



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Environmental Biotechnology							
Course Code		TBY323		Course Level		First Cycle (Bachelor's Degree)			
ECTS Credit	2	Workload	49 (<i>Hours</i>)	Theory	2	Practice	0	Laboratory	0
Objectives of the Course		It aims to teach the use of biotechnological applications in solving environmental problems.							
Course Content		Introduction to Environmental Biotechnology, The relationship between technology, environmental technology and environmental biotechnology, Microorganisms and technology, Microorganisms and metal removal, Air pollution and phytoremediation, Soil pollution and phytoremediation, Solid waste treatment and their use in agriculture, Biotechnological applications used in waste water and wastewater treatment , the use of treated waters in agriculture, biogas production, biogas production and agriculture, biological fertilizers, bioextraction and biomassing							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Individual Study					
Name of Lecturer(s)		Lec. Evrim ELÇİN							

Assessment Methods and Criteria

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

Recommended or Required Reading

1	R.K. Sinha, R. Sinha. Environmental Biotechnology, Aavishkar Publishers, India. 2008.2.Bitton G. Wastewater microbiology., John Wiley & Sons, Inc., Hoboken, New Jersey, 2005.3.Glazer A.N., Nikaido H. Microbial Biotechnology, Cambridge University Press, 2007.
2	Ünyayar, A. 2018.Çevre Mikrobiyolojisi ve Biyoteknolojisi, Atlas Akademi.

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction to Environmental Biotechnology
2	Theoretical	Relationship between technology, environmental technology, environmental biotechnology
3	Theoretical	Microorganisms and technology
4	Theoretical	Metal removal by microorganisms
5	Theoretical	Air pollution and phytoremediation
6	Theoretical	Soil pollution and phytoremediation
7	Theoretical	Treatment of solid waste and gaining them to agriculture
8	Intermediate Exam	Midterm Exam
9	Theoretical	Wastewater and biotechnological applications used in wastewater treatment
10	Theoretical	Use of treated wastewater in agriculture
11	Theoretical	Biogas production and agriculture
12	Theoretical	Biological fertilizers
13	Theoretical	Microbial fertilizers
14	Theoretical	Biopesticides
15	Theoretical	Bioextraction and Biomining
16	Final Exam	Final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	1	2	42
Midterm Examination	1	2	1	3



Final Examination	1	2	2	4
Total Workload (Hours)				49
[Total Workload (Hours) / 25*] = ECTS				2
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	Recognize the concepts of environment and environmental pollution
2	Knows the properties of microorganisms used in biotechnology
3	Knows phytoremediation of soil and air pollution
4	Knows biogas production and its use in agriculture
5	Knows the use of biotechnological applications in agriculture

Programme Outcomes (Agricultural Biotechnology)

1	To be able to develop skills in identifying, modeling and solving problems in agricultural biotechnology
2	To be able to synthesize life and engineering sciences for the effective resource planning of agricultural biotechnology applications
3	To be able to interpret about living organisms structure, metabolic and physiological processes in order to propose biotechnological solutions to the agricultural problems
4	To be able to analyze genomic, metabolomic and proteomic information via bioinformatic tools.
5	To have the ability to analyze collected data and interpret the results.
6	To have the ability of individual working ability and to make independent decisions, to work in inter-disciplinary and interdisciplinary teamwork, to communicate by expressing their ideas orally and in writing, clearly and concisely
7	To have the awareness of professional liabilities and ethics
8	To be able to follow current national and international problems

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	3	4	5	3	5
P2	3	4	5	3	3
P3	3	5	5	2	3
P4	1	2	1	1	2
P5	3	2	3	2	3
P6	2	2	3	2	2
P7	4	2	2	2	2
P8	5	2	2	2	2

