

Study program : Chemistry			
Type and level of studies: PhD studies of chemistry - BIOCHEMISTRY			
Course unit: Higher Course of Biochemistry			
Teacher in charge : Milan Mladenović, PhD, Assistant Professor			
Language of instruction : English			
ECTS: 15			
Prerequisites: Entered PhD studies of chemistry - BIOCHEMISTRY			
Semester: Winter semester			
Course unit objective			
Student will be introduced with enzyme reactions on organ level applying the knowledge of basic Biochemistry course. Student will learn the basic organization of organs and regulation of metabolic processes on organ level.			
Learning outcomes of Course unit			
Biochemical organization of organs, reactions of anabolism and catabolism of primary and secondary metabolites in tissues. Recognition of reaction type of primary metabolites. Ability to follow scientific progress in the field of research of metabolic reactions. Update of personal knowledge with scientific literature. Multidisciplinary application of metabolic reactions. Absorption, distribution, metabolism and excretion of metabolites. Basic organization of organs.			
Course unit contents			
<i>Theoretical classes.</i>			
Biochemistry of blood. Physiological and biochemical organization of liver. Detoxification reactions in liver. Redox reactions in liver. Physiological and biochemical organization of kidneys. Excretion reactions in kidneys. Physiological and biochemical organization of brain. Metabolic reactions in central nervous system. Physiological and biochemical organization of muscles and bones. Organ enzyme status. Structural organization of proteins.			
<i>Experimental classes</i>			
<i>In vitro</i> and <i>in vivo</i> experimental procedures. Specific organ-dependent biochemical reactions.			
Literature			
<ol style="list-style-type: none"> 1. R. K. Murray, D. K. Granner, P. A. Mayes, V. W. Rodwell, <i>Harper's Illustrated Biochemistry</i>, 26ed, McGraw-Hill Co., 2003 2. D. L. Nelson, M. M. Cox, <i>Leninger PRINCIPLES OF BIOCHEMISTRY</i>, 4ed, W. H. Freeman Publishers, 2012 3. R. H. Garret, C. H. Grisham, <i>BIOCHEMISTRY</i>, Cengage Learning, 2012 4. J. M. Berg, J. L. Tymoczko, L. Stryer, <i>Biochemistry</i>, 5ed, Inbunden, 2011 5. Voet & Voet, <i>Biochemistry</i>, 4ed, John Wiley & Sons, 2004 6. J. Koolman, K. Roehm, <i>Color Atlas of Biochemistry</i>, 2ed. Thieme, 2003 			
Number of active teaching hours			Other classes
Lectures: 2	Practice: 2	Other forms of classes: <i>mentoring system</i>	
Teaching methods			
Lectures, seminars, practical classes			
Examination methods (maximum 100 points)			
Exam prerequisites	No. of points:	Final exam	No. of points:
Student's activity during lectures	10	oral examination	
practical classes/tests	20	written examination	50
Seminars/homework	20	
Project			
Other			
Grading system			
Grade	No. of points	Description	
10	90-100	Excellent	
9	80-90	Exceptionally good	
8	70-80	Very good	

7	60-70	Good
6	50-60	Passing
5	<50	Failing