

Study Programme: Chemistry, Biochemistry			
Course Unit Title: Analytical Chemistry I			
Course Unit Code: Z-102			
Name of Lecturer(s): Full professor Slobodan Gadžurić; Full professor Đendi Vaštag			
Type and Level of Studies: Bachelor Academic Studies			
Course Status (compulsory/elective): Compulsory			
Semester (winter/summer): Summer			
Language of instruction: English			
Mode of course unit delivery (face-to-face/distance learning): Face-to-face			
Number of ECTS Allocated: 9			
Prerequisites: None			
Course Aims:			
<ul style="list-style-type: none"> • Provide students with necessary methodical foundation (both theoretical and practical) of qualitative chemical analysis as a basis for further understanding and application in other chemistry disciplines. • Provide balanced knowledge on key analytical concepts and application of analytical methods. • Develop practical skills to apply standard methodology in solving problems during analytical chemistry course, as well as in further education or in profession. 			
Learning Outcomes:			
<ul style="list-style-type: none"> • List and explain procedures and applications of analytical methods in modern chemistry and in contemporary environment. • Demonstrate acquired knowledge and understanding of the basic facts, terms, principles and theories of qualitative chemical analysis. • Identify cations and anions present in a sample, applying standard separation techniques, and analyze data obtained by qualitative analysis of mixtures. • Apply appropriate laboratory procedures in solving practical problems in qualitative analysis of the given samples. • Adequately operates the basic equipment in the analytical laboratory, safely handles the reagents and knows potential hazards and risk assessment in practical work. • Independently draws conclusions and writes reports on the results of the qualitative analysis. 			
Syllabus:			
<i>Theory</i>			
Basic principles, topics and branches of analytical chemistry. Analytical measurements (mass, volume). Qualitative chemical analysis and analytical reactions. Acid-base equilibria in analytical chemistry. Precipitation in qualitative analysis. Systematic qualitative analysis of cations. Redox reactions in analytical chemistry. Qualitative analysis of anions. Qualitative analysis of selected materials. Chromatography in qualitative analysis.			
<i>Practical instructions</i>			
Systematic cation analysis. Analysis of anions. Analysis of alloys. Chromatography in qualitative analysis. Analysis of unknown inorganic sample. Calculation in analytical chemistry (solutions, pH, heterogeneous equilibria).			
Required Reading:			
1. R. Kellner, J. Mermet, M. Otto, H. M. Widmer: Analytical Chemistry, Wiley/VCH, 1998.			
2. Weekly teaching load			
Weekly Contact Hours: 135	Lectures: 45	Practical work: 60+30	
Teaching Methods:			
Lectures and laboratory work			
Knowledge Assessment (maximum of 100 points): 100			
Pre-exam obligations	points	Final exam	points
Lab exercises	30	Written exam	(40)
Test I and Test II	40	Oral exam	30