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| **Study program:** Doctoral academic studies **-** Chemistry | | |
| **Course title:** Two-Dimensional Nuclear Magnetic Resonance (2D NMR) (H309C) | | |
| **Name of lecturer/lecturers:** Niko S. Radulović | | |
| **Type of course:** elective | | |
| **Number of ECTS allocated:** 10 | | |
| **Course objectives**  Acquaintance PhD students, whom nuclear magnetic resonance will be the basic source of structural information, with work on an NMR spectrometer. | | |
| **Course outcomes**  The PhD student will master basic one-dimensional and two-dimensional techniques. The student will be able to work independently on an NMR spectrometer. | | |
| **SYLLABUS**  *Lectures*  Components of the spectrometer. Sample preparation. Tuning. Locating. Shimming.  Basic one-dimensional experiments.  Pulse sequences, preparation and acquisition, processing of spectra, post-processing, interpretation of spectra, possible problems and most common errors for the following:  1. 13C experiments for the determination of multiplets: DEPT and APT  2. COZY experiment  3. TOCSY experiment  4. NOESY experiment  5. ROESY experiment  6. HMQC experiment  7. HMBC experiment  8. HSQC experiment | | |
| **References**  1. Tim Claridge, High-Resolution NMR Techniques in Organic Chemistry, Volume 2, Elsevier (2009) [ISBN 978-0-08-054818-0]. (Volume 27 of the Tetrahedron Organic Chemistry Series).  2. Crews, Rodriguez, & Jaspars: Organic Structure Analysis, Second Edition, Oxford University Press (2010) [ISBN 978-0-19-533604-7].  3. Jeffrey H. Simpson: Organic Structure Determination Using 2-D NMR Spectroscopy (Elsevier, 2008) [ISBN 978-0-12-088522-0] | | |
| **Active teaching classes** | **Lectures:** 105 | **Laboratory work:** / |
| **Teaching mode:** interactive lectures, homework, seminar, panel discussions | | |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** | | |
| written exams - 40 points; presentation of homework - 30 points; practical exam - 30 points | | |