OSTIM TECHNICAL UNIVERSITY
FACULTY OF ENGINEERING

COURSE SYLLABUS FORM
2021-2022

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MEC 201 Statics							
Course Name	**Course Code**	**Period**	**Hours**	**Application**	**Laboratory**	**Credit**	**ECTS**
Theory of machines	MEC 303	1	3	0	0	3	4

Language of Instruction	English
Course Status	Compulsory
Course Level	Bachelor
Learning and Teaching Techniques of the Course	Lecture, Discussion, Question Answer, Practice

Course Objective

At the end of this course, the student will be able to recognize the types and functions of mechanisms, acquire a clear understanding of mobility of mechanisms in relation to their topological characteristics and perform kinematic enumeration, perform kinematic analysis of planar mechanisms, analyze a gear train, perform force analysis of planar mechanisms.

Learning Outcomes

1. Ability to determine the types of joints, links, degree-of-freedom of a mechanism

2. Ability to enumerate different types of mechanisms

3. Ability to perform position, velocity and acceleration analysis of planar mechanisms

4. Ability to use MATLAB (or, a similar program) in the full cycle solution of position, velocity and acceleration analysis of planar mechanisms

5. Ability to identify different types of gear trains and their application areas

6. Ability to determine the speed ratio of a given gear train

7. Ability to identify different types of forces that exist in planar mechanisms

8. Ability to determine the reaction and actuator forces in a planar mechanism that is in static or dynamic equilibrium 9. Ability to use MATLAB (or, a similar program) in the full cycle solution of force analysis of planar mechanisms.

Course Outline
Introduction to mechanisms: basic concepts, mobility, basic types of mechanisms. Position, velocity and acceleration analysis of linkages. Cam mechanisms. Gear trains. Static and dynamic force analysis of mechanisms.

Weekly Topics and Releated Preparation Studies		
Weeks	**Topics**	**Preparation Studies**
1	Introduction	
2	Kinematic Analysis of Mechanisms Loop Closure Equations Position Analysis of Mechanisms (Solution Techniques for Loo Closure Equations)	
3	Kinematic Analysis of Mechanisms Loop Closure Equations Position Analysis of Mechanisms (Solution Techniques for Loo Closure Equations)	
4	Velocity and Acceleration Analysis of Mechanisms	
5	Velocity and Acceleration Analysis of Mechanisms	
6	Gear Trains Simple Gear Trains Planetary Gear Trains Bevel Gears	
7	Gear Trains Simple Gear Trains Planetary Gear Trains Bevel Gears	
8	Midterm exam	

9	Force Analysis in Machinery Static Force Analysis Dynamic Force Analysis	
10	Force Analysis in Machinery Static Force Analysis Dynamic Force Analysis	
11	Force Analysis in Machinery Static Force Analysis Dynamic Force Analysis	
12	Four-Link Mechanisms Four-Bar Mechanism	
13	Four-Link Mechanisms Four-Bar Mechanism	
14	Vibration Analysis	
15	Vibration Analysis	
16	**Final Exam**	

Textbook(s)/References/Materials:
E. Söylemez, Mechanisms, METU

Assessment		
Studies	**Number**	**Contribution margin (%)**
Attendance	14	10
Lab		
Application		
Field Study		
Course-Specific Internship (if any)		
Quizzes / Studio / Critical	5	20
Homework		
Presentation		
Projects		
Report		
Seminar		
Midterm Exams / Midterm Jury	1	30
General Exam / Final Jury	1	40
	Total	**100**
Success Grade Contribution of Semester Studies		60
Success Grade Contribution of End of Term		40
	Total	**100**

Relationship Between Course Learning Outcomes and Program Competencies						
Nu	Learning Outcomes	Contribution Level				
		1	2	3	4	5
1	An ability to apply knowledge of science, mathematics, and engineering.					x
2	An ability to design static systems, components, or processes to meet industrial needs.					x
3	An ability to work with multi-disciplinary teams.					x
4	An ability to identify, formulate, and solve engineering problems.					x
5	Take responsibility to solve unpredictable and complex problems encountered in applications as an individual and as a member of a team			x		
6	Plan and manage activities in teamwork			x		
7	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.				x	
8	Can do research on interdisciplinary fields.			x		

ECTS / Workload Table			
Activities	Number	Duration (Hours)	Total Workload
Course hours (Including the exam week: 16 x total course hours)	16	3	48
Laboratory			
Application			
Course-Specific Internship			
Field Study			
Study Time Out of Class	14	2	28
Presentation / Seminar Preparation			
Projects			
Reports			
Homeworks			
Quizzes / Studio Review	5	2	10
Preparation Time for Midterm Exams / Midterm Jury	1	15	15
Preparation Period for the Final Exam / General Jury	1	15	15
Total Workload			**116**