



AYDIN ADNAN MENDERES UNIVERSITY
GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
FIELD CROPS
FIELD CROPS
FIELD CROPS MASTER
COURSE INFORMATION FORM

Course Title	Introduction to Biotechnology in Field Crops								
Course Code	ZTB540	Course Level			Second Cycle (Master's Degree)				
ECTS Credit	8	Workload	201 (Hours)	Theory	2	Practice	2	Laboratory	0
Objectives of the Course	The aim of this course is to definition of biotechnology-related terms, application areas in field crops, identification of biotechnology samples used in past and present, collection of analysis material, DNA and RNA isolations, expression of genes, gene transfer techniques, molecular marker methods and biotechnology on grain quality in abiotic stress conditions in field crops theoretical and practical training of research.								
Course Content	Explain of information on important techniques and their use in field crops within the scope of plant biotechnology								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Experiment, Discussion, 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	C. Neal Stewart. PLANT BIOTECHNOLOGY AND GENETICS: Principles, Techniques, and Applications. 2008. Wiley. John Wiley & Sons, Inc., Hoboken, New Jersey.
2	Srivastava, P.S., Narula A., Srivastava S. Plant. 200. Biotechnology and Molecular Markers. Kluwer Academic Publishers New York, Boston, Dordrecht, London, Moscow. eBook ISBN: 1-4020-3213-7.

Week	Weekly Detailed Course Contents	
1	Theoretical	The definition of plant biotechnology, and the purposes and areas of use of biotechnology
2	Theoretical	Identification of structure of cell, chromosomes, DNA, RNA, gene, locus concepts
3	Theoretical	Structure of the gene and Gene expression analysis
4	Theoretical	Expression of genes, investigation of translation concepts
5	Theoretical	Explanation of protein biosynthesis
6	Theoretical	Introduction of DNA and RNA isolation, polymerase chain reaction (PCR)
7	Theoretical	Introduction of basic principles of gel electrophoresis
8	Intermediate Exam	Midterm exam
9	Theoretical	Visualization of products obtained as a result of molecular analysis and evaluation of results
10	Theoretical	Molecular biology and physiology of salinity stress
11	Theoretical	Molecular biology and physiology of drought stress
12	Theoretical	Molecular biology and physiology of temperature stress
13	Theoretical	Discussion of molecular studies on quality characteristics of protein and oil in the scope of grain quality in field crops
14	Theoretical	Developments in DNA markers and their use in field crops
15	Theoretical	Discussion of the current and future effects of genetically modified organisms
16	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Lecture - Practice	14	0	2	28
Assignment	5	0	5	25
Term Project	2	0	30	60
Individual Work	5	0	10	50



Midterm Examination	1	2	4	6
Final Examination	1	2	2	4
Total Workload (Hours)				201
[Total Workload (Hours) / 25*] = ECTS				8

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	Investigation of plants at DNA and RNA levels
2	Gene expression analysis at RNA level
3	Explaining the molecular mechanisms of various agronomic properties
4	Abiotic stress resistant plant breeding activities in the light of this information
5	To be able to use appropriate genetic markers to be used in plant breeding

Programme Outcomes (Field Crops Master)

1	To be able to improve and deepen the level of expertise in field crops on the basis of the departments licenses qualifications.
2	To be able to recognize the subjects related to field crops, to be able to solve these and make interpretation.
3	To be able to have the skills of acting independently, to have power to decide and to create.
4	To be able to work in teams between departments
5	To be able to give briefing about latest information of Field Crops in written, oral and visual ways.
6	To be able to take responsibility for developing the new approaches and to formulate a solution facing unforeseen complex situations of applications,
7	To be able to defend the original opinions in both Turkish and in foreign languages by using these languages and communicating effectively.
8	To be able to contribute to science by producing knowledge for the aim of improving quality, efficiency and sustainability
9	To be able to apply breeding methods in order to improve new varieties for Field Crops.
10	To be able to maintain and select the appropriate statistical methods within the framework of the study, evaluation of scientific ethics; to convert the results into a report/dissertation and to offer them by producing scientific publications.

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	5	5	5	5
P2	4	5	5	5	4
P3	5	5	5	5	5
P4	5	5	5	5	4
P5	5	5	5	5	5
P6	4	5	5	5	4
P7	5	5	5	5	5
P8	5	5	5	5	4
P9	5	5	5	5	5
P10	5	5	5	5	4

