

DEPARTMENT OF MECHATRONIC ENGINEERING  
COURSE SYLLABUS

Course Details						
Code			Academic Year		Semester	
MEC109			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 into account in future projects.				
Prerequisites		-				
Coordinator		-				
Lecturer(s)		Asst. Prof. Dr. Murat Hamderi				
Assistant(s)		Research Assist. Uğur GÜNAY, Research Assist. Ferit YARDIMCI				
Work Placement						
Recommended or Required Reading						
Books / Lecture Notes		Lecture notes and exercises in pdf (students can download)				
Other Sources		-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.				
Additional Course Material						
Documents		-				
Assignments		-				
Exams		-				
Course Composition						
Mathematics und Basic Sciences		40			%	

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

**Assessment**

Activity	Count	Percentage (%)
Midterm Exam	1	40
Quiz		
Assignments	1	20
Attendance		
Recitations		
Projects		
Final Exam	1	40
<b>Total</b>		<b>100</b>

**ECTS Points and Work Load**

Activity	Count	Duration	Work Load (Hours)
Lectures	14	5	70
Self-Study	14	3	42
Assignments	1	10	10
Presentation / Seminar Preparation			
Midterm Exam	1	2	10
Recitations			
Laboratory			
Projects			
Final Exam	1	2	15
<b>Total Work Load</b>			<b>147</b>
<b>ECTS Points (Total Work Load / Hour)</b>			<b>6</b>

**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.
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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**Weekly Content**

1	1-2 VL Introduction to basic concepts 3-4 VL Forces acting on the same point of application, Equilibrium of rigid bodies
2	5-6 VL Moment concept 7-8 VL Vector meaning of moment 9-10 VL center of gravity
3	1-2 Ue Force groups 3-4 Ue Force groups
4	5-6 Ue Moment balance 7-8 Ue Vector meaning of moment 9-10 Ue center of gravity
5	11-12 VL Center of mass of a volume 13-14 VL Volumetric, superficial and linear center of gravity
6	11-12 Ue Support reactions 13-14 Ue center of gravity
7	15-16 VL Headstock, carrier and cage systems 17-18 VL Lattice systems, Ritter cutting method 19-20 VL Tilt bar
8	Midterm
9	15-17 Ue Truss systems 18-20 Ue Intrinsic effects in bending beams
10	21-22 VL Cross-section effects 23-24 VL Boundary and transition conditions
11	21-22 Ue Internal Influences 23-24 Ue
12	25-26 VL Calculation of section effects in frame systems 27-28 VL Curved beam
13	25-26 Ue Section effects 27-28 Ue Section Effects
14	29-30 VL Review and exam preparation
15	29-30 Ue Exam preparation

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

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

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2	5	3	-	-	-	4	-
3	5	3	-	-	-	4	4
Contribution Level		1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High					
<a href="https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&amp;curSunit=5946">https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=en&amp;curSunit=5946</a>							
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