

MM 576 Vibrations of Continuous Systems				MECHANICAL ENGINEERING DEPARTMENT					
Semester	Methods of Education							Credits	
	Lecture	Recit.	Lab.	Project/Field Study	Homework	Other	Total	Credit	ECTS credit
1,2	30	12				146	188	3	7.5
Language	Turkish								
Compulsory / Elective	Optional								
Prerequisites	-								
Course Contents	Initial and Boundary-value problems in continuous systems. General formulation of the eigenvalue problem. Transverse vibration of strings, longitudinal vibration of rods, bending vibration of bars and torsional vibration of shafts. Vibration of membranes and plates. Analytical methods, approximate methods and finite element method. Special cases.								
Course Objectives	Investigation of vibrations of rods, beams, shafts, membranes and plates which are the basic structures of continuous systems .								
Learning Outcomes and Competences	Understanding of fundamentals in the investigation of continuous system vibrations.								
Textbook and /or Reference	1. Meirovitch, L. (1967). Analytical Methods in Vibrations. New York: McMillan. 2. Meirovitch, L. (1986). Elements of Vibration Analysis. Singopure: McGraw Hill. 3. Inman, D.J. (2001). Engineering Vibration. New Jersey: Prentice Hall.								
Assessment Criteria					If any, mark as (X)		Percentage (%)		
	Midterm Exams				X		40		
	Quizzes								
	Homeworks								
	Projects				X		20		
	Term Paper								
	Laboratory Work								
	Other								
Final Exam				X		40			
Instructors	Prof. Sefaatdin YUKSEL								
Week	Subject								
1	Introduction								
2	Boundary Value Problems in Continuous Systems. Analytical Methods								
3	Transverse Vibration of Strings								
4	General Formulation of the Eigenvalue Problem								
5	Boundary Conditions, Types of Functions and expansion theorem								
6	Longitudinal Vibration of Rods								
7	Bending Vibration of Bars								
8	Torsional Vibration of Shafts								
9	Vibration of Membranes								
10	Vibration of Plates								
11	Approximate Methods								
12	Approximate Methods								
13	Finite Element Method								
14	Special Cases								