

MM 596 Conduction Heat Transfer				MECHANICAL ENGINEERING DEPARTMENT					
Semester	Methods of Education							Credits	
	Lecture	Recit.	Lab.	Project/Field Study	Homework	Other	Total	Credit	ECTS credit
1,2	12	30				146	188	3	7.5
Language	Turkish								
Compulsory / Elective	Optional								
Prerequisites	-								
Course Contents	Continuum concept. Integral and differential formulation methods. Separation of variables. Orthogonal functions. Solutions in cartesian, cylindrical and spherical coordinate systems. Transient conduction. Duhammel's superposition integral. Solutions with Laplace transform and Fourier integrals. Normalization.								
Course Objectives	To train students to formulate and solve engineering and scientific problems involving conduction heat transfer and to prepare students for individual research.								
Learning Outcomes and Competences	Gaining the ability in the derivation and usage of heat conduction equation. Learning the methods of separation of variables, integral and Laplace transforms and numerical techniques, integral and variational methods to solve heat conduction problems in rectangular, cylindrical and spherical coordinates.								
Textbook and /or Reference	1. Kakaç, S. and Yener,Y., (1993), Heat Conduction, Philadelphia, Pa:Taylor and Francis, 2. Arpaci, V.S., (1966), Conduction Heat Transfer, Addison-Wesley.								
Assessment Criteria					If any, mark as (X)		Percentage (%)		
	Midterm Exams				X		50		
	Quizzes								
	Homeworks								
	Projects								
	Term Paper								
	Laboratory Work								
	Other								
	Final Exam				X		50		
Instructors	Prof. Mecit SIVRIOGLU								
Week	Subject								
1	Introduction								
2	General Heat Conduction Equation								
3	One- Dimensional Steady- State Heat Conduction								
4	One- Dimensional Steady- State Heat Conduction								
5	Ortogonal Functions, Fourier Expansions and Finite Fourier Transforms								
6	Steady two and three Dimensional Heat Conduction: Solutions with Seperation of Variables								
7	Steady two and three Dimensional Heat Conduction: Solutions with Seperation of Variables								
8	Midterm Exam 1								
9	Unsteady Heat Conduction: Solutions with Seperation of Variables								
10	Solutions with Integral Transforms								
11	Solutions with Laplace Transforms								
12	Midterm Exam 2								
13	Further Methods of Solutions								
14									