<table>
<tr><td colspan="2">NAME OF THE COURSE</td><td colspan="5">Biochemistry II</td></tr>
<tr><td>Code</td><td>PMC225</td><td>Year of study</td><td colspan="4">3rd</td></tr>
<tr><td>Course teacher</td><td>Viljemka Bučević Popović, Assistant Professor
Matilda Šprung, Assistant Professor</td><td>Credits (ECTS)</td><td colspan="4">6.5</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2">Barbara Soldo, Assistant Professor</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>45</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="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">The objective of the course is to gain understanding of macronutrient metabolism (lipids, protins, carbohydrates), digestion and absorption of fuel molecules, as well as their usage and storage.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="5">The course enrolment prerequisites are General and Inorganic Chemistry and Organic Chemistry.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="5">1. Demonstrate understanding of fundamental catabolic processes. Show understanding of basic anabolic processes.
2. Explain the mechanisms of regulation of metabolic processes.
3. Explain the mechanisms of storage and mobilization of fuel molecules.
4. Integrate metabolic processes at the organs level.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5">Lectures:
1. Introduction to metabolism (2 hours)
2. Glycolysis (2 hours)
3. Citric acid cycle (2 hours)
4. Respiratory chain (2 hours)
5. Oxidative phosphorylation, thermogenesis, oxidative stress (2 hours)
6. Gluconeogenesis (2 hours)
7. Pentose phosphate pathway (2 hours)
8. Glycogen metabolism and glycogen metabolism regulation (2 hours)
9. Degradation of fats and fatty acids, synthesis of ketone bodies (2 hours)
10. Synthesis of fatty acids, triacylglycerol synthesis and storage (2 hours)
11. Cholesterol (2 hours)
12. Amino acid metabolism (2 hours)
13. Hem (2 hours)
14. Nucleotide metabolism (2 hours)
15. Integration of metabolism (2 hours)

Seminars:
Questions solving and discussion on topics that follow lectures.

Laboratory exercises:
1. Acid-base properties of amino acids (4 hours)
2. Time course of enzyme reaction. Enzyme kinetics (6 hours)
3. Inhibition of enzyme reaction. Activation of the enzyme reaction (6 hours)
4. Influence of temperature on enzyme activity (4 hours)
5. Protein electrophoresis (4 hours)
6. Protein separation methods. Gel-filtration (4 hours)
7. Determination of protein concentration by Bradford method (3 hours)
8. Determination of enzyme activity in natural samples: alkaline phosphatase in the sea water (6 hours)
9. Determination of bilirubin concentration (4 hours)
10. Determination of iron and iron binding capacity (4 hours)</td></tr>
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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						
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	3	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests	0.5	Oral exam	1.5	(Other)	
	Written exam	1.5	Project		(Other)	
Grading and evaluating student work in class and at the final exam	The written exam may be taken as two partial exams. At least 50% score is needed from each partial exam for passing grade on the written exam, followed by an oral exam.					

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, Biochemistry, 6th Ed.	8	

Optional literature (at the time of submission of study programme proposal)	Robert K. Murray, David A Bender, Kathleen M. Botham, Peter J. Kennelly, Victor W. Rodwell, P. Anthony Weil, Harper's illustrated biochemistry, 2010 Donald Voet, Judith G. Voet, Charlotte W. Pratt, Fundamentals of Biochemistry, 3rd Ed., 2005, John Wiley & Sons, Inc.
Quality assurance methods that ensure the acquisition of exit competences	Consultations, partial examinations, student survey for subject and teacher evaluation, attendance records, quiz performance analysis, partial and final exams.
Other (as the proposer wishes to add)	