



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

Course name	<b>Analytical Chemistry 1</b>			
Course code	Course status	Semester	Hours of instruction	ECTS
1C16HOS412	required	II	3+4	8
Teacher(s)	<b>Assist. prof. Dragana Blagojević PhD</b>			

Prerequisite course(s)	Entry requirements
Stoichiometry, General Chemistry	Attended subjects

**Course goals**  
The aim of the course Analytical Chemistry 1 is to get acquainted with the theoretical and practical foundations of qualitative chemical analysis.

**Learning outcomes**  
The student has basic knowledge of solutions, electrolytes, acid-base balances, pH-values, buffers, solubility product, complex compounds, redox balances. He knows the classification and methods of proving cations and anions. Applies the acquired theoretical and practical knowledge and independently performs qualitative analysis of cations and anions.

**Course content**  
Significance and Application of Analytical Chemistry. Disperse systems. Dissolution of substances and solvents. Chemical equilibrium. Activity and concentration. Ionic force. Acid and base theories. Dissolution of acids and bases in water. Equilibria in multiproton systems in water. Ionic product of water. pH value. Equilibria in aqueous salt solutions. Hydrolysis. Calculation of pH of aqueous solutions. Buffers. pH buffer. Heterogeneous systems. Solubility of precipitate in water. Fractional and controlled precipitation. Complex compounds. Properties, structure and nomenclature. Equilibria in aqueous solutions of the complex. Chemical redox reactions. Oxidant and reducing agent strength. Electrode potential. Dissolution of sediment. Qualitative chemical analysis. Cation analysis. Anion analysis.  
Experimental exercises: Individual determinations of cations and anions.

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

**Books and other learning materials**  
J. Savić, M. Savić: Fundamentals of Analytical Chemistry, Svjetlost, Sarajevo, 1989,  
M.B. Rajković: Introduction to analytical chemistry - classical basics. Pergament, Belgrade, 2007  
T. Janjić: Theoretical Foundations of Analytical Chemistry, Naucna knjiga, Belgrade, 1994.  
S. Sladojević, M. Rakanović: Analytical Chemistry, Theoretical Foundations of Qualitative Chemical Analysis, Faculty of Technology, Banja Luka, 2016.

**Course activities and grading method**  
The activity and the colloquium refer to laboratory exercises and are a condition for taking the final exam.  
Two tests during the semester. The first test covers the area of solutions, pH values and buffers, and the second test the area of heterogeneous systems, complex compounds and redox reactions. Test results are included in the final grade only if they exceed 50% of the points provided for this form of knowledge assessment.

Activity	5	Tests	20
Exit colloquium	15	Final exam	60

**Additional course notes**  
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Name of the teacher who prepared this form | Dragana Blagojević