<table>
<tr><td colspan="2">NAME OF THE COURSE</td><td colspan="5">Biochemistry III</td></tr>
<tr><td>Code</td><td>PMC019</td><td>Year of study</td><td colspan="4">II</td></tr>
<tr><td>Course teacher</td><td>dr. sc. Stjepan Orhanović, assistant professor</td><td>Credits (ECTS)</td><td colspan="4">4,0</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">dr.sc. Barbara Soldo</td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>30</td><td>15</td><td></td><td></td></tr>
<tr><td>Status of the course</td><td>mandatory</td><td>Percentage of application of e-learning</td><td colspan="4"></td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">Course objective is understanding of the molecular basis of the link between properties of biological macromolecules (structure and conformation), metabolism and physiological processes. Goal is to comprehend determinants of protein folding, ways of achieving native conformation and conformational dynamics and relate that knowledge to the processes that exploit specificity of defined conformation and conformational changes in metabolic and physiological processes. Also, course objective is recognition of molecular basis in the assembly of macromolecular structures, motility and information transfer.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="6">Entry competences are acquired upon completing exams Biochemistry I and Biochemistry II. It is necessary to have a firm knowledge of the structure and biosynthesis of biological macromolecules, organisation and regulation of the metabolism. There are no enrolment requirements.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="6">Upon completing exam student will be able to:
- explain principles of protein folding and dynamic nature of the protein structure
- describe structure and organization of proteins and macromolecular assemblies such as virus envelope, bacterial cell wall and structural proteins (collagen, fibroin, keratin, elastin)
- relate physiological processes on the molecular level with structural and dynamic properties of proteins and with macromolecular interactions involved (immunological response, blood clothing, signal transduction, sensory systems)
- relate regulatory protein structure with their interaction with DNA and compare prokaryotic and eukaryotic regulation of the gene expression)</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">Lectures are being held for two hours per week, 15 weeks in total, seminars, one hour per week, follows lectures.
1. Protein folding (determinants and way of folding).
2. Protein folding (accessory proteins, protein structure prediction, protein folding linked diseases).
3. Dynamic of the protein structure (motility modes, studying and displaying motility)
4. Polysaccharide envelope of the bacterial cell wall (structure of Gram positive and Gram negative bacterial cell wall)
5. Virus envelope (structure of the virus envelope)
6. Blood clothing (structure of the blood cloth and mechanism of the cascaded reaction of the activation of the proteins involved in blood clothing).
7. Proteins of the immunological system (Antibody structure and mechanism of antibody diversity generation)
8. Proteins of the immunological system (structure of various proteins involved in immunological response)
9. Hormonal regulation (transducing of the hormonal signal via 7TM receptors and G proteins)
10. Hormonal regulation (tyrosin kinase receptors and dimerization of receptors)
11. Motility (actin, myosin muscles).
12. Motility (sytems of cellular motility based on kinesin and dynein, bacterial flagella)
13. Sensory systems (taste, smell)
14. Sensory systems (vision, hearing touch)
15. Protein involved in the gene expression (proteins and regulation in prokaryotes</td></tr>
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	and eukaryotes)					
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 and preparing seminar on selected topic					
Screening student 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)*	Class attendance	1.5	Research		Practical training	
	Experimental work		Report		Exam preparation	1,9
	Essay		Seminar essay	0,2	(Other)	
	Tests	0.2	Oral exam	0,1	(Other)	
	Written exam	0.1	Project		(Other)	
Grading and evaluating student work in class and at the final exam	It is possible to complete written part of the exam through passing two partial exams during semester. Passing grade on the written exams is set at 50 % of total points. Written part of the exam comprises 50 % of overall grade (passing written part is condition for accession on the oral exam), oral exam comprises another 50 %.					

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Jeremy M. Berg, John L. Tymoczko, Lubert Stryer Biokemija, Školska knjiga, Zagreb, 2013	5	
	Donald Voet, Judit G. Voet, Biochemistry, 4th Edition, John Wiley and sons, 2011	3	
	Donald Voet, Judit G. Voet, Biochemistry, 4th Edition, John Wiley and sons, 2011, Chapter 35, Molecular Physiology		www.wiley.com/college/voet

Optional literature (at the time of submission of study programme proposal)	
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 partial and final tests.
Other (as the proposer wishes to add)	