

1.	Course title	Structural bioinformatics		
2.	Course code	BIO-I-01		
3.	Study program	Bioinformatics		
4.	Unit offering the course	FCSE		
5.	Undergraduate/master/PhD	Master		
6.	Year/semester 1/winter/elective	7. ECTS: 6		
8.	Teacher(s)	associate professor Slobodan Kalajdziski		
9.	Course prerequisites	None		
10.	Goals (competences): The student will be able to analyse protein structures, their use and extraction of additional knowledge that would be applied during the prediction of the structure and function of unknown protein molecules.			
11.	Course content: Protein plays the major role in the functioning of organisms, where their function is directly related to their three-dimensional structure. Knowing the protein structure may allow further development of knowledge and methods that will be used to predict the structure and function of proteins. The structure of the matter is this: Techniques for experimental determination of protein structure (NMR spectroscopy, X-ray crystallography), the format of protein structure, PDB files, structural classification schemes (CATH, SCOP), structure prediction and alignment, determining the function from the structure, comparative modelling, fold recognition.			
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	120 + 0 + 60 = 180 hours		
15.	Teaching activities	15.1.	Lectures	120 hours
		15.2.	Training (labs, problem solving), seminar and team work	0 hours
16.	Other activities	16.1.	Project work	15 hours
		16.2.	Self study	15 hours
		16.3.	Home work	30 hours
17.	Grading			
	17.1.	Tests		65 points
	17.2.	Seminar work/project (written or oral presentation)		25 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.	Philip E. Bourne, Helge Weissig	Structural Bioinformatics	Wiley-Liss, 1 edition	2003
		2.	Arthur M. Lesk	Introduction to Protein Architecture: The Structural Biology of Proteins	Oxford University Press, USA, 1 edition	2001
	3.	David Whithford	Proteins: Structure and Function	Wiley, 1 edition	2005	
	22.2.	Additional				
		No.	Authors	Title	Publisher	Year
		1.				
		2.				
3.						