1.	Course title	**Phylogenetics and comparative genetics**		
2.	Course code	BIO-I-07		
3.	Study program	Master Studies of Informatics Sciences and Computer Engineering - Module Bioinformatics		
4.	Unit offering the course	**FCSE in collaboration with Institute of Biology at the Faculty of Natural Sciences and Mathematics**		
5.	Undergraduate/master/PhD	**Master**		
6.	Year/semester 1/winter/compulsory	7. ECTS: **6**		
8.	Teacher(s)	**Dr. Sasho Panov, Associate Professor**		
9.	Course prerequisites	None		
10.	Goals (competences): The student will achieve basic knowledge and practical skills regarding phylogenetics, as well as comparative genetics and genomics.			
11.	Course content: Basic concept of molecular evolution and phylogenetics. Molecular sequence analysis of nucleic acids and proteins. Algorithms and software for sequence analysis. Sequence homology: orthologous and paralogous genes. Concept of phylogenetic trees. Comparative genetics and genomics: similarities and differences between genome structure and function among different organisms. Minimal genome project. Synthetic biology and artificial genome design. Practical analysis of biological data with selected software tools and phylogenetic tree contruction.			
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 + 15 + 135 = 180 hours		
15.	Teaching activities	15.1.	Lectures	30 hours
		15.2.	Training (labs, problem solving), seminar and team work	15 hours
16.	Other activities	16.1.	Project work	60 hours
		16.2.	Self study	25 hours
		16.3.	Home work	50 hours
17.	Grading			
	17.1.	Tests		45 points
	17.2.	Seminar work/project (written or oral presentation)		45 points
	17.3.	Active participation		10 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.	Frederic P. Miller, Agnes F. Vandome, John McBrewster	Molecular Evolution	Alphascript Publishing	2009
		2.				
		3.				
	22.2.	Additional				
		No.	Authors	Title	Publisher	Year
		1.				
		2.				
		3.				