



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



CHEMISTRY DEPARTMENT

FIRST CYCLE OF STUDY

Chemistry/Chemistry Education

<b>Course name</b>	<b>Biochemistry 1</b>			
<b>Course code</b>	<b>Course status</b>	<b>Semester</b>	<b>Hours of instruction</b>	<b>ECTS</b>
1C16HOS1058	obligative	VII	3+3	7
<b>Teacher(s)</b>	<b>Prof. Biljana Davidović-Plavšić PhD</b>			

<b>Prerequisite course(s)</b>	<b>Entry requirements</b>
Chemistry of Natural Products	Passed exam

**Course goals**  
The aim of the Biochemistry 1 course is to acquire knowledge about the molecular basis of the functioning of living organisms, the principles of construction and biochemical characteristics of cells and the structural and functional characteristics of macromolecules. Students will also get acquainted with the basic principles of work in the biochemical laboratory.

**Learning outcomes**  
The student understands the structure and biochemical characteristics of cells. The student connects the structure of biomolecules with their function. The student applies qualitative and quantitative methods to determine individual groups of biomolecules. The student applies methods for isolation, purification and determination of biomolecule activity.

**Course content**  
The subject of biochemistry. Covalent bonds and intermolecular interactions. Water properties. Hydrophobic effect. Cell biomolecules. Carbohydrates: Structure and function. Lipids and biological membranes: Properties and functions of triglycerides, phospholipids. Fatty acids. Lipid interactions and lipid bilayer. Structure and function of biological membranes. Basic mechanisms of transport of molecules and ions through the membrane. Amino Acids: Structure and division by polarity, acid-base properties. Proteins: Primary, secondary, tertiary and quaternary structure. Techniques for protein purification. Nucleic Acids: Structure and properties. Enzymes: Specificity. Kinetics. Regulation of enzymatic reactions. Vitamins and hormones: Structure and function.  
*Experimental exercises*  
Methods of isolation, purification, characterization and determination of activity of particular biomolecules.

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

**Books and other learning materials**  
B. Kukavica, B. Davidović-Plavšić, D. Kojić, J. Purać: Biochemistry 1, Faculty of Sciences and Mathematics, University of Banja Luka (2017)  
B. Kukavica, B. Davidović-Plavšić, D. Kojić, J. Purać: Collection of tasks in biochemistry, Faculty of Sciences and Mathematics, University of Banja Luka (2018)  
Biljana Kukavica, Mirela Boroja: Biochemistry laboratory practicum, Faculty of Sciences and Mathematics, University of Banja Luka (2012)  
Zoran Kukrić, Ladislav Vasilišin: Biochemistry laboratory practicum, Faculty of Technology Banja Luka (2000)  
Zoran Vujčić, Experimental biochemistry Practicum, Faculty of Chemistry, Beograd (2002)

**Course activities and grading method**  
The colloquium refers 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.

		<b>Colloquium</b>	<b>20</b>
<b>Tests during the semester (1,2)</b>	<b>20</b>	<b>Final exam</b>	<b>60</b>

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