DEPARTMENT OF CIVIL ENGINEERING

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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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.
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
1							
2							
3							
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9							
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11							
12							

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

Compiled by:	
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