

MM 564 Convective Heat Transfer				MECHANICAL ENGINEERING DEPARTMENT					
Semester	Methods of Education							Credits	
	Lecture	Recit.	Lab.	Project/Field Study	Homework	Other	Total	Credit	ECTS credit
1,2	24	18				146	188	3	7.5
Language	Turkish								
Compulsory / Elective	Optional								
Prerequisites	-								
Course Contents	Basic principles and equations. Laminar flows; two-dimensional parallel flows, buoyancy driven flows, thermal boundary layers, fully developed heat transfer. Boundary layer flows; nearly parallel flows, momentum and thermal boundary layers, non-parallel flows. Similarity solutions; similarity transformation, similarity solution of boundary layers. Turbulent flows; algebraic models, one and two-equation models, heat transfer prediction.								
Course Objectives	To derive basic equations which are governing convective heat transfer. To teach and apply basic analytical and numerical methods employed for solution of these equations. To solve engineering problems by simplifying governing equations..								
Learning Outcomes and Competences	Understanding of the basic characteristics of convective heat transfer. Learning and applications of methods used to the solution of convective heat transfer problems. Interpret the results of solved problems.								
Textbook and /or Reference	1. W.M.Kays, M.E. Crawford and B.Weigand, Convective Heat and Mass Transfer, McGraw-Hill Book Company, 4th Ed., 2005. 2. White, F. M. Viscous Fluid Flow. McGraw-Hill Book Company., 3th Ed., 2006.								
Assessment Criteria					If any, mark as (X)		Percentage (%)		
	Midterm Exams				X		20		
	Quizzes								
	Homeworks				X		10		
	Projects				X		5		
	Term Paper				X		5		
	Laboratory Work								
	Other								
	Final Exam				X		60		
Instructors									
Week	Subject								
1	Fundamentals of Convection heat transfer.								
2	Dimensionless analysis and dinamic similarity.								
3	Differential formulations of fundamentals rules.								
4	Differential formulations of fundamentals rules.								
5	Exact solutions of one dimension flows.								
6	Boundary layer theory.								
7	Integral Method.								
8	Integral Method.								
9	Laminar convection heat transfer in channels.								
10	Laminar convection heat transfer in channels.								
11	Natural convection.								
12	Introduction to turbulence.								
13	Heat transfer in turbulent flow.								
14	Heat transfer in turbulent flow.								