RECOMBINANT DNA TECHNOLOGY AND GENETICALLY MODIFIED ORGANISMS

1	Course Title:	RECOMBINANT DNA TECHNOLOGY AND GENETICALLY MODIFIED ORGANISMS	
2	Course Code:	VGN5008	
3	Type of Course:	Optional	
4	Level of Course:	Second Cycle	
5	Year of Study:	1	
6	Semester:	2	
7	ECTS Credits Allocated:	5.00	
8	Theoretical (hour/week):	3.00	
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:	Doç.Dr. ÖZDEN ÇOBANOĞLU	
15	Course Lecturers:	Doç. Dr. Özden ÇOBANOĞLU	
16	Contact information of the Course Coordinator:	Doç. Dr. Özden ÇOBANOĞLU Bursa Uludağ Üniv. Zootekni ve Hayvan Besleme Bölümü / Genetik Anabilim Dalı, Görükle Kampüsü Nilüfer/BURSA E-mail:ocobanoglu@uludag.edu.tr Tel: 0 224 294 1241	
17	Website:	http://www.veteriner.uludag.edu.tr	
18	Objective of the Course:	To learn the theory of basic techniques used in recombinant DNA and apply them in the laboratory, to comprehend vector selection criteria, To learn advanced analysis methods used in recombinant DNA technology and their areas of use, to learn to create a target-oriented experimental approach, to create a project, to conduct experiments, to interpret the results and to present them as a report. Students; To have knowledge about their use in GMO research, environment, industry and agricultural production. To analyze the potential risks of GMOs, national and international regulations in GMO production and trade, GMO and biosecurity, moral and social issues, to have knowledge on GMOs, biosecurity and food safety.	
19	Contribution of the Course to Professional Development:	In this course, students will gain experience in theoretical concepts related to recombinant DNA technology as well as its applications in different living things. In addition, they will be able to reach more scientific information about GMOs and ethics.	
20	Learning Outcomes:		
		1	To teach the basic concepts of recombinant DNA Technology.
		2	To teach the basic techniques used in recombinant DNA technology.
		3	To establish the basic infrastructure required to understand and do molecular Biotechnology-genetic engineering applications.

	4	To teach the definition of GMO and how to use it, analyze the production stages of GMO products.
	5	To learn the procedures and laws applied in the world and in our country related to the production of GMO plants.
	6	To have the basic knowledge of National and International Food Safety and Biosecurity.
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21	Course Content:

Course Content:

Week	Theoretical	Practice
1	Advances in Recombinant DNA Technology	
2	Analysis of Cloned Genes	
3	New Tools in Gene Function Studies	
4	Analysis of Important Biological Processes Using Recombinant DNA Technology	
5	Application of Recombinant DNA in Biotechnology	
6	The Effects of Recombinant DNA on Human Genetics	
7	Recombinant DNA Technology Applications	
8	Applications of GMOs in the World and in Turkey	
9	Midterm exams	
10	Gene Transfer Stages	
11	Transgenic Plant and Animal Related Genes and Their Traits	
12	Scientific and Ethical Issues Regarding Transgenic Organisms	
13		
14		

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self-study and preparation	14	5.00	70.00
Homeworks	2	15.00	30.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	4.00	4.00
Others	0	0.00	0.00
Final Exams	1	4.00	4.00
Total Work Load			150.00
Total work load/ 30 hr			5.00
ECTS Credit of the Course			5.00

22	Textbooks, References and/or Other Materials:	1. Recombinant DNA. 2nd Edition J.D. Watson, J. Witkowski, M. Gilman, M. Zoller. W.H. Freeman and 2. Recombinant DNA Technology, S.S. Sandhu. I. K. International Publishing, 2010. Proteomik Analizler. G. Temizkan, N. Arda. Nobel Tıp Kitabevleri, 2019. 4. Rekombinant DNA Teknolojisi ve Genomik. Ders Notları. 2019. 5. Genetiği Değiştirilmiş Organizmlar (GDO). İTO Yayınevi, 2010. 6. Genetiği Değiştirilmiş Organizmlar. B. Akman. ODTU Yayınevi, 2007. 7. Gene Cloning and DNA Analysis: An Introduction, 6th Edition, T. Brown, Wiley-Blackwell, 2010. 8. From Genes to Genomes: Concepts and Applicaitons of DNA Technology, 2nd Edition, Dale, von Schantz, John Wiley & Sons, Ltd, 2007. 9. Principles of Gene Manipulation and Genomics, 7th Edition, Primrose, Twyman, Blackwell Publishing, 2006.

23	Assesment

TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Midterm Exam	1	40.00
Quiz	0	0.00
Home work-project	2	10.00
Final Exam	1	50.00
Total	4	100.00
Contribution of Term (Year) Learning Activities to Success Grade		50.00
Contribution of Final Exam to Success Grade		50.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		The evaluation of the course will be done with homework to be given in the form of small projects, and the exams of the course will be done in a classical way.

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	3	1	2	2	1	5	1	0	0	0	0	0	0	0	0	0
ÖK2	4	2	3	1	2	3	4	0	0	0	0	0	0	0	0	0
ÖK3	2	3	1	3	4	2	4	0	0	0	0	0	0	0	0	0
ÖK4	5	4	3	4	5	4	2	0	0	0	0	0	0	0	0	0
ÖK5	3	5	2	3	4	2	4	0	0	0	0	0	0	0	0	0
ÖK6	4	2	4	5	2	1	3	0	0	0	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