

MM 407 Synthesis of Mechanism				DEPARTMENT OF MECHANICAL ENGINEERING					
Semester	Methods of Education							Credits	
	Lecture	Recit.	Lab.	Project / Field Study	Homework	Other	Total	Credit	ECTS Credit
7	42	0	-	12	14	7	75	3	3.0
Language	Turkish								
Compulsory / Elective	Elective								
Prerequisites	None								
Course Contents	Introduction to kinematic synthesis. Design of common linkage mechanisms: Grashof's Theorem, optimum transmission angle, four-bar and slider-crank mechanisms. Two, three and four position synthesis: Graphical and analytical methods, complex number modelling, applications of Freudenstein's equation. Correlation of crank angles. Current topics in mechanisms.								
Course Objectives	To provide sufficient theoretical background for the understanding of mechanism design techniques and to introduce practical mechanism design problems.								
Learning Outcomes and Competences	Learning the methods used for the synthesis of mechanisms. Developing of skills for the design of mechanical systems having moving parts.								
Textbook and /or Reference	1. Mechanisms, E. Söylemez, METU, No:64, 1999. 2. Mechanism Design: Analysis and Synthesis, A.G. Erdman & G.N. Sandor, Prentice Hall, vol:1, Fourth Edition, 2001. 3. Theory of Machines and Mechanisms, J.E. Shigley & J.J. Uicker, McGraw-Hill, Second edition, 1995. 4. Synthesis of Mechanisms, M. Akyurt, King Abdüllaziz University, 1997.								
Assessment Criteria						If any, mark as (x)		Percentage (%)	
	Midterm Exams					X		60	
	Quizzes								
	Homeworks								
	Projects								
	Term Paper								
	Laboratory Work								
	Other								
Final Exam					X		40		
Instructors	Assoc.Prof. Omer KELES								
Week	Subject								
1	Introduction to kinematic synthesis: Classification, enumeration.								
2	Design of common linkage mechanisms: Four-bar and slider-crank mechanisms.								
3	Design of common linkage mechanisms: Grashof's theorem, optimum transmission angle.								
4	Path generation: Graphical and analytical methods.								
5	Path generation: Graphical and analytical methods.								
6	Path generation: Cognates of mechanisms.								
7	Motion generation: Graphical and analytical methods.								
8	Motion generation: Graphical and analytical methods.								
9	Motion generation: Graphical and analytical methods.								
10	Function generation: Overlay method, Chebychev spacing.								
11	Function generation: Graphical and analytical methods.								
12	Function generation: Graphical and analytical methods.								
13	Applications of Freudenstein's equation, computer aided synthesis.								
14	Current topics in mechanisms.								