MECHANISM DESIGN

1	Course Title:	MECHANISM DESIGN	
2	Course Code:	MAK3037	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	3	
6	Semester:	5	
7	ECTS Credits Allocated:	4.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:		
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Doç. Dr. SEVDA TELLİ	
15	Course Lecturers:	Prof.Dr. Osman KOPMAZ Dr.Öğr.Üyesi Sevda TELLİ ÇETİN Dr. Öğr. Üyesi Ahmet YILDIZ Arş.Gör. Ercan DÜZGÜN Arş.Gör. Mert Ali ÖZEL	
16	Contact information of the Course Coordinator:	0224 294 19 62 okopmaz@uludag.edu.tr	
17	Website:		
18	Objective of the Course:	The aim of this course is to teach methods to obtain, transform and transfer various motion types, -Introduce and study different types of mechanisms and the principles associated with their kinematic analysis and design, -Demonstrate how to implement these principles on mechanisms and machines.	
19	Contribution of the Course to Professional Development:	Students who attend this course can do the systematic analysis of a mechanism, calculate its degree of freedom, draw its kinematic chain. Given basic design requirements, they can dimension a four-bar linkage and crank-slider mechanism. Furthermore, they can perform the kinematic analysis of a given mechanism at least using two different methods.	
20	Learning Outcomes:		
		1	Students who take this course learn the definition of mechanism, and the basic structural components of a mechanism.
		2	They get the ability of obtaining the degree of freedom of a mechanism, and kinematic analysis and synthesis of certain mechanisms.
		3	They can do kinematic analysis of mechanisms
		4	They can design lever and planar cam mechanisms.
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Introduction to the theory of mechanisms, basic definition s and concepts, definition and classification of joints.	
2	Definition of degree of freedom, degree of freedom of joints.	
3	Kinematic chains:Classification and calculation of degrees of freedom	
4	Classification of mechanisms, and obtaining their degree of freedom, and exceptional cases.	
5	Criterion for constrained motion: Grübler's theorem.	
6	Planar coupler mechanisms, Grashof's criterion, transmission angle, Alt's construction.	
7	Introduction to kinematic analysis, loop equations.	
8	Kinematic analysis by means of complex numbers (position and velocity analysis)	
10	Kinematic analysis by graphical methods, Aronhold-Kennedy theorem.	
12	Calculation of base circle radius, producing cam profile	
13	Gear mechanisms.	
14	Planet mechanisms	
22	Textbooks, References and/or Other Materials	-MAK3007 Makine Teorisi Ders Notları, O. Kopmaz – S.Telli Çetin -Mekanizma Tekniği, İ.Deniz Akçalı, H.Mutlu

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	10	5.00	50.00
Homeworks	1	10.00	10.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	6.00	6.00
Others	0	0.00	0.00
Final Exams	1	12.00	12.00
Total Work Load			120.00
Total work load/ 30 hr			4.00
ECTS Credit of the Course			4.00

TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	2	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		As midterm and final exams, twowritten exams are given to students.

24	**ECTS / WORK LOAD TABLE**

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	4	4	0	0	3	0	0	0	0	0	0	0	0	0	0	0
ÖK4	4	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	**1 very low**		**2 low**			**3 Medium**			**4 High**			**5 Very High**				