

MM 532 Co-Generation Power Plants and District Heating & Cooling 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	Formation of air pollution and related definitions. Fuels, emissions and emission formation mechanisms. Environmental aspects of air pollution. Legal aspects of air pollution. Air pollution control acts and their applications. Technical aspects of air pollution. Air pollution control technologies. Internal and external emission control methods .Environmental chimney design. Measurement and analyses aspect of air pollution. Emission and imission measurements. Flue gas purification applications. Flue gas dust, SO2 , NOx purification systems. Solid waste problems. Vehicle emission control systems.								
Course Objectives	To describe the basic approaches used for analyses, design and optimization of air pollution control systems. To explain the engineering approaches to system design and operation. To teach and apply the economical and environmental analyses to the air pollution control systems.								
Learning Outcomes and Competences	Understanding of the basic characteristics of air pollution control systems. Learning and applications of approaches and methods used to to analyses and design of air pollution control systems. Interpret the results of solutions.								
Textbook and /or Reference	1 Stern,A.C. Engineering Control of Air Pollution. Academic Pres.1977. 2 Durrmaz, A, Y. Ercan. Yanmadan Kaynaklanan Hava Kirliliğinin Kontrolu.1987. 3 Durmaz , A. Kömürün Yanması. Kömür, Özellikleri,Teknolojisi ve Çevre İlişkileri, İTÜ,1998.								
Assessment Criteria					If any, mark as (X)		Percentage (%)		
	Midterm Exams				X		40		
	Quizzes								
	Homeworks								
	Projects								
	Term Paper								
	Laboratory Work								
	Other								
Final Exam				X		60			
Instructors									
Week	Subject								
1	Type of Energy, Energy Sources and Energy Efficiency.								
2	Importance of Co-generation, District Heating – Cooling.								
3	Economical Analyses Related to Energy Efficiency, Enviromental Control.								
4	Fossil, Nuclear, Solar Fuels, Combustion , Combustion Systems.								
5	Heat Generators, Boilers, Nuclear Reactors, Solar Collector.								
6	Energy Conversion Processes and Thermal Power Plant.								
7	1. MT. Steam Cycle Thermal Power Plants.								
8	Gas Cycle Heat Power Plants, Re-frigeration Cycles.								
9	Co – generation of Heat and Power, Steam Cycle Co-generation.								
10	Gas Cycle TPP and Gas-Steam Combined Cycle Power Plant.								
11	2.MT. Combined Cycle Thermal Power Plants.								
12	District Heating Systems, System Structures.								
13	Design Approach for District Heating Systems								
14	District Cooling Systems.								