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| **Study program:** Doctoral academic studies **-** Chemistry |
| **Course title:** Asymmetric Syntheses (2D NMR) (H307C) |
| **Name of lecturer/lecturers:** Niko S. Radulović |
| **Type of course:** elective |
| **Number of ECTS allocated:** 10 |
| **Course objectives**Introduction to modern strategy, tactics and control in asymmetric organic syntheses. |
| **Course outcomes**The student will master the basic principles of asymmetric synthesis (which includes the controlled generation of new chiral centers and the recognition of available starting material that contains the same structural fragment as the target molecule). Enabling the doctoral student to independently plan and realize the asymmetric synthesis of organic compounds that have more chiral centers. |
| **SYLLABUS***Lectures*1. Control of stereochemistry – introduction.2. Control of relative stereochemistry.3. Resolution.4. Chiral pool - asymmetric synthesis with natural products as starting materials.5. Asymmetric induction I - strategies based on the nature of reagents.6. Asymmetric induction II - asymmetric catalysis: construction S-O and S-N bonds.7. Asymmetric induction III – asymmetric catalysis: construction of S-H and S-C bonds.8. Asymmetric induction IV – strategies based on the nature of the substrate.9. Kinetic resolution.10. Enzymes: biological methods in asymmetric synthesis.11. New chiral centers from old ones - enantiomerically pure compounds and sophisticated methods.12. Strategy of asymmetric synthesis.  |
| **References**1. Paul Wyatt, Stuart Warren, Organic Synthesis, Strategy and Control, John Wiley & Sons, 2007. |
| **Active teaching classes** | **Lectures:** 105 | **Laboratory work:** / |
| **Teaching mode:** interactive lectures, homework, seminar, panel discussion |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** |
| written exam - 40 points; presentation of homework - 30 points; practical exam - 30 points |