|  |
| --- |
| **Study program:** Master studies Chemistry |
| **Course title:** Advanced Course in Instrumental Methods in Organic Chemistry (H226C) |
| **Name of lecturer/lecturers:** Gordana S. Stojanović |
| **Type of course:** compulsory |
| **Number of ECTS allocated:** 5 |
| **Course objectives**• Acquiring knowledge about nuclear magnetic resonance (NMR) of carbon-13 (13S).• Developing the ability to understand the relationship between 13CNMR spectroscopic data of organic compounds and their structure.• Developing skills for determining the structure of organic compounds based on 13C NMR.• Basics of two-dimensional NMR methods. |
| **Course outcomes**After successful completion of this course, the student is able to:• Determine the structure of an organic compound based on 13C NMR and two-dimensional spectra.• Explain the position of the signal in 13C NMR spectra.• Explain the connection of signals of two-dimensional NMR spectra. |
| **SYLLABUS***Lectures*Basics of 13C NMR spectroscopy. Chemical shifts of 13C in organic compounds. Calculation of chemical shifts based on empirical rules. Scalar conjunctions 13C. Basics of multipulse NMR experiments. Polarization transfer experiments. Nuclear Overhauser effect. Basics of two-dimensional methods. Homonuclear correlated 2D NMR spectra (H,H COSY). Heteronuclear correlated 2D NMR spectra (HETCOR). 2D NOE spectra (NOESY). 2D spectra of heteronuclear multiple ibond correlation (HMBC).*Laboratory work*Determination of the structure of organic compounds based on 13C NMR and 2D NMR spectra. |
| **References**1. S. Milosavljević, Strukturne instrumentalne metode, Hemijski fakultet, Beograd, 1996. |
| **Active teaching classes** | **Lectures 45** | **Laboratory work 30** |
| **Teaching mode:** Presentation of the lecture in PowerPoint, with the involvement of students in the discussion.Practical determination of the structure of organic compounds based on spectra in exercise classes. |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** |
| **Pre exam duties** | **Points** | **Final exam**  | **Points** |
| Activity during lectures | 5 | Written examination | 40 |
| Practical teaching | 10 | Oral examination |  |
| Teaching colloquia | 45 |  |  |
| Seminar |  |  |  |