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

Theoretical classes.

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.

Experimental classes

In vitro and *in vivo* experimental procedures. Specific organ-dependent biochemical reactions.

Literature

1. R. K. Murray, D. K. Granner, P. A. Mayes, V. W. Rodwell, ***Harper's Ilustrated Biochemistry***, 26ed, McGraw-Hill Co., 2003
2. D. L. Nelson, M. M. Cox, ***Leninger PRINCIPLES OF BIOCHEMISTRY***, 4ed, W. H. Freeman Publishers, 2012
3. R. H. Garret, C. H. Grisham, ***BIOCHEMISTRY,*** Cengage Learning, 2012
4. J. M. Berg, J. L. Tymoczko, L. Stryer, ***Biochemistry, 5ed,*** Inbunden, 2011
5. Voet & Voet, ***Biochemistry,*** 4ed, John Wiley & Sons, 2004
6. J. Koolman, K. Roehm, ***Color Atlas of Biochemistry***, 2ed. Thieme, 2003

Number of active teaching hours				**Other classes**
Lectures: 2	Practice: 2	Other forms of classes*: mentoring system*	Independent work:	

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