn the methods for calculating them. The goal is for students to understand the basic principles of analyzing statically indeterminate systems and apply them to engineering problems. Furthermore, students are expected to be able to determine the internal forces and deformations of such structures using different solution techniques.					
Content	This course covers the force-displacement method and the displacement-force method in a classical context. It includes the use of these methods for determining the static indeterminacies of bar structures in both directions through forces or displacements. It also covers the basic principles of calculating system states and determining internal forces and displacements. The course also covers how force and displacement lines are affected by the force and displacement method or the rotation angle method.					
Prerequisites	(BAU202)					
Coordinator	Prof. Dr. Murat Hamderi					
Lecturer(s)	Prof. Dr. Murat Hamderi					
Assistant(s)	Research Assistant Ferit Yardımcı					
Work Placement	None					

Recommended or Required Reading	
Books / Lecture Notes	Dallmann, R. (2020). Baustatik 1: Berechnung statisch bestimmter Tragwerke. Carl Hanser Verlag GmbH Co KG.
Other Sources	Dallmann, R. (2020). Baustatik 1: Berechnung statisch bestimmter Tragwerke. Carl Hanser Verlag GmbH Co KG.

Additional Course Material	
Documents	
Assignments	
Exams	

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Course Composition		
Mathematics und Basic Sciences	20	%
Engineering	60	%
Engineering Design	20	%
Social Sciences		%
Educational Sciences		%
Natural Sciences		%
Health Sciences		%
Expert Knowledge		%

Assessment		
Activity	**Count**	**Percentage (%)**
Midterm Exam	1	40
Quiz		
Assignments	8	0
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	6	84
Assignments	1	24	24
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations			
Laboratory	14	1	14
Projects			
Final Exam	1	2	2
		Total Workload	**168**
		ECTS Points(Total Work Load / Hour)	**6**

Learning Outcomes	
1	Students gain the ability to analyze statically indeterminate structures by learning the force method.

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2	Students gain the ability to perform deformation analysis of structural systems by understanding the path length method.
3	Students gain the ability to evaluate load transfer in structures by learning to create static and kinematic influence lines.
4	Students gain the ability to interpret critical loads and buckling behavior by performing stability analysis of bar elements.
5	Students learn energy methods in structural mechanics and gain the ability to use these methods in structural deformation calculations.
6	Students acquire the ability to apply the basic principles of the finite element method in engineering analyses.
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Weekly Content	
1	Lines of Action
2	Introduction to Hyperstatic Systems
3	Introduction to the Force Method
4	Solution of First-Order Hyperstatic Systems Using the Force Method
5	Solution of First-Order Hyperstatic Systems Using the Force Method
6	Solution of First-Order Hyperstatic Systems Using the Force Method
7	Introduction to the Cross Method
8	Midterm Exam
9	Solving beams using the Cross method
10	Solving frame systems using the Cross method
11	Introduction to matrix methods
12	Solving beams using matrix methods
13	Solving beams using matrix methods
14	Solving beams using matrix methods
15	Solving beams using matrix methods
16	Final Exam

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

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

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2	5	3		5		3	5
3	5	3		5		3	5
4	5	3		5		3	5
5	5	3		5		3	5
6	5	3		5		3	5
7							
8							
9							
10							
11							
12							

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