RSE	Bioinformatics								
PPC211		Year of st	udy	3	3				
dr. sc. S	Stjepan Orhanović,			2,0					
		Type of instruction (number of hours)		L 15	S	E 15	F		
election	nal	Percentag	je of	20%					
Course objective is acquiring knowledge about experimentally generated data (sequences and structural information) in biochemistry and molecular biology, their									
Entry competences encompasses basic knowledge of the structure and the sequences of DNA and proteins.									
 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 									
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 I (lectures 1 hour, exercises 1 hour)									
 ☑ sem ☑ exer □ on li □ parti □ field 	inars and workshops rcises ine in entirety al e-learning work		 multimedia laboratory work with m (other 	entor `)					
Attending classes (Skipping 20 % lectures, seminars and exercises is allowed), preparing two seminars on selected topic.									
	dr. sc. s assista election Course (seque deposit Entry c sequen Upon c 1. 2. 3. 4. 5. Upon c 1. 2. 3. 4. 5. Lecture informa 1. Scie exercis 2. Scie exercis 3. Data 4. Data 5. Sequ hour) 7. Prote 8. Prote 9. Anal 10. Ana 11. Dat 13. Stru hour) 14. Intr protein 15. Intr protein 15. Intr protein 15. Intr protein 15. Intr	PPC211 dr. sc. Stjepan Orhanović, assistant professor electional COURSE Course objective is acquirir (sequences and structural i deposition in the databases Entry competences encomp sequences of DNA and pro- Upon completing exam stude 1. perform search of r nucleic acids and p 2. analyze protein, DN 3. analyze protein structure 4. recognize role and 5. recognize ways to a sequence, phenoty Lectures of bioinformatics a informatics classroom and b exercises 1 hour) 2. Scientific literature and b exercises 1 hour) 3. Databases of nucleic acid 4. Databases of protein sec 5. Sequence alignment and 6. Sequence alignment and 6. Sequence alignment and 6. Sequence alignment and 6. Sequence alignment and hour) 7. Protein structure database 9. Analysis of the protein structure databases 9. Introduction to the DNA protein sequencing I (lectur 15. Introduction to the DNA protein sequencing II (lectur 16. Attending classes (Skipping	PPC211 Year of st dr. sc. Stjepan Orhanović, assistant professor Credits (E Image: Construct of the second of	PPC211 Year of study dr. sc. Stjepan Orhanović, assistant professor Credits (ECTS) assistant professor Type of instruction (number of hours) electional Percentage of application of e-learning COURSE DESCRIPTION Course objective is acquiring knowledge about experi (sequences and structural information) in biochemistr deposition in the databases and their processing usin Entry competences encompasses basic knowledge o sequences of DNA and proteins. Upon completing exam student will be able to: 1. perform search of relevant databases: scienti nucleic acids and proteins, and structures of 1 2. analyze protein, DNA and RNA sequences 3. analyze protein structure 4. recognize role and possibilities of bioinformat 5. recognize ways to analyze genomes and rela sequence, phenotypes and inherited disease Lectures of bioinformatics are going to be followed by informatics classroom and by presentation of student 1. Scientific literature and basis of scientific literature exercises 1 hour) 2. Scientific literature and basis of scientific literature exercises 1 hour) 3. Databases of nucleic acids sequences (lectures 1 hour, e 5. Sequence alignment and phylogenetic threes I (lect hour) 7. Protein structure databases I (lectures 1 hour, exe 6. Sequence alignment and phylogenetic threes I (lect hour) 7. Protein structure databases I (lectures 1 hour, exe 6. Sequence alignment and phylogenetic threes I (lect hour) 7. Protein structure databases I (lectures 1 hour, exe 8. Analysis of the protein structure I (lectures 1 hour, exe 13. Structural bioinformatics and drug deve	PPC211 Year of study 3 dr. sc. Stjepan Orhanović, assistant professor Credits (ECTS) 2,0 Type of instruction (number of hours) L electional Percentage of application of e-learning 20% COURSE DESCRIPTION Course objective is acquiring knowledge about experimentally (sequences and structural information) in biochemistry and m deposition in the databases and their processing using bioinfor Entry competences encompasses basic knowledge of the stru- sequences of DNA and proteins. 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Upon completing exam student will be able to: 1. perform search of relevant databases: scientific publications, nucleic acids and proteins, and structures of biological macro 2. analyze protein structure 4. recognize role and possibilities of bioinformatics in the drug d 5. recognize ways to analyze genomes and relationship of the g sequence, phenotypes and inherited disease Lectures of bioinformatics are going to be followed by practical exercis informatics classroom and by presentation of student's seminars. 1. Scientific literature and basis of scientific literature search I (lecture exercises 1 hour) 2. Scientific literature and basis of scientific literature search I (lecture texercises 1 hour) 3. Databases of protein sequences (lectures 1 hour, exercises 1 hour) 4. Databases of nucleic acids sequences (lectures 1 hour, exercises 1 hour) 5. Sequence alignment and phylogenetic threes I (lectures 1 hour, exercises 1 hour) 9. Analysis of the protein structure (lectures 1 hour, exercises 1 hour)	PPC211 Year of study 3 dr. sc. Stjepan Orhanović, assistant professor Credits (ECTS) 2,0 Type of instruction (number of hours) 15 15 electional Percentage of application of e-learning 20% Course objective is acquiring knowledge about experimentally generated data (sequences and structural information) in biochemistry and molecular biology, deposition in the databases and their processing using bioinformatics tools. Entry competences encompasses basic knowledge of the structure and the sequences of DNA and proteins. Image: Course objective is acquiring knowledge about experimentally generated data (sequences of DNA and proteins, and Structures of biological macromolecule 2. analyze protein structure Upon completing exam student will be able to: 1. perform search of relevant databases: scientific publications, sequence anucleic acids and proteins, and Na sequences 3. analyze protein structure 4. recognize ways to analyze genomes and relationship of the gene sequence, phenotypes and inherited disease 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 I (lectures 1 hour, exercises 1 hour) 3. Databases of protein sequences (lectures 1 hour, exercises 1 hour) 4. Batabases of protein structure		

work (name the proportion of ECTS	attendance									
credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	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 %.									
			Number of copies in the library	Availability via other media						
Required literature (available in the library and via other media)	Arthur M. Lesk Oxford Univers		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 Other (as the proposer wishes to	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.									
add)										