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| **UNIVERSITY OF NIŠ** | | | | | | |
| **Course Unit Descriptor** | | Faculty | | | Faculty of Science and Mathematics | |
| GENERAL INFORMATION | | | | | | |
| Study program | | | | Chemistry | | |
| Study Module (if applicable) | | | |  | | |
| Course title | | | | Physico-chemical methods of testing the balance in  complexes | | |
| Level of study | | | | ☐Bachelor ☐ Master’s x Doctoral | | |
| Type of course | | | | ☐ Obligatory x Elective | | |
| Semester | | | | ☐ Autumn xSpring | | |
| Year of study | | | |  | | |
| Number of ECTS allocated | | | | 8 | | |
| Name of lecturer/lecturers | | | | Milan Mitic | | |
| Teaching mode | | | | x lectures ☐Group tutorials ☐ Individual tutorials  ☐Laboratory work ☐ Project work x Seminar  ☐Distance learning ☐ Blended learning ☐ Other | | |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** | | | | | | |
| *The purpose of this course is the training a students for physical and chemical analysis of the balance in complexing environments. After, student is qualified for independent scientific and professional work in solving problems in*  *the field of chemical complexes.* | | | | | | |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** | | | | | | |
| **Complexes. Features. Structure. The chemical bond in the complexes. Complexes in solutions. Equilibria in solutions of mononuclear and polynuclear complexes. The balance of acid-base reactions - protonation of the ligand. Determination of the constant of protonation. The balance of the redox reaction. The composition of the complex. Constant stability. The methods of determining: general, potentiometric, spectrophotometric. Methods based on extraction, ion exchange, and solubility. Polarographic method. Nuclear magnetic resonance . The electron spin resonance. Kinetic methods. Thermodynamics of the complex. Analytical applications: gravimetric**  **analysis, acid-base, precipitation, complexometric, redox titration, polarography, spectrophotometry, extraction, ion exchange, electrophoresis. Practical examples** | | | | | | |
| **LANGUAGE OF INSTRUCTION** | | | | | | |
| X 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** | | | | | | |