AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Utilization of Tissue Culture in Plant Breeding								
Course Code	TBY421		Couse Level	First Cycle (Bachelor's Degree)					
ECTS Credit	4	Workload	104 *(Hours)*	Theory	2	Practice	0	Laboratory	2
Objectives of the Course	Students learn the help of biotechnological methods in plant breeding								
Course Content	The importance of plant breeding, the plant cell tissue cultures help to plant breeding, moral and ethical aspects of biotechnology								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Demonstration, Discussion								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	70

Recommended or Required Reading	
1	Lecture notes
2	Plant biotechnology, Adrian Slater, Nigel W. Scott and Mark R. Fower, OXFORD PRESS
3	Bitki Biyoteknolojisi, Rüştü Hatipoğlu, Adana, 2012
4	Bitki Islahı, 2015, Orhan KURT, OMÜ, Ziraat Fakültesi Ders Kitabı, No:43

Week	Weekly Detailed Course Contents	
1	Theoretical	The development of plant breeding
2	Theoretical	Plant breeding during Mendel and after
3	Theoretical	Plant tissue culture and plant breeding
4	Theoretical	Principles of in vitro culture
5	Theoretical	Nutrient media used in tissue culture
6	Theoretical	The sterilization methods used in in vitro culture
7	Theoretical	Clonal propagation and somatic variations
8	Theoretical	In vitro pollination and fertilization
9	Intermediate Exam	Midterm exam
10	Theoretical	Embryo culture
11	Theoretical	Meristem culture
12	Theoretical	Cell and protoplast culture and somatic hibridization
13	Theoretical	Haploid plant production
14	Theoretical	Gene transfer in plants
15	Theoretical	The future of the plant tissue culture
16	Final Exam	Final exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	2	2	56
Lecture - Practice	14	1	2	42

Midterm Examination	1	2	1	3
Final Examination	1	2	1	3
			Total Workload (Hours)	104
			[Total Workload (Hours) / 25*] = **ECTS**	4
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	Students learn the plant tissue culture methods are used in breeding
2	Students learn modern breeding techniques
3	Learn classical breeding techniques
4	Have an idea about shortening the breeding process with biotechnological processes
5	Have an idea about the contribution of plant breeding to world nutrition and shelter

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