Course Information Form

Title	Code	Local Credit	ECTS	Lecture (hour/week)	Practical (hour/week)	Laboratory (hour/week)
Hydrogen Production from Waste	TET5202	3	7.5	3	0	0

Prerequisite	None

Semester	Fall, Spring

Course Language	Turkish
Level Of Course	Second Cycle
Course Category	Major Area Courses
Mode Of Delivery	Face-to-Face

Owner Academic Unit	Disiplinler Arası Bölüm
Course Coordinator	Bedri KEKEZOĞLU
Instructor(s)	Halit Eren Figen
Asistant(s)	

Course Objectives	1. Waste and Biomass definitions, characteristics and energy potentials 2. Energy production technologies from waste and biomass by biological and thermal methods, 3. Costs of energy generation techniques from waste and biomass, Waste and Circular economy
Course Content	Introduction to Energy Production from Waste ; Energy, Economic, and Environmental Analysis of Waste Management Strategies ;Biofuels: An Overview - Bioethanol, Biodiesel, Biogas Production Techniques; Chemical and Thermochemical Conversion of Wastes; Biochemical Conversion of Wastes; Future of Hydrogen and Carbon Dioxide Technologies; Waste for Advanced Energy Devices , Integrated Approaches and Future Perspectives; Environmental and Social Impact of Waste-to-Energy, Life Cycle Assessment (LCA) Approach to Evaluate Different Waste
Recommended Optional Program Components	None

Course Learning Outcomes

Weekly Subjects and Related Preparation Studies

Week	Subjects	Related Preparation
1	Introduction to Energy Production from Waste	
2	Energy, Economic, and Environmental Analysis of Waste Management Strategies	
3	Biofuels: An Overview - Bioethanol, Biodiesel, Biogas Production Techniques	
4	Chemical and Thermochemical Conversion of Wastes: Combustion/Incineration, Torefaction	
5	Chemical and Thermochemical Conversion of Wastes: Esterification, Transesterification, Gasification	

6	Chemical and Thermochemical Conversion of Wastes: Pyrolysis, Landfill Gas Production	
7	Biochemical Conversion of Wastes ; Anaerobic Digestion of Waste for Biogas Production	
8	Midterm 1 / Practice or Review	
9	Biochemical Conversion of Wastes ; Waste Fermentation for Energy Recovery,	
10	Biochemical Conversion of Wastes ; Microbial Fuel Cells (MFCs) forWaste Recycling and Energy Production	
11	"Future of Hydrogen and Carbon Dioxide Technologies; Hydrogen Production, Carbon Dioxide Capture and Use Methods"	
12	Waste for Advanced Energy Devices , Integrated Approaches and Future Perspectives, Centralized and Decentralized Waste to Energy Plants	
13	Environmental and Social Impact of Waste-to-Energy, Life Cycle Assessment (LCA) Approach to Evaluate Different Waste	
14	Presentation	
15		
16	Final	

Evaluation System

Activities	Number	Percentage of Grade
Attendance/Participation		
Laboratory		
Application		
Field Work		
Special Course Internship (Work Placement)		
Quizzes/Studio Critics		
Homework Assignments		
Presentations/Jury	1	10
Project	1	20
Seminar/Workshop		
Mid-Terms	1	30
Final	1	40
Percentage of In-Term Studies		60
Percentage of Final Examination		40
TOTAL		100

ECTS Workload Table

Activities	Number	Duration(Hour)	Total Workload
Course Hours	13	3	39

Laboratory			
Application			
Field Work			
Study Hours Out of Class	13	3	39
Special Course Internship (Work Placement)			
Homework Assignments			
Quizzes/Studio Critics			
Project	1	35	35
Presentations / Seminar	1	35	35
Mid-Terms (Examination Duration + Examination Prep. Duration)	1	30	30
Final (Examination Duration + Examination Prep. Duration)	1	40	40
		Total Workload	218
		Total Workload / 30(h)	7.27
		ECTS Credit	7.5

Extra Notes	None