COURSE INFORMATION SHEET

University: Catholic University in Ružomberok	
Faculty: Faculty of Education	
Course code: KCH/Ch-BD109A/22	**Course title:** Analytical Chemistry
Type and range of planned learning activities and teaching methods: **Form of instruction:** Lecture / Laboratory practical **Recommended study range:** **hours weekly:** 2 / 3 **hours per semester:** 26 / 39 **Teaching method:** on-site	
Credits: 4	**Working load:** 100 hours
Recommended semester/trimester: 5.	
Level of study: I.	
Prerequisities:	
Requirements for passing the course: The final evaluation will be based on the total number of points obtained from the written exam. Course evaluation and laboratory protocols	
Learning outcomes of the course: The aim is to teach the student to analytical thinking, which is extremely important in the pedagogical process and planning experiments. Students are able to describe and explain the principle of individual analytical methods, clarify the use of chemical reactions and chemical equilibria for analytical purposes, practically implement methodological procedures of qualitative and quantitative analysis.	
Course contents: 1. Basic concepts in analytical chemistry. Evidence. Identification. characterization. 2. Process of chemical analysis. Division of methods in analytical chemistry. 3. Selectivity of evidence and determination. 4. Methods of signal comparison, reference materials. Sampling. 5. Sample preparation. Dissolution of solid samples. Melting. Pyrolysis and decomposition of the sample by microwave radiation. 6. Protolytic equilibria. Quantitative analysis. Titration curves. Equivalence point indication. 7. Conditions for selection of chemical reaction and indicator. Standardization. Alkalimetry. Acidimetry. 8. Complex equilibria. Chelatometry. Measurement errors. Accuracy, precision and reliability of analysis results. 9. Oxidation-reduction equilibria. Redox potential and influence of side reactions. 10. Manganometry. Dichromatometry. Cerimetry. 11. Iodimetry. Bromatometry. Titanometry. 12. Precipitation equilibria. Solubility and solubility product. 13. Argentometry and gravimetry. Laboratory exercise: Preliminary analytical tests. Qualitative determinations - evidence of cations, evidence of anions, evidence of an unknown sample. Quantitative analysis - alkalimetric and acidimetric determinations, redox determinations, precipitation and chelatometric determinations. Gravimetry.	

Recommended or required literature:

1. Rievaj M., Tomčík P.: Chemical Reactions and Equilibria in Titrimetric Analysis, Verbum Ružomberok (2021)
2. Kellner R.: Analytical Chemistry Wiley 2004

Language of instruction:

Notes:

Course evaluation:

Assessed students in total: 3

A	B	C	D	E	FX
100.0	0.0	0.0	0.0	0.0	0.0

Name of lecturer(s): Ing. Renata Bellová, PhD.

Last modification: 28.11.2023

Supervisor(s):

Guarantor:

Administrátor Systému

People responsible for the delivery, development and quality of the study programme:

prof. ThDr. Rastislav Adamko, PhD., doc. Mgr. Marek Babic, PhD., doc. RNDr. Pavel Bella, PhD., prof. PaedDr. Mgr. art. Rastislav Biarinec, ArtD., prof. Irina Chelysheva, DrSc., prof. PaedDr. František Dlugoš, PhD., Mgr. Juraj Dvorský, PhD., prof. PhDr. Ingrid Emmerová, PhD., doc. Tatiana Korenkova, CSc., prof. PaedDr. Milan Ligoš, CSc., doc. Mgr. Eva Litavcová, PhD., doc. PaedDr. Peter Mačura, PhD., prof. PhDr. David Papajík, PhD., doc. Ing. Miroslav Saniga, CSc., prof. Nóra Séllei, PhD., DrSc., PhDr. ThLic. Martin Taraj, PhD., Prof. Ing. Peter Tomčík, PhD., prof. Dr. phil. fac. theol. Peter Volek, doc. Ing. Igor Černák, PhD.