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| **Study program:** Doctoral academic studies **-** Chemistry |
| **Course title:** Selected Topics of Optical and Related Methods of Chemical Analysis (H323C) |
| **Name of lecturer/lecturers:** Aleksandra N. Pavlović |
| **Type of course:** elective |
| **Number of ECTS allocated:** 10 |
| **Course objectives** The acquisition of theoretical knowledge about modern methods of instrumental analysis, as well as training for the use of instrumentation for planning and applying scientific research. |
| **Course outcomes** Upon successful completion of this course, the student will be able to: - understand the principles of modern instrumental methods of analysis,- recognize the applicability of instrumental methods of analysis in concrete cases,- apply appropriate laboratory procedures when solving assigned practical problems in instrumental analysis,- skillfully communicate in written and oral form on the topics covered by the course. |
| **SYLLABUS***Lectures*Application of selected methods of instrumental analysis in solving practical problems of analysis: Atomic emission spectrometry with inductively coupled plasma (ICP OES), Inductively coupled plasma-mass spectrometry (ICP-MS spectrometry), X-ray fluorescence spectrometry, Electron microscopy (TDS, EDS, SEM, TEM, coupled methods SEM-TDS, SEM-EDS), Photoelectron spectroscopy (XPS), Auger electron spectroscopy, Atomic force microscopy (AFM), Neutron activation analysis (NAA), Secondary ion mass spectroscopy (SIMS). |
| **References**1. A. Pavlović, I. Rašić Mišić, Odabrana poglavlja optičkih metoda analize, Prirodno-matematički fakultet, Niš, 2016.2. V. Jokanović, Instrumentalne metode: ključ razumevanja nanotehnologije i nanomedicine, Inžinjerska akademija Srbije i Institut za nuklearne nauke „Vinča“, Beograd, 2014.3. F. Rouessac, A. Rouessac, Chemical Analysis: Modern Instrumental Methods and Techniques, John Wiley & Sons, Chichester, 2000. 4. D. Harvey, Modern Analytical Chemistry, McGraw-Hill Higer Education, Boston, 2000. |
| **Active teaching classes** | **Lectures:** 105 | **Laboratory work:** / |
| **Teaching mode:** lectures, seminar, consultations |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** |
| activity during the lecture - 5 points; seminars - 50 points; oral exam - 45 points |