F	UNDAMENTALS AND	APPL	ICATIONS OF BIOINFORMATICS						
1	Course Title:	FUNDAMENTALS AND APPLICATIONS OF BIOINFORMATICS							
2	Course Code:	TTIP5005							
3	Type of Course:	Optional							
4	Level of Course:	Third Cycle							
5	Year of Study:	1							
6	Semester:	1							
7	ECTS Credits Allocated:	5.00							
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:	Doç. Dr.	GIYASETTİN ÖZCAN						
15	Course Lecturers:	Dr. Öğr. Üyesi Dilek PİRİM							
16	Contact information of the Course Coordinator:	Bilgisayar Müh. Bölüm Binası, 1. kat, oda 107 Tel.:+90 (224) 294 2792							
17	Website [.]	email: gozcan at uludag.edu.tr							
10	Objective of the Course:	This source sime to increase the skills of students who have have							
		bioinformatics and curriculum knowledge. Computational methods used to extract information from large-scale experimental methods such as genome sequencing and microarray technology will be introduced. The main emphasis of the course is on providing an overview of the field and identifying solutions to key problems of bioinformatics such as DNA and protein sequence alignment, structural protein alignment, protein / RNA structure prediction, phylogenetic tree building, microarray data analysis and analysis of gene / protein networks.							
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	To have knowledge about bioinformatics terminology and applications						
		2	Ability to use biological data banks						
		3	To learn basic Bioinformatics problems and methods that can be used to solve them.						
		4							
		5							
		6							
		7							
		8							
		9							
		10							
21	Course Content:								
		Co	ourse Content:						
Week	Neek Theoretical Practice								

1	Introduction to Bioinformatics															
2	Sequence Analysis and Dynamic Programming															
3	Statistical Analysis of Sequence Alignment															
4	Next Generation DNA Sequencing															
5	Markov Models and Multiple DNA Alignments					s										
6	Phylogenetic Trees and Clustering Models															
7	Protein Structure															
8	Protein Structure Prediction (Secondary, Tertiary)															
9	Protein Structure - Structural Matching															
10	Microarray Data Analysis															
11	Gene-Protein Networks and Pathways															
12	Protein-Protein and Protein DNA Relations															
13	Creating and Analysis of Large Scale Network Structures															
14	Finding Motifs in Networks															
22	Textbooks, References and/or Other						M. Ga	M. Zvelebil and J. O. Baum, Understanding Bioinformatics, Garland Science, 2008.								
23	Asses	ment									,					
TERM L	EARNI	NG ACT	IVITIES	\$		Ν	IUMBE	E WI	EIGHT							
Activites						Number			Dura	Duration (hour)			Total Work Load (hour)			
Homewerkerk-project 2					40	40 ₁ 00 2.00			1	28.00						
Practicals/Labs							0 0			0.00	0.00			0.00		
Self study and preperation 3						10	10.00 0.00				0.00					
Homew	Homeworks							2			34.00	34.00			68.00	
Projects							0			0.00	0.00			0.00		
Field St	Field Studies						(0 0.00				0.00				
Midtern	term exams							0.00				0.00				
Others	rs						(0			0.00			0.00		
Final E	l Exams						Ür	Undergraduate Educatio			iofARee	of Regulation.			54.00	
Total W	I Work Load											150.00				
Total w	al work load/ 30 hr														5.00	
ECTS (Credit c	f the C	ourse											-	5.00	
25	25 CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PC	1 PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ1 0	PQ11	PQ12	PQ1 3	PQ14	PQ15	PQ16
ÖK1	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			LO: L	earr	hing C	bjec	tive	s F	Q: P	rogra	m Qu	alifica	tions	5	1	•
L																

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