AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Energy Producıng From Lıvıng Things (bıoenergy)						
Course Code	ÇS011		Couse Level	Short Cycle (Associate's Degree)			
ECTS Credit	3	Workload	73 *(Hours)*	Theory	2	Practice	0	Laboratory	0
Objectives of the Course	Providing information on solid (compost, fertilizer, etc.), liquid (biodiesel, bioethanol, etc.), gaseous (biogas, syngaz, leangaz, poor gas, etc.) fuel and electricity production facilities (biogas plant, incineration, pyrolysis, gasification plant, etc.) from biomass products and biological agricultural products such as domestic, animal, forester and agricultural wastes.						
Course Content	What are the definitions and types of bioenergy. Bioenergy products and processes.						
Work Placement	N/A						
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Experiment, Demonstration, Discussion, Case Study, Individual Study						
Name of Lecturer(s)	Ins. Adem KESKİN, Lec. Sevil ÖZCAN						

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	70

Recommended or Required Reading

1	Mustafa ACAROĞLU, Alternative energy resources. Nobel Publishing
2	Nedim SARAÇOĞLU, Global Climate Change, Bioenergy and Energy Forestry. Elif Publishing
3	http://www.emo.org.tr/ekler/bee909821a8c133_ek.pdf

Week	Weekly Detailed Course Contents	
1	Theoretical	What is Bioenergy? What are Bioenergy Types?
2	Theoretical	What is biogas, what products, how to obtain?
3	Theoretical	Use of vegetable, animal and municipal wastes in obtaining biogas.
4	Theoretical	Energy recovery from wastes and treatment plants.
5	Theoretical	Fermentation technologies and their simple applications.
6	Theoretical	What is biomass energy, what products, how to obtain?
7	Theoretical	Use of agricultural and industrial wastes as biomass.
8	Intermediate Exam	Midterm
9	Theoretical	Use of domestic and forest waste as biomass.
10	Theoretical	Thermal technologies.
11	Theoretical	Compost technologies.
12	Theoretical	Pellet-briquette technologies.
13	Theoretical	Biodiesel and bioethanol production.
14	Theoretical	Laboratory application
15	Theoretical	Laboratory application
16	Final Exam	final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Individual Work	3	5	1	18
Midterm Examination	1	10	1	11
Final Examination	1	15	1	16
Total Workload (Hours)				73
[Total Workload (Hours) / 25*] = **ECTS**				3

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	Know bioenergy products.
2	Know the types of Bio Energy.
3	Knows the processes of obtaining bioenergy.
4	Know the use of plant wastes in obtaining energy.
5	Knows the processes of electricity production from biological products in solid, liquid and gaseous form.

Programme Outcomes *(Physiotherapy)*

1	To be able to recall the information of research methods and statistics so as to follow the developments, monitor and interpret scientific literature
2	To have the appropriate knowledge of basic sciences at the level of interest, to use specific medical terms and terminology of physical therapy
3	To be able to recall knowledge of the general structure and proporties of musculoskeletal system and the joints and to evaluate the story of musculoskeletal diseases.
4	To be able to comprehend the methods of measurement of the range of motion of joints and to measure it.
5	To be able implement a general evaluation of posture analysis and gait analysis.
6	To be able to recall the knowledge about general characteristics of musculoskeletal diseases, osteoporosis, osteoarthritis, rheumatoid arthritis, ankylosing spondylitis, especially rheumatic diseases, mechanical low back and neck pain, disc herniation, soft tissue disorders and to apply appropriate physiotherapy.
7	To be able to recall the knowledge and gain skills about the devices and the agents of heater used in physical therapy, indications and contraindications of using, and the necessary information about how to apply on patients.
8	To be able to recall the knowledge of the electromagnetic field.
9	To be able to recall what Elektroakapunktur, Laser, Biofeedback, cervical and lumbar traction systems, pneumatic compression therapy are, and how to apply them, which one is applicable to patients.
10	To be able to recall what manipulation-mobilization is and which patients are suitable for this application.
11	To be able to recall what massage and hydrotherapy treatments are and which patients are suitable for these applications.
12	To be able to gain the professional and ethical awareness, apply gained knowledge and skills in reallife situations and transfer gained knowlegde to individuals around her/his environment, and improve behavior of life-long learning.
13	To gain knowledge about methods of diagnosis, protection and treatment of diseases
14	To be able to recall the knowledge and gain skills about physical therapy and rehabilitation methods to be applied to neurological disorders.
15	To be able to recall the knowledge and gain skills about physical therapy and rehabilitation methods to be applied to cardiopulmonary disorders.
16	To be able to recall the knowledge and gain skills about physical therapy and rehabilitation methods to be applied to pediatric patients.
17	To be able to gain knowledge about the effects of fitness and exercise on metabolism and responses of body systems to them.
18	To have knowledge about rehabilitation services
19	To become individuals who can do interdisciplinary team work, with a sense of social responsibility and entrepreneur.
20	To be able to recall the knowledge about Ataturk's Principles and the History of Turkish Revolution.
21	To be able to gain the knowledge and ability to become contemporary individuals who can use Turkish language grammar well and know a foreign language knowledge necessasary to follow the developments in the profession.

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

	L1	L2	L3	L4	L5
P1	5	5	5	5	5
P2	4	4	4	4	4
P3	1	1	1	1	1
P4	1	1	1	1	1
P5	1	1	1	1	1
P6	1	1	1	1	1
P7	2	2	2	2	2
P8	1	1	1	1	1
P9	1	1	1	1	1
P10	1	1	1	1	1
P11	1	1	1	1	1
P12	1	1	1	1	1
P13	1	1	1	1	1
P14	1	1	1	1	1

P15	1	1	1	1	1
P16	1	1	1	1	1
P17	1	1	1	1	1
P18	1	1	1	1	1
P19	5	5	5	5	5
P20	4	4	4	4	4
P21	4	4	4	4	4