MOLECULAR BIOLOGY TECHNIQUES

1	Course Title:	MOLECULAR BIOLOGY TECHNIQUES	
2	Course Code:	MBG2006	
3	Type of Course:	Compulsory	
4	Level of Course:	First Cycle	
5	Year of Study:	2	
6	Semester:	4	
7	ECTS Credits Allocated:	6.00	
8	Theoretical (hour/week):	2.00	
9	Practice (hour/week):	2.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Dr. Ögr. Üyesi ELİF UZ	
15	Course Lecturers:	Araştırma Görevlileri	
16	Contact information of the Course Coordinator:	Dr. Öğr. Üyesi Elif UZ YILDIRIM Bursa Uludağ Üniversitesi Fen-Edebiyat Fak., Moleküler Biyoloji ve Genetik Bölümü elifuz@uludag.edu.tr 902242941776	
17	Website:		
18	Objective of the Course:	To comprehend the basic logic of the techniques used in molecular biology and genetics studies.	
19	Contribution of the Course to Professional Development:	To gain the capacity of choosing the right method during experimental studies. Moreover, to choose the right techiques, since the students learn the similarities and differences among methods.	
20	Learning Outcomes:		
		1	Learn the basic methods used in molecular biology.
		2	Gain the capacity to design their own experiments
		3	Learn basic equipments and consumables used in a molecular biology laboratory.
		4	Gain the basic skills in order to work in a molecular biology laboratory.
		5	Comprehend how to follow novel developments in the techniques used in molecular biology.
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21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Basic concepts of techniques used in molecular biology: A general overview I	Laboratory rules and safety (Groups A1-B1)

2	Basic concepts of techniques used in molecular biology: A general overview II	Laboratory rules and safety (Groups A2-B2)
3	Isolation techniques (DNA, RNA and protein)	Laboratory equipments (Groups A1-B1)
4	cDNA synthesis, library preparation	Laboratory equipments (Groups A2-B2)
5	Conepts of PCR	Laboratory consumables (Groups A1-B1)
6	Types of PCR and concepts of RT-PCR	Laboratory consumables (Groups A2-B2)
7	Electrophoretic techniques (Agarose and PAGE)	Solution Preparation (Groups A1-B1)
8	Principles of hybridization techniques (Southern and Northern blot)	Solution Preparation (Groups A2-B2)
9	Principles of hybridization techniques (Western blot)	DNA Isolation (Groups A1-B1)
10	DNA sequencing techniques	DNA Isolation (Groups A2-B2)
11	siRNA/miRNA, Microarray	Spectrophotometric measurements of DNA and Agarose Gel (Groups A1-B1)
12	Genome editing using nucleases (ZFNs, TALENs and CRISPR-Cas)	Spectrophotometric measurements of DNA and Agarose Gel (Groups A2-B2)
13	ChIP, ELISA, protein sequencing	PCR and gel electrophoresis (Groups A1-B1)
14	Yeast complementation: Yeast one hybrid, yeast two hybrid and yeast three hybrid	PCR and gel electrophoresis (Groups A2-B2)

22	Textbooks, References and/or Other Materials:	Temel ve İleri Moleküler Biyoloji Yöntemleri-Genomik ve Proteomik Analizler, Güler Temizkan, Nazlı Arda, Nobel Tıp Kitabevi, 2017.

Activites	Number	Duration (hour)	Total Work Load (hour)
Midterm Exam	1	28.00	
Theoretical	14	2.00	28.00
Quiz	6	15.00	
Practicals/Labs	14	2.00	28.00
Home work project	0	0.00	
Self study and preperation	14	7.00	98.00
Final Exam	1	60.00	
Homeworks	6	4.00	24.00
Total	0	100.00	
Projects	0	0.00	0.00
Contribution of Term (Year) Learning Activities to	40.00		
Field Studies	0	0.00	0.00
Midterm exams	1	1.00	1.00
Contribution of Final Exam to Success Grade	60.00		
Others	0	0.00	0.00
Total	100.00		
Final Exams	1	1.00	1.00
Measurement and Evaluation Techniques Used in the	Midterm and final Exam questions. Moreover, lab quizzes		
Total Work Load			181.00
Total work load/ 30 hr			6.00
24 ECTS / WORK LOAD TABLE			
ECTS Credit of the Course			6.00

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	5	4	4	5	5	2	2	4	5	4	0	0	0	0	0	0
ÖK2	5	3	4	5	5	3	2	3	4	5	0	0	0	0	0	0
ÖK3	2	2	2	2	2	2	2	5	5	5	0	0	0	0	0	0
ÖK4	4	5	4	5	4	3	3	2	5	5	0	0	0	0	0	0

ÖK5	3	4	4	3	3	3	3	4	4	5	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**