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| **Study program** Master Studies | | | | |
| **Course title** Application of modern instrumental methods in analytical chemistry (H209C) | | | | |
| **Name of lecturer/lecturers** Snežana S. Mitić | | | | |
| **Type of course** Obligatory | | | | |
| **Number of ECTS allocated** 5 | | | | |
| **Course objectives**  Expanding already acquired knowledge about optical and voltammetric methods of analysis. Enabling the student to correctly choose the method of sample preparation for analysis. Adequate choice of optical or electrochemical methods. Practical application of modern methods of analysis. Interpretation of the obtained results. | | | | |
| **Course outcomes**  Having finished this course successfully, a student will be able to:  - adequately prepare samples for analysis using the chosen method,  - understand the application of modern analysis methods,  - propose a method of analyzing real samples,  - apply the given modern analysis methods in practice,  - accurately and precisely analyze and interpret the obtained results. | | | | |
| **SYLLABUS**  *Lectures*  Method of sample preparation, application of certain methods, obtaining and processing of the obtained results of the following optical methods of analysis: Raman spectroscopy, induced coupled plasma spectroscopy, nuclear magnetic resonance, electron spin resonance spectroscopy, diffraction of H X-rays, fluorescence and phosphorescence spectroscopy, chemiluminescence. Method of sample preparation, application of prescribed methods, obtaining and interpreting the results of the following electrochemical methods: hydrodynamic voltammetry, cyclic voltammetry, pulse voltammetry, stripping voltammetry, microvoltammetry, amperometry and biamperometry, polarography, chronopotentiometry, chronoamperometry, oscillometry.  *Laboratory work*  Experimental exercises from certain areas that are included in this course | | | | |
| **References**  1. D.A. Skoog, F.J. Holler, T.A. Nieman, Principles of Instrumental Analysis, Harcourt Brace & Company,  Philadelphia, 1998.  2. F. Rouessac, A. Rouessac, Chemical analysis: modern instrumental methods and techniques, John Wiley,  Chichester, 2000.  3. A. J. Bard, LR Faulkner, Electrochemical methods, Fundamentals and Applications, J. Wiley & Sons, 2001.  4. S. Mentus, Elektrohemija, University of Belgrade, Faculty of Physical Chemistry, Belgrade, 2001.  5. S. Mitić, Elektroanalitička hemija, PMF, Niš, 2008.  6. J. Wang, Analytical Electrochemistry, Wiley, 2006. | | | | |
| **Active teaching classes** | **Lectures**  30 | | **Laboratory work**  30 | |
| **Teaching mode**  Lectures, laboratory exercises, consultations | | | | |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** | | | | |
| **Pre exam duties** | **Points** | **Final exam** | | **Points** |
| Activity during lectures | 5 | Written examination | |  |
| Practical teaching | 20 | Oral examination | | 45 |
| Teaching colloquia | 30 |  | |  |
| Seminar | - |  | |  |