INTRODUCTION TO BIOTECHNOLOGY

1	Course Title:	INTRODUCTION TO BIOTECHNOLOGY
2	Course Code:	TAR3328-S
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	3
6	Semester:	6
7	ECTS Credits Allocated:	3.00
8	Theoretical (hour/week):	2.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	---
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. NAZAN DAĞÜSTÜ
15	Course Lecturers:	--
16	Contact information of the Course Coordinator:	ndagustu@uludag.edu.tr, 224 2941518, U.Ü. Ziraat Fakültesi Tarla Bitkileri Bölümü 16059 Görükle Bursa
17	Website:	
18	Objective of the Course:	To teach the introduction of biotechnological applications in plant breeding
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	

	1	To have knowledge of biotechnology terms
	2	To have knowledge of plant tissue culture terms
	3	To have knowledge on combination of plant biotechnology and classical breeding methods
	4	To learn the methods of gene transfer
	5	To learn the methods of plant tissue culture
	6	To learn modern plant breeding techniques
	7	To know which type of modern breeding application can apply to solve the conventional breeding problem
	8	To have information on GDO
	9	To have knowledge on transformation techniques for obtaining GDO
	10	To have knowledge on GDO applications in agronomy

21	Course Content:

Course Content:

Week	Theoretical	Practice
1	General definition of biotechnology, the importance and aim of it in agriculture, historic overview of plant biotechnology	
2	Methods of plant biotechnology in plants, in vitro culture methods, methods of genetic manipulation	

3	Organization of in vitro laboratory, cleaning room, media preparation room, inoculation and incubation room, data collecting room	
4	Plant media used in tissue culture, composition of media, common media used in plant cell and tissue culture, preparation of plant media	
5	In vitro aseptic techniques, sterilization methods, infections after sterilization	
6	Embryo culture	
7	Meristem culture	
8	Isolation, inoculation and subculture	
9	Haploid plant production and use of haploid plants in agriculture	
10	Protoplast culture, regeneration and somatic hybridization	
11	What is the mean of somaclonal variation? The sort of variation, the determination of genetic stability and variation methods, advantages and disadvantages of this system	
12	The mechanism of heredity in plants, the structure of chromosomes, Gene transfer methods in plants	
13	Transgenic plants and genomic libraries	
14	Plants developed via biotechnological methods, the use of genetically modified	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	2	3.00	6.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	2	6.00	12.00
Others	5	7.00	35.00
Final Exams	1	10.00	10.00
Total Work Load			103.00
Total work load/ 30 hr			3.03
ECTS Credit of the Course			3.00

Materials:

M. Babaoglu, E. Gurel, S. Ozcan. S. U. Vakfı Yayınları, Konya. pp.1-456.

and E.W. Roberts, Cambridge University Press, UK.

Plant Propagation by Tissue Culture. Handbook and

and P.D. Shenington, Exegetics Ltd., England.

Bitki Doku Kültürleri Yöntemleri ve Uygulama Alanları,

Bölgesi. Ege Tarımsal Araştırma Enstitüsü Müdürlüğü Yayın No: 78.

A-58.

23 Assessment

TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Midterm Exam	2	40.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	3	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		

24	**ECTS / WORK LOAD TABLE**

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	2	2	2	3	2	2	2	2	2	3	0	0	0	0	0	0
ÖK2	2	2	3	3	2	2	2	1	1	1	0	0	0	0	0	0
ÖK3	2	2	2	3	3	3	3	2	2	2	0	0	0	0	0	0
ÖK4	1	2	2	2	2	1	3	3	2	1	0	0	0	0	0	0
ÖK5	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0
ÖK6	2	2	2	2	2	2	2	1	1	1	0	0	0	0	0	0
ÖK7	2	2	2	2	3	1	2	2	2	2	0	0	0	0	0	0
ÖK8	2	2	2	2	2	1	2	1	1	1	0	0	0	0	0	0
ÖK9	1	1	1	2	2	2	2	1	1	1	0	0	0	0	0	0
ÖK10	2	2	2	1	1	1	2	2	2	2	0	0	0	0	0	0
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	**1 very low**		**2 low**		**3 Medium**		**4 High**			**5 Very High**						