AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title		Molecular Plant Breeding						
Course Code		TBY413		Couse Level		First Cycle (Bachelor's Degree)		
ECTS Credit	4	Workload	104 *(Hours)*	Theory	2	Practice	0	Laboratory	2
Objectives of the Course		To combined " Plant Breeding " and " Molecular Markers " issues by providing basic information to people working in this field						
Course Content		The definition of molecular markers, techniques used in marker application, PCR-based marker techniques, genetic mapping, marker -based selection						
Work Placement		N/A						
Planned Learning Activities and Teaching Methods			Explanation (Presentation), Experiment, Demonstration, Discussion, Individual Study					
Name of Lecturer(s)								

Assessment Methods and Criteria

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

Recommended or Required Reading

1	Lecture notes
2	Genome Mapping and Molecular Breeding in Plants(Fruits and Nuts) (Editor:Chittaranjan Kole)(2007)
3	Genome Mapping and Molecular Breeding in Plants(Vegetables) (Editor:Chittaranjan Kole)(2007)
4	Plant Molecular Breeding (Editor: H. John Newbury)(2003)

Week	Weekly Detailed Course Contents	
1	Theoretical	Molecular Markers: Definition, Types, importance of molecular markers in breeding activities
2	Theoretical	Techniques used in the Marker Practice Approaches: nucleic acid isolation, Polymerase Chain Reaction
3	Theoretical	The technical approach used in Marker Application: PAGE, capillary electrophoresis, sequence analysis
4	Theoretical	AFLP (Amplified Fragment Length Polymorphism) principles and methods of application
5	Theoretical	SSR (Simple Sequence Repeats, microsatellites) principles and methods of application
6	Theoretical	SNP (Single Nucleotide Polymorphism in) the principles and methods of application
7	Theoretical	SSR detection methods
8	Theoretical	SNP detection methods
9	Intermediate Exam	Mid-term exam
10	Theoretical	Plant Breeding: Definition, Breeding methods, agricultural importance and Objectives
11	Theoretical	Use of Molecular Markers in Plant Breeding: Identification of genetic resources, conservation and phylogenetic analysis
12	Theoretical	Genetic mapping
13	Theoretical	Marker-based selection (Marker Assisted Selection MAS)
14	Theoretical	Mapping based cloning (Map-Based Cloning)
15	Theoretical	The Future of Plant Breeding
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 molecular techniques are used in plant breeding
2	Students learn PCR-based molecular techniques
3	Students learn the marker -based selection methods
4	Get knowledge about classical plant breeding
5	Learn how to shorten plant breeding time by using molecular techniques

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