

Study program: Chemistry				
Type and level of studies: graduate - PhD studies				
Course unit: Selected chapters of bioorganic chemistry				
Teacher in charge: Vladimir Petrović				
Language of instruction - English				
ECTS: 10				
Prerequisites: - enrolled doctoral studies				
Semester: Summer Semester				
Course unit objective				
In order to understand the complex biochemical processes of life, it is necessary to understand the connection between structure and role of bioactive compounds in the body. Special attention will be devoted to the study of enzymes and some of their reactions. Also, the goal of this course is that students to become familiar with biomimetic chemistry, and learn about the methods and model systems by which is possible to imitate the complex processes that occur in a cell. In addition, students will learn about the basics of Supramolecular chemistry.				
Learning outcomes of Course unit				
It is expected that the student, after passing the examination in bioorganic chemistry, understand the significance of the structure and role of enzymes and other biomolecules in the body. In addition, it can be considered that the candidates understood the importance and role of the synthetic model-systems in bioorganic chemistry.				
Course unit contents				
<i>Theoretical classes:</i>				
The relationship of the structure and biological activity of organic compounds. Supramolecular chemistry. Supramolecular assemblies, natural and synthetic supramolecular. Molecular recognition and catalysis, model systems. The synthesis of peptides, nucleosides, and their analogs. Introduction to the enzymatic catalysis. The mechanisms of enzymatic reactions. Hydrolytic enzymes and enzymes that catalyze the formation of a new carbon-carbon bond. Functionalized cyclodextrins, crown ethers and cryptands as enzyme model systems. Enzymes and coenzymes involved in the creation of new carbon-carbon bonds. Molecular moving in the body. Vitamin B12. Enzyme inhibitors and their importance in biomedicine. DNA as the receptor. Organic antitumor agents.				
<i>Practical classes:</i>				
Practical work is coordinated with the lectures and carried out in the form of experimental exercises.				
Literature				
1. Dugas H., Bioorganic Chemistry, 3 th Ed., Springer, 1996.				
2. Kalsi P.S., Kalsi J.P., Bioorganic, Bioinorganic and Supramolecular Chemistry, 2 th Ed., New Academic Science UK, 2011.				
3. Petrović. Z.D., Simijonović D., Petrović V.P., Bioorganic chemistry – practicum, Faculty of Science, Kragujevac 2018.				
Number of active teaching hours				Other classes
Lectures: 2	Practice: 2	Other forms of classes: consultations, mentoring system	Independent work: Seminars	
Teaching methods				
Lectures, consultations, experimental work, seminars, colloquia				
Examination methods (maximum 100 points)				
Exam prerequisites	No. of points:	Final exam	No. of points:	
Student's activity during lectures	5	oral examination	-	
practical classes/tests	-	written examination	30	
Seminars/homework	15		
Project				
Colloquium/ Colloquiums	50			

Grading system

Grade	No. of points	Description
10	91-100....	Excellent
9	81-90....	Exceptionally good
8	71-80....	Very good
7	61-70....	Good
6	51-60....	Passing
5	Failing