

AGRICULTURAL BIOTECHNOLOGY

1	Course Title:	AGRICULTURAL BIOTECHNOLOGY	
2	Course Code:	TAR2308	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	2	
6	Semester:	4	
7	ECTS Credits Allocated:	2.00	
8	Theoretical (hour/week):	2.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	yok	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. NAZAN DAĞÜSTÜ	
15	Course Lecturers:	yok	
16	Contact information of the Course Coordinator:	ndagustu@uludag.edu.tr, 224 2941518, U.U. Field Crops Department, Faculty of Agriculture 16059 Görükle Campus Bursa	
17	Website:		
18	Objective of the Course:	The aim of this course is to provide information about applications in the field of agricultural biotechnology such as plant tissue culture and plant transformation techniques. The course will specifically focus on how agricultural biotechnology affects global food security and the environmental ecosystem.	
19	Contribution of the Course to Professional Development:	Learns the applications of biotechnology, one of the new breeding methods in agriculture.	
20	Learning Outcomes:		
		1	Will have knowledge about biotechnology
		2	Will be informed about which agricultural products are subject to GMO application.
		3	Will have information about the benefits and harms of biotechnological applications in health, environment and areas of application
		4	Know what biosecurity is and how it is applied
		5	Will have information about GMO, Know how GMO practices are implemented in our country, in Europe and America.
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21	Course Content:		
		Course Content:	
Week	Theoretical	Practice	
1	What is the mean of biotechnology and What are the types of biotechnology		

2	Historical development of biotechnology- Different approaches to the past, present and future of biotechnological applications	
3	Modern biotechnology applications for agricultural purposes	
4	Biotechnology applications in food	
5	Biotechnology applications in health	
6	Biotechnology applications for the environment	
7	Transgenic Applications: Genetically modified organisms and products (GMO)	
8	GMOs in the world and the European Union	
9	GMO risks and concerns	
10	Recommended risk management system in terms of biosecurity and biodiversity	
11	International and national structuring studies in terms of biosecurity	
12	Convention on biological diversity Cartagena Protocol on Biosafety	
13	National biosafety law, conclusions and recommendations	
14	Biosecurity practices in our country	

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	6	6.00	36.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	1.00	1.00
Others	0	0.00	0.00
Final Exams	1	1.00	1.00
Total Work Load			66.00
Total work load/ 30 hr			2.20
ECTS Credit of the Course			2.00

22	Textbooks, References and/or Other Materials:	1. Topal, Ş. Biyogüvenlik ve Biyoteknoloji, Cemturan Ofset Matbaası, 2006 2. Anonim. Directive 2001/18/EC of the European Parliament and of the Council of 12 March 2001 on the deliberate release into the environment of genetically modified organisms and repealing Council Directive 90/220/EEC—Commission Declaration. OJ L 106, 17/04/2001. P.0001-0039. 3. Karagöz, A., N. Zincirci, A. Tan, T. Tuncer, H. Köksel, M. Sürek, C. Toker, K. Özbek. Bitki Genetik Kaynaklarının Korunması ve Kullanımı. In: TMMOB Ziraat Mühendisliği Odası, Ziraat Mühendisliği VII. Teknik Kongresi Bildiriler Kitabı -1. 11-15 Ocak 2010, Ankara. p. 155-177. 4. James, C. Global Status of Commercialized Biotech/GM Crops: 2009 The first fourteen years, 1996 to 2009. ISAAA Brief no:41-2009. ISAAA: Ithaca, NY. Erişim Tarihi: 01.03.2010 http://www.isaaa.org/resources/publications/briefs/41/default.asp 5. Anonim. International Labour Organization (ILO). http://www.ilo.org/global/lang--en/index.htm Erişim Tarihi: 22.02.2010 6. Anonim. International Fund for Agricultural Development (IFAD). http://www.ifad.org/ Erişim Tarihi: 22.02.2010 7. Renckens, S. Avrupa Gıda Güvenliği Kurumu EFSA ve AB’de GDO’ların Bilimsel Risk Değerlendirmesi. In:GDO GERÇEĞİ “Modern Biyoteknoloji, Genetiği Değiştirilmiş Organizmalar ve Gıda Güvenliği Konferans Notları” Gıda Dernekleri Federasyonu, İstanbul 2004. p. 48-68. 8. Anonim. EUROPA http://ec.europa.eu/food/food/biotechnology/authorisation/index_en.htm Erişim Tarihi: 23.02.2010. 9. Babaoğlu, M., E. Gürel ve S. Özcan. 2001. Bitki Biyoteknolojisi. Doku kültürü ve uygulamaları. Selç. Üniv. Vakf. Yay. Tak no:975-6652-03-9, 374 s 10. Finamore, A., M. Ruselli, S. Britti, G. Monastra, R. Ambra, A. Turrini, E. Mengheri. Intestinal and Peripheral Immune Response to MON 810 Maize Ingestion in Weaning and Old Mice. Journal of Agricultural and Food Chemistry. 2008; DOI:10.1021/jf802059w. 11. Huangfu, C., X. Song, S. Qiang. ISSR variation within and among wild Brassica juncea populations: implication for herbicide resistance evolution. Genet Resour Crop Evol, 2009; 56:913-924. 12. Quist, D. and I.H. Chapela. Transgenic DNA introgressed into traditional maize landraces in Oaxaca, Mexico. Nature, 2001; 414:541-543. 13. Anonim. FAOSTAT. http://www.faostat.fao.org Erişim Tarihi: 23.02.2010 14. Anonim. USDA Foreign Agricultural Service. http://www.fas.usda.gov/ E.T.: 23.02.2010 15. Plant Biotechnology in Agriculture, 1989. K. Lindsey and M.G.K., John, Wiley & Sons, Inc., New York. 16. Bitki Biyoteknolojisi, 1999. R. Hatipoğlu, Ç.Ü. Ziraat Fakültesi Genel Yayın No: 190 Ders Kitapları Yayın No: A-58.Bett, K.S. Mounting evidence of genetic pollution from GE crops growing evidence of widespread GDO. 1999. http://www.purefood.org/ge/gepollution.cfm E.T.: 24.02.2010 17. E. OLHAN, 2010. Modern biyoteknolojinin tarımda kullanımının politik ve ekonomik yönden değerlendirilmesi. Farklı Boyutlarıyla Genetiği Değiştirilmiş Organizmalar, 9-14. 18. Ellstrand N. 2003. Current knowledge of gene flow in plants: implications for transgene flow. The Royal Society, Philosophical Transactions, 1163-1170.
23	Assesment	

TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Midterm Exam	1	40.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	2	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	Bursa Uludağ University is evaluated according to the principles of the Associate and Undergraduate Education Regulation	

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	3	2	2	2	2	1	3	0	0	0	0	0
ÖK2	1	2	3	3	2	2	3	3	4	3	1	0	0	0	0	0
ÖK3	2	2	2	2	3	3	3	3	1	1	3	0	0	0	0	0
ÖK4	3	1	2	2	2	3	3	2	2	2	2	0	0	0	0	0
ÖK5	3	3	1	2	2	2	2	2	3	4	3	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							