AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Biofuels								
Course Code	ZTM545		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	8	Workload	200 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	Biofuels are fuels of biological origin and are one of the most prominent renewable energy sources in recent years. Petroleum derivatives are renewable and sustainable energy sources unlike fuels such as coal and natural gas.								
Course Content	Biofuels are fuels of biological origin and are one of the most prominent renewable energy sources in recent years. Petroleum derivatives are renewable and sustainable energy sources unlike fuels such as coal and natural gas.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Individual Study								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading	
1	Alternative Energy Resources Graduate Course Notes

Week	Weekly Detailed Course Contents	
1	Theoretical	Distribution of energy consumption in today's world, an overview of energy production from petrochemical and renewable sources, energy terminology
2	Theoretical	Biofuel production, classification and history
3	Theoretical	Microorganisms used in bioethanol production
4	Theoretical	Pretreatments applied to raw materials in bioethanol production
5	Theoretical	Raw materials used in bioethanol production
6	Theoretical	Fermentation in bioethanol production
7	Intermediate Exam	Midterm Exam
8	Theoretical	Raw materials used in biodiesel production
9	Theoretical	Microbial lipids in biodiesel production
10	Theoretical	Chemical modifications to triacylglycerols
11	Theoretical	Transesterifikasyon
12	Theoretical	Biological hydrogen production
13	Theoretical	Microbial fuel cells
14	Final Exam	Final Exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	4	3	98
Assignment	6	10	5	90
Midterm Examination	1	3	3	6
Final Examination	1	3	3	6
			Total Workload (Hours)	200
			[Total Workload (Hours) / 25*] = **ECTS**	8
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	Biofuel production, classification and history
2	Microorganisms used in bioethanol production

3	Pretreatments applied to raw materials in bioethanol production
4	Raw materials used in biodiesel production
5	Microbial fuel cells

Programme Outcomes *(Agricultural Machinery Master)*	
1	Identification, formulation and solving the problems in the field of Agricultural Machinery
2	The ability to use modern engineering tools and techniques
3	The ability to use the information, which is obtained by following the scientific and technological developments, in the academic life and practice.
4	The ability to evaluate multi-faced relationship between them by understanding interaction among agricultural technology, soil, plants and animals
5	Professionalism and ethical responsibility
6	The ability to work in disciplinary and multi-disciplinary teams
7	The ability to communicate effectively
8	The ability to do research for accessing information and to use data base and other resources
9	The ability to do analyze and interpret the experimental results and the design of experiment
10	The ability to identify and interpret knowledge of current professional issues and events
11	The ability to get aware the universal and social effects of engineering solutions and applications
12	Accordance with the requirements of science and technology, ability to use scientific knowledge creative

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L3
P1	5	
P2	5	
P3	5	
P4	5	
P5		4
P6	5	
P7	5	4
P8		4
P9		4
P10		4
P11		4