NAME OF THE COURSE	Bioinformatics					
Code	PPC211	Year of study	3			
Course teacher	dr. sc. Stjepan Orhanović, assistant professor	Credits (ECTS)	2,0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			15		15	
Status of the course	electional	Percentage of application of e-learning	20%			

COURSE DESCRIPTION	
Course objectives	Course objective is acquiring knowledge about experimentally generated data (sequences and structural information) in biochemistry and molecular biology, their deposition in the databases and their processing using bioinformatics tools.
Course enrolment requirements and entry competences required for the course	Entry competences encompasses basic knowledge of the structure and the sequences of DNA and proteins.
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Upon completing exam student will be able to: 1. perform search of relevant databases: scientific publications, sequences of nucleic acids and proteins, and structures of biological macromolecules 2. analyze protein, DNA and RNA sequences 3. analyze protein structure 4. recognize role and possibilities of bioinformatics in the drug development 5. recognize ways to analyze genomes and relationship of the gene sequence, phenotypes and inherited disease
Course content broken down in detail by weekly class schedule (syllabus)	Lectures of bioinformatics are going to be followed by practical exercises in the informatics classroom and by presentation of student's seminars. 1. Scientific literature and basis of scientific literature search I (lectures 1 hour, exercises 1 hour) 2. Scientific literature and basis of scientific literature search II (lectures 1 hour, exercises 1 hour) 3. Databases of nucleic acids sequences (lectures 1 hour, exercises 1 hour) 4. Databases of protein sequences (lectures 1 hour, exercises 1 hour) 5. Sequence alignment and phylogenetic threes I (lectures 1 hour, exercises 1 hour) 6. Sequence alignment and phylogenetic threes II (lectures 1 hour, exercises 1 hour) 7. Protein structure databases I (lectures 1 hour, exercises 1 hour) 8. Protein structure databases II (lectures 1 hour, exercises 1 hour) 9. Analysis of the protein structure (lectures 1 hour, exercises 1 hour) 10. Analysis of the protein structure II (lectures 1 hour, exercises 1 hour) 11. Databases of the sequenced genomes I (lectures 1 hour, exercises 1 hour) 12. Databases of the sequenced genomes II (lectures 1 hour, exercises 1 hour) 13. Structural bioinformatics and drug development (lectures 1 hour, exercises 1 hour) 14. Introduction to the DNA microarray data and use of mass spectrometry in protein sequencing I (lectures 1 hour, exercises 1 hour) 15. Introduction to the DNA microarray data and use of mass spectrometry in protein sequencing II (lectures 1 hour, exercises 1 hour)
Format of instruction	☒ lectures ☒ seminars and workshops ☒ exercises ☐ *on line* in entirety ☐ partial e-learning ☐ field work ☒ independent assignments ☐ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	Attending classes (Skipping 20 % lectures, seminars and exercises is allowed), preparing two seminars on selected topic.
Screening student	Class: 1 — Research: — Practical training:

work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	attendance					
	Experimental work		Report		(Other)	
	Essay		Seminar essay	0,5	(Other)	
	Tests		Oral exam		(Other)	
	Written exam	0,5	Project		(Other)	

Grading and evaluating student work in class and at the final exam	Students take written exam, passing grade on the written exams is set at 50 % of total points. Written part of the exam comprises 50 % of overall grade while seminar essays comprise another 50 %.

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	Arthur M. Lesk, Introduction to bioinformatics 3e, Oxford University Press, 2008	1	

Optional literature (at the time of submission of study programme proposal)	David W. Mount, Bioinformatics, Sequence and Genome analysis, 2e, Cold Spring Harbor Laboratory Press, 2004 Jonathan Pevsner, Bioinformatics and Functional Genomics, John Wiley and Sons, 2009
Quality assurance methods that ensure the acquisition of exit competences	Personal consultations, completing partial exams, students survey for the evaluation of the subject and teacher, evidence of the presence on the classes, analysis of the success rate on the final tests.
Other (as the proposer wishes to add)	