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| **Study program:** Chemistry (PhD) | | |
| **Course title: Modern organic syntheses (H305C)** | | |
| **Name of lecturer/lecturers: Niko S. Radulović, Goran M. Petrović** | | |
| **Type of course: elective** | | |
| **Number of ECTS allocated 10** | | |
| **Course objectives**  **Getting to know modern strategy, tactics and control in organic syntheses.** | | |
| **Course outcomes**  **The student should be able to independently propose a modern methodology and achieve a synthesis**  **organic compounds.** | | |
| **SYLLABUS**  *Lectures*  *A: Introduction: Selectivity, 1. planning of organic syntheses: tactics, strategy and control, 2. chemoselectivity, 3. regioselectivity, 4. stereoselectivity: controlled aldol reaction, 5. alternative strategies of enone synthesis, 6th strategy selection: cyclopentenone synthesis.*  *B: Building carbon-carbon bonds, 7. ortho-strategy for the synthesis of aromatic compounds, 8. σ-complexes metals, 9. controlling the Michael reaction, 10. specific equivalents of enols, 11. extended enolates, 12. allyl-anions, 13. homoenolates, 14. acyl anion equivalents*  *V: Carbon-Carbon Double Bonds, 15. Synthesis of Double Bonds of Defined Stereochemistry, 16. Stereocontrolled Vinyl Anion Equivalents, 17. Electrophilic Attack on Alkenes, 18. Vinyl Cations: Palladium Catalyzed S-S Coupling, 19. Allyl- alcohols: allyl cation equivalents.*  *G: Strategy of functional groups, 20. functionalization of pyridine, 21. oxidation of aromatics compounds, enols and enolates, 22. functionality and pericyclic reactions: nitrogen heterocycles cycloadditions and sigmatropic rearrangements, 23. synthesis and chemistry of azoles and other heterocycles with two or more heteroatoms, 24. tandem organic reactions.* | | |
| **References**  Paul Wyatt, Stuart Warren, Organic Synthesis, Strategy and Control, John Wiley & Sons, 2007. | | |
| **Active teaching classes** | **Lectures 105** | **Laboratory work** |
| **Teaching mode:** lectures, project teaching, seminar, case studies | | |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** | | |
| **Seminars-30 points, written examination 40 points, oral examination 30 points** | | |