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| **Study program** Undergraduate Studies |
| **Course title** Preparative organic chemistry |
| **Name of lecturer/lecturers**  Marija Genčić |
| **Type of course** Obligatory |
| **Number of ECTS allocated** 4 |
| **Course objectives** The aim of this course is to inform students abouabout all basic concepts, techniques, and methods that are standardly applied in preparative organic chemistry. In addition to practical (laboratory performance), students will also acquire theoretical knowledge related to different types of reactions that have synthetic significance. Special attention will be paid that students learn to "read" correctly, ie. they have a good understanding of every part of the regulations related to obtaining a certain compound, so, if necessary, they could modify it and adapt it to the synthesis of the corresponding homolog or analog  |
| **Course outcomes**. Upon successful completion of this course, the student is able to:- choose reaction conditions and practically carry out the synthesis of selected organic compounds,- prepare reagents (primarily solvents) for the reaction,- purify the raw product,- follow the course of the reaction,- determine the reaction yield. |
| **SYLLABUS***Lectures* Preparative scale reactions for obtaining different types of organic compounds: aromatic substitutions (electrophilic, nucleophilic), elimination reactions, substitution reactions, addition reactions, reactions which include organometallic compounds, oxidations, reductions, reactions conducted under solvent-free conditions, and rearrangement reactions. Laboratory glassware, equipment, and devices. Work under different temperature regimes. Reactions that require specific conditions (absence of moisture and inert atmosphere). Working with gases. Learn how to use and search chemical literature and database. Choosing the most suitable way to obtain certain organic compounds (price, availability of starting material, simplicity of reaction, and safety). Solvents and drying reagents. Selection and optimization of reaction conditions. Experimental monitoring of the course of the reaction. Workup of reaction mixtures. Yield.*Laboratory work* Preparation of glycine from chloroacetic acid and urotropin. Preparation of diethyl tartrate via acid-catalyzed esterification of tartaric acid. Preparation of benzylideneacetone by base-catalyzed condensation of benzaldehyde and acetone. Preparation of aniline by reduction of nitrobenzene. Obtaining salicylaldehyde aldoxime under solvent-free conditions. Preparation of 1-phenylazo-2-naphthol by azo coupling of benzenediazonium chloride and 2-naphthol. Preparation of cyclohexene by dehydration of cyclohexanol. Preparation of 1,2-dibromo-1-phenylethane by addition of bromine to styrene. Production of butanal by oxidation of 1-butanol. Preparation of phenylacetylene by elimination of hydrogen bromide from 1,2-dibromo-1-phenylethane. |
| **References**1. N. S. Radulović, Praktikum iz preparativne organske hemije, Prirodno-matematički fakultet, Niš, 2015.2. Z. Ferjančić, F. Bihelović, Preparativna organska hemija, Hemijski fakultet, Beograd, 2012.3. Ž. Čeković, Eksperimentalna organska hemija: aparati, metode, sinteze, Hemijski fakultet, Beograd, 1995.4. А.I. Vogel, A.R. Tatchell, B.S. Furnis, A.J. Hannaford, P.W.G. Smith. Vogel's Textbook of Practical Organic Chemistry (5th Edition), Longman Group UK Limited, London, United Kingdom, 1989.5. K. P. C. Volhard, N. E. Schore, Organska hemija, četvrto izdanje, Data status, Beograd, 2004. |
| **Active teaching classes** | **Lectures 15** | **Laboratory work 60** |
| **Teaching mode** lectures, interactive classes, laboratory exercises, consultations |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** |
| **Pre exam duties** | **Points** | **Final exam**  | **Points** |
| Activity during lectures | 5 | Written examination | 30 |
| Practical teaching | 40 | Oral examination |  |
| Homework | 5 | Practical examination  | 20 |