1.	Course title	**Data mining for Bioinformatics**	
2.	Course code	InIS-BI-Z-04	
3.	Study program	**Intelligent Systems Engineering**	
4.	Unit offering the course	**FCSE**	
5.	Undergraduate/master/PhD	**Master**	
6.	Year/semester 1/summer/compulsory	7. ECTS: **6**	
8.	Teacher(s)	prof. Ana Madevska Bogdanova, prof. Zaneta Popeska	
9.	Course prerequisites	None	
10.	Goals (competences): To enable the students to understand the gene and protein sequence analysis, how-to-use biological data bases, development of statistical and probabilistic methods and their employment in solving real life problems, advanced computational algorithms in Bioinformatics.		
11.	Course content: Genomic data bases, sequence similarities, DNA sequence analysis, RNA, secondary protein structure prediction, Markov chains, dynamic programming (global and local sequence alignment), DNA chip (microarrays) data analysis.		
12.	Teaching methods: Lectures supported by slide presentations, interactive lectures, trainings (using lab equipment and software packages), team work, case studies, invited guests and lectures, individual practical assignments presentations, seminar paper, e-learning (forums, consultations).		
13.	Total available time	6 ECTS x 30 hours = 180 hours	
14.	Distribution of the available time	30+30+40+40+40 = 180 hours	
15.	Teaching activities	15.1.	Lectures	30 hours
		15.2.	Training (labs, problem solving), seminar and team work	30 hours
16.	Other activities	16.1.	Project work	40 hours
		16.2.	Self study	40 hours
		16.3.	Home work	40 hours
17.	Grading			
	17.1.	Tests		20 points
	17.2.	Seminar work/project (written or oral presentation)		50 points
	17.3.	Active participation		30 points
18.	Grading criteria	to 59 points	5 (five) (F)
		from 60 to 68 points	6 (six) (E)
		from 69 to 76 points	7 (seven) (D)
		from 77 to 84 points	8 (eight) (C)
		from 85 to 92 points	9 (nine) (B)
		from 93 to 100 points	10 (ten) (A)

19.	Final exam prerequisites	Successfully completed activities 15.1 and 15.2
20.	Course language	Macedonian and English
21.	Quality assurance methods	Internal evaluation and student questionnaires

22.	Literature						
	22.1.	Compulsory					
			No.	Authors	Title	Publisher	Year
			1.	N. C. Jones, P. A. Pevzner	An introduction to bioinformatics algorithms	MIT Press	2004
			2.	R. Durbin, A. Krogh, G. Mitchinson, S. Eddy	Biological Sequence Analysis: Probabilistic Models of Proteins and Nucleic Acids",	Cambridge University Press,	1999
			3.	Andreas D. Baxevanis, B. F. Ouellette	Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins	ISBN: 0471383910, Publisher: Wiley, John & Sons, Inc.	2010
	22.2.	Additional					
			No.	Authors	Title	Publisher	Year
			1.				
			2.				
			3.				