



MARMARA ÜNİVERSİTESİ - Mühendislik Fakültesi

Çevre Mühendisliği

SYLLABUS

Code	Course Name	Type	Weekly Course Hour			Credits	ECTS	Weekly Time and Class Schedule
			T	A	L			
	Energy and the Environment	Seçimlik	3	0		3	5	
Önkoşul Dersi	Prerequisites							
Instructor						Office Hours Schedule		
e-mail						Office/Room No		
Phone						Phone		
Teaching Asst.						Office/Room No		
e-mail								
Course Objectives	This course provides an introduction to energy systems and renewable energy resources, with a scientific examination of the energy field and an emphasis on alternate energy sources and their technology and application. The class will explore society's present needs and future energy demands, examine conventional energy sources and systems, including fossil fuels and nuclear energy, and then focus on alternate, renewable energy sources such as solar, biomass (conversions), wind power, geothermal, and hydro. Energy conservation methods will be emphasized.							
Textbooks and/or References	1	Energy and the Environment: Scientific and Technological Principles, Fay JA and Golomb DS, Oxford University Press, 2011						
	2	Energy and the Environment, Ristinem, RA., Kraushaar, JJ., 2nd ed., 2006						
Week	Date	Topics						Reference
Week 1		Introduction: What is energy? First and second law of thermodynamics, Quantifying energy, units of energy						
Week 2		Sources of energy. Renewable and non-renewable energy sources						
Week 3		Work and Heat Interactions, Heat to motive power, Energy transfer by heat and heat exchange.						
Week 4		Fossil fuels (past, present and future), Environmental consequences of fossil fuel production and utilization						
Week 5		Fossil fueled power plants, components (burner, boiler, steam turbine, condenser, cooling tower), cycles.						
Week 6		CHP and cogeneration, energy efficiency and conservation						
Week 7		Hydroelectric power						
Week 8		Midterm						
Week 9		Nuclear energy: Fundamentals of nuclear power, comparing fission and fusion energies, nuclear power health effects, safety requirements, radioactive waste management and disposal						
Week 10		Biomass and biofuels overview						
Week 11		Biogas-anaerobic digesters, bioenergy from wastes						
Week 12		Energy recovery from activated sludge incineration						
Week 13		Wind energy, Solar energy, Geothermal and ocean						
Week 14		Hydrogen and fuel cells						
Week 15		Energy recovery						
Evaluation Tools	Tool	Quantity	Date			Weight in Total(%)	Weight in Semester Evaluation (%)	
	Final exam	1				40	0	
	Final Make-up exam (if needed)					40	0	
	Semester Evaluation					60	100	
	Midterm(s)	1				30	50.0	
	Quiz(zes)					15	25.0	
	Project(s)	1				15	25.0	
	Homeworks(s)							
	Laboratory							
Other								
*** Lifelong Learning Programme ***						Language: English		
Evaluation Tool	Quantity	Student workload hours			Evaluation Tool	Quantity	Student workload hours	
Theoretical hours	14	42.0			Application hours	--	0.0	
Midterm	1	25.0			Final exam	1	25.0	
Quiz					Project	1	15	
Laboratory					Homework			
Atelier					Seminar			
Field study					Presentation	1	10.0	
Other					Self-study	1	14.0	
					<b>TOTAL</b>	<b>19</b>	<b>131.0</b>	
Recommended ECTS Credit (Total Hours/25) : 5								