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| **Study program:** Master studies Chemistry- chemistry teacher |
| **Course title:** Selected chapters of instrumental analysis (H231C) |
| **Name of lecturer/lecturers: Milan B. Stojković** |
| **Type of course: compulsory** |
| **Number of ECTS allocated: 5** |
| **Course objectives****Acquisition of theoretical and practical knowledge about optical and electroanalytical methods of instrumental analysis and the possibilities of their application. Acquiring knowledge about the importance of the correct choice of analytical method. Ability of students to handle certain analytical devices.** |
| **Course outcomes****The student is able to:****- make the correct choice of instrumental analytical method****- explain and differentiate instrumental techniques,****- to recognize the applicability of instrumental methods of analysis in concrete cases****- to properly handle certain analytical instruments.****- apply acquired knowledge to problems in other sciences and scientific fields** |
| **SYLLABUS***Lectures*Division and importance of optical methods of analysis. Principles, analytical information and application: infrared spectroscopy, Raman spectroscopy, atomic absorption spectroscopy, inductively coupled plasma spectroscopy, atomic fluorescence spectroscopy, X-ray fluorescence spectroscopy, molecular fluorescence and phosphorescence spectroscopy. Division and importance of electroanalytical methods. Principles, analytical information and application: coulometry, chronopotentiometry, classical polarography, hydrodynamic voltammetry, amperometric titrations, biamperometric titrations, pulse polarographic and voltammetric techniques, cyclic voltammetry and stripping voltammetry.*Laboratory work*1. Determination of phosphoric acid in Coca Cola2. Determination of acetylsalicylic acid in aspirin3. Determination of ascorbic acid in a sample of cedevita4. Electrochemical determination of glucose5. Production and characterization of the ion-selective electrode6. Determination of the reaction mechanism based on cyclic voltagrams |
| **References**1. S. Mitić, Elektroanalitička hemija, PMF, Niš, 20082. D.A. Skoog, D. M. West, F.J. Holer, Foundamentals of Analytical Chemistry, Sounders College Publishing, New York, 19963. G. D. Christian, 2004, Analytical Chemistry-Sixth Edition, Wiley, 2003 |
| **Active teaching classes** | **Lectures 45** | **Laboratory work 30** |
| **Teaching mode: Lectures, consultations, colloquiums, defense of seminar papers** |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** |
| **Pre exam duties** | **Points** | **Final exam**  | **Points** |
| Activity during lectures | 5 | Written examination | 30 |
| Practical teaching | 25 | Oral examination |  |
| Teaching colloquia | 30 |  |  |
| Seminar | 10 |  |  |