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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** |