

MM 306E Dynamics of Machinery				DEPARTMENT OF MECHANICAL ENGINEERING					
Semester	Methods of Education							Credits	
	Lecture	Recit.	Lab.	Project /Field Study	Homework	Other	Total	Credit	ECTS Credit
6	42	-	-	-	30	28	100	3	4.0
Language	English								
Compulsory / Elective	Compulsory								
Prerequisites	MM 202								
Course Contents	Static and dynamic force analysis of mechanisms; graphical and analytical methods. Dynamic force analysis: Shaking forces and moments. Friction models, force analysis with friction. Balancing: Rotating shafts, flywheels. Introduction to mechanical vibrations: Single degree of freedom system. Free and forced vibrations. Vibration isolation.								
Course Objectives	To present the basic graphical and analytical methods of static and dynamic force analysis of mechanisms. To teach the basic concepts of mechanical vibrations.								
Learning Outcomes and Competences	An ability to perform the static and dynamic force analysis of the mechanisms. Learning the basics of equilibrium of flywheels and rotating shafts. Learning the basics of mechanical vibrations.								
Textbook and /or Reference	1. Theory of Machines and Mechanisms, J. E Shigley and J. J. Uicker, McGraw-Hill, Second Edition, 1995. 2. Mechanism Design: Analysis and Synthesis, A. G. Erdman and G. N. Sandor, Prentice Hall, Third Edition, V.1, 1997. 3. Kinematics and Dynamics of Machines, G. E. Martin, McGraw-Hill. 4. Notes on Dynamics of Machinery, E. Söylemez and Others, METU. 5. Engineering Mechanics: Static and Dynamics, R. C. Hibbeler, Prentice- Hall.								
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	Prof. Nizami AKTURK, Assoc.Prof. Sefaatdin YUKSEL, Assist.Prof. Tuncay KARACAY								
Week	Subject								
1	Introduction: Basic concepts.								
2	Static force analysis: Graphical and analytical methods								
3	Static force analysis: Graphical and analytical methods								
4	Static force analysis: Graphical and analytical methods								
5	Dynamic force analysis: Graphical and analytical methods.								
6	Dynamic force analysis: Graphical and analytical methods.								
7	Dynamic force analysis: Graphical and analytical methods.								
8	Dynamic force analysis: Shaking forces and moments								
9	Friction models, force analysis with friction.								
10	Balancing: Rotating shafts, flywheels.								
11	Balancing: Rotating shafts, flywheels.								
12	Introduction to mechanical vibrations: Single degree of freedom system.								
13	Introduction to mechanical vibrations: Free and forced vibrations.								
14	Introduction to mechanical vibrations: Vibration isolation								