|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **UNIVERSITY OF NIŠ** | | | | | | |
| **Course Unit Descriptor** | | **Faculty** | | |  | |
| **GENERAL INFORMATION** | | | | | | |
| Study program | | | | **Chemistry** | | |
| Study Module (if applicable) | | | | Chemistry | | |
| Course title | | | | Selected topics in the application of organic reagents in chemical  analysis | | |
| Level of study | | | | Bachelor  Master’s  Doctoral | | |
| Type of course | | | | Obligatory  Elective | | |
| Semester | | | | Autumn Spring | | |
| Year of study | | | |  | | |
| Number of ECTS allocated | | | | 8 | | |
| Name of lecturer/lecturers | | | | Milan Stojkovic | | |
| Teaching mode | | | | Lectures Group tutorials  Individual tutorials  Laboratory work  Project work  Seminar  Distance learning  Blended learning  Other | | |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** | | | | | | |
| *The study of the structure and properties of organic compounds as potential ligands for complex formation with metals and their application in both qualitative and quantitative analysis as well as in methods of separating. Understanding the equilibrium process of complex formation, an organic compound choice as a ligand for qualitative or quantitative analysis of*  *specific metal ions.* | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| **The reaction ability of organic reagents. Complex compounds. Basic terms. Types of ligands. Ring size, the nature of the donor atoms. Nature of the metal ions. Steric effects. Chelating effects. The properties of the complex. Stability. Optical properties. The absorption spectra of organic reagents and their complexes. Chromophores. The luminescence of organic compounds and their metal complexes. Oxidation-reduction reactions of the organic reagents and their metal complexes.**  **The application of organic reagents. Methods of separation. The precipitate reagents. Organic reagents and extraction methods of analysis. The organic reagents in the chromatographic methods. The organic ion-exchange reagents. Qualitative analysis. Specific organic reagents. Normal salts. Quantitative analysis. Types of reactions in the quantitative analysis. The selectivity of the organic reagents. Sensitivity and limit of detection. Gravimetry: the solubility of the organic reagent and their salts in water. Titrimetric methods: acid-base and redox indicators. Spectrophotometric analysis: construction of non-ferrous complex ligands with the donor atoms: O, O; N, N; O, N; S, S; S, N. Fluorimetry: specific organic reagents. Masking. General characteristics of masking. Quantitative assessment of masking. Basic masking organic reagents (donor atoms N, O, S, O, O, S, O). Unmasking and unmasking methods.** | | | | | | |
| **LANGUAGE OF INSTRUCTION** | | | | | | |
| Serbian (complete course)  English (complete course)  Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course)  Serbian with English mentoring Serbian with other mentoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | |
| **ASSESSMENT METHODS AND CRITERIA** | | | | | | |
| **Pre exam duties** | **Points** | | **Final exam** | | | **points** |
| **Activity during lectures** | **10** | | **Written examination** | | | **20** |
| **Practical teaching** |  | | **Oral examination** | | | **30** |
| **Teaching colloquia** | **40** | | **OVERALL SUM** | | | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** | | | | | | |