INTRODUCTION TO BIOINFORMATICS ALGORITHMS

1	Course Title:	INTRODUCTION TO BIOINFORMATICS ALGORITHMS	
2	Course Code:	BMB4017	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	4	
6	Semester:	7	
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. GIYASETTİN ÖZCAN	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	Bilgisayar Müh. Bölüm Binası, 1. kat, oda 107 Tel.:+90 (224) 294 2792 email: gozcan at uludag.edu.tr	
17	Website:		
18	Objective of the Course:	To learn methods and algorithms for analyzing high-volume biological data / signals. To learn how to obtain results that have meaning in medical terms with these methods.	
19	Contribution of the Course to Professional Development:	To understand biological databases, to be able to design the necessary algorithms to process these databases	
20	Learning Outcomes:		
		1	Students learn the algorithms which are used to analze high volüme biological data.
		2	Students learn to use probabilistic prediction methods to solve problems.
		3	In terms of medicine, students understand the benefits of the bioinformatics algorithms
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21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Fundamental problems of bioinformatics and its computations	
2	Sequence Alignment Algorithms	
3	Short read sequence alignment	
4	Alignment against database, BLAST	

5	Multiple Sequence Alignment	
6	Motif search algorithms	
7	Probabilistic algorithms	
8	Phylogeny Algorithms	
9	Next Generation Sequencing	
10	Genomic Integration	
11	Biological networks	
12	Secondary prediction	
13	Protein structure prediction	
14	Interaction with cancer drugs	

22	Textbooks, References and/or Other Materials:	1. Richard Durbin, Sean R. Eddy, Anders Krogh, Graeme Mitchison Biological Sequence Analysis: Probabilistic Models of Proteins and Nucleic Acids , 1998
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	25.00
Quiz	0	0.00
Home work-project	2	15.00
Final Exam	1	60.00
Total	4	100.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course	Measurement and evaluation is carried out according to the priciples of Bursa uludag University Associate and	

24	**ECTS / WORK LOAD TABLE**	Number	Duration (hour)	Total Work Load (hour)
Theoretical		14	3.00	42.00
Practicals/Labs		0	0.00	0.00
Self study and preperation		0	0.00	0.00
Homeworks		0	0.00	0.00
Projects		0	0.00	0.00
Field Studies		0	0.00	0.00
Midterm exams		1	50.00	50.00
Others		0	0.00	0.00
Final Exams		1	58.00	58.00
Total Work Load				200.00
Total work load/ 30 hr				5.00
ECTS Credit of the Course				5.00

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	5	4	4	3	2	1	1	1	1	2	3	0	0	0	0
ÖK2	5	5	4	4	3	2	1	1	1	1	2	3	0	0	0	0
ÖK3	5	5	4	4	3	2	1	1	1	1	2	3	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	1 very low	2 low	3 Medium	4 High	5 Very High