

MM 204E Thermodynamics II				DEPARTMENT OF MECHANICAL ENGINEERING					
Semester	Methods of Education							Credits	
	Lecture	Recit.	Lab.	Project / Field Study	Homework	Other	Total	Credit	ECTS Credit
4	42	-	-	-	-	83	125	3	5.0
Language	English								
Compulsory / Elective	Compulsory								
Prerequisites	MM 203 E								
Course Contents	Thermodynamic relations, fundamental relations for simple compressible system, mixtures of pure substances, some power refrigeration cycles, vapor power cycles, air-standard power cycles, air-standard refrigeration cycles, chemical reactions, combustion process, enthalpy of formation, enthalpy of combustion, higher and lower heating values of fuels, theoretical reaction temperature, adiabatic flame temperature, chemical equilibrium, equilibrium constant, one-dimensional flow of compressible fluids.								
Course Objectives	To train students to analyze the power and refrigeration cycles to determine thermodynamic properties of substances, and to solve engineering problems involving air-conditioning processes. To teach the application of thermodynamic laws to combustion processes and the concepts of chemical and phase equilibrium.								
Learning Outcomes and Competences	Learning the methods used to calculating states and performance parameters for power and refrigeration cycles. Gaining the ability to determine the relations among thermodynamic properties, to use equations, tables and charts to fix states of gas mixtures, and to solve engineering problems involving air-conditioning processes. Learning the methods to analyze systems involving combustion processes and to determine equilibrium states for chemically reacting and multiphase systems.								
Textbook and / or Reference	1) Thermodynamics: An Engineering Approach, Y.A. Çengel and M.A. Boles 2) Fundamentals of Engineering Thermodynamics, M.T. Moran and H.N. Shapiro								
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. Mecit SIVRIOGLU, Assoc. Prof. Atilla BIYIKOGLU, Assist. Prof. Oguz TURGUT								
Week	Subject								
1	GAS POWER CYCLES								
2	GAS POWER CYCLES								
3	VAPOR POWER CYCLES								
4	VAPOR POWER CYCLES								
5	REFRIGERATION CYCLES								
6	THERMODYNAMIC PROPERTY RELATIONS								
7	Midterm Exam I								
8	THERMODYNAMIC PROPERTY RELATIONS								
9	GAS MIXTURES								
10	GAS-VAPOR MIXTURES AND AIR CONDITIONING								
11	CHEMICAL REACTIONS								
12	CHEMICAL REACTIONS								
13	Midterm Exam II								
14	CHEMICAL AND PHASE EQUILIBRIUM								