



**УНИВЕРЗИТЕТ У БАЊОЈ ЛУЦИ**  
UNIVERSITY OF BANJA LUKA  
**ПРИРОДНО-МАТЕМАТИЧКИ ФАКУЛТЕТ**  
FACULTY OF NATURAL SCIENCES AND MATHEMATICS



CHEMISTRY DEPARTMENT

FIRST CYCLE General chemistry and Teaching chemistry

<b>Course name</b>	<b>Biochemistry 2</b>			
<b>Course code</b>	<b>Course status</b>	<b>Semester</b>	<b>Hours of instruction</b>	<b>ECTS</b>
1C16HOS1059	obligative	VIII	3+3	6
<b>Teacher(s)</b>	<b>Prof. Biljana Davidović-Plavšić PhD</b>			

<b>Course conditions</b>	<b>Conditions</b>
Biochemistry 1	listened

**Course goals**  
The aim of the course of Biochemistry 2 is to introduce students to the basics of organization, functioning and regulation of biochemical processes in living systems as well as basic metabolic processes and importance of chemistry for living organisms with basic principles of work in biochemical laboratory.

**Learning outcomes**  
The student understands the basics of the functioning of living systems based on knowledge of basic metabolic processes (glycolysis, citric acid cycle, fatty acid oxidation). The student applies methods for isolation and purification of biological material. The student applies knowledge and methods to monitor metabolic processes.

**Course content**  
Cell, introduction to metabolism (anabolism and catabolism). Bioenergy. Glycolysis. Pentose phosphate pathway and gluconeogenesis. Glycogen metabolism. The citric acid cycle. Oxidative phosphorylation. Electron transport chain. Catabolism of lipids and fatty acids. Anabolism of lipids and fatty acids. Amino acid metabolism and urea cycle. Integration and regulation of metabolism, example of the lac operon. Free radicals and antioxidant system of protection. Erythrocytes as a model system for investigation of antioxidant metabolism.  
*Experimental exercises*  
Methods of isolation, purification and monitoring of metabolic processes in biological material.

**Teaching methods**  
Lectures, computational and laboratory exercises, consultations.

**Books and other learning materials**  
Ljubiša Topisirević, Đorđe Fira, Jelena Lozo: Dynamic biochemistry, University of Belgrade, Faculty of Biology (2010)  
B. Kukavica, B. Davidović-Plavšić, D. Kojić, J. Purać: Collection of tasks in biochemistry, Faculty of Natural Sciences and Mathematics, University of Banja Luka (2018)  
B. Davidović-Plavšić, B. Kukavica: Biochemistry of metabolism: problems and tasks, Faculty of Natural Sciences and Mathematics, University of Banja Luka (2024)  
Vesna Niketić and Milan Nikolić: Instructions for exercises in biochemistry of proteins and nucleic acids, Faculty of Chemistry, Belgrade (2008)

**Course activities and grading method**  
The colloquium refer to the exercises and is a condition for taking the final exam. Test (1,2) - a written assessment from lectures, during the semester. The final exam consists of a written and an oral exam.

		Colloquium	20
Tests during the semester (1,2)	20	Final exam	60

**Additional course notes**  
/

**Name of the teacher who prepared this form** Biljana Davidović-Plavšić