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| **Study program** Chemistry |
| **Course title** Organic chemistry 1 |
| **Name of lecturer/lecturers** Goran M. Petrović and Aleksandra S. Đorđević |
| **Type of course** Obligatory |
| **Number of ECTS allocated** 7 |
| **Course objectives**The goal of the course is to acquire knowledge about the representation of the structures of organic compounds, isomerism, systematization in organic chemistry, chemical bonds, electronic effects in organic molecules, intermolecular and acid-base interactions, configuration, conformation and so on obtaining, physical and chemical characteristics of alkanes, alkenes, alkynes, dienes, cycloalkanes, aromatic hydrocarbons and heterocyclic aromatic compounds. |
| **Course outcomes**After successful completion of this course, the student is able to:- present the structures of hydrocarbons, aromatic and heterocyclic aromatic compounds,- understands the relationship between the structure, physical and chemical properties of the mentioned compounds,- understands the principles of radical substitution and addition reactions of hydrocarbons, electrophilesaddition reactions of hydrocarbons, elimination reactions of hydrocarbons and reactions of electrophilic inucleophilic aromatic substitutions. |
| **SYLLABUS***Lectures*Introduction to organic chemistry. Alkanes: types of formulas, isomerism, nomenclature, chemical bonds theories, tetragonal hybridization. Conformations of alkanes, physical properties of alkanes, intermolecular interactions, alkanes production reactions. Alkane reactions, free radical reactions, free radicals stability, hyperconjugation. Stereoisomers, optical isomerism, RS nomenclature. Alkenes, nomenclature, structure, geometric isomerism, nomenclature of stereoisomers, trigonal hybridization, alkenes obtaining. Alkene reactions, addition of identical adducts, resonance, substitution of allylic hydrogen. Alkene reactions, electrophilic addition of non-identical adducts, free radical addition. Alkynes, nomenclature, digonal hybridization, properties, acidity, reactions of alkynes, tautomerism. Dienes, division, structure, reactions, conjugate addition. Cycloalkanes, division, nomenclature of spirane, bicyclic compounds, conformations of cycloalkanes, reactions. Aromatic hydrocarbons, benzene structure, aromaticity, nomenclature, physical properties, benzene reactions, electrophilic aromatic substitution. Electrophilic substitutions of substituted benzenes, rate, regioselectivity. Reactions nucleophilic aromatic substitutions. Heterocyclic aromatic compounds, structure, reactivity.*Laboratory work*Solving problems from lectures. |
| **References**K.P.C. Vollhardt, N.E. Schore, Organska hemija, Ed. Haydigraf, Beograd, 1996.; prevod B. ŠolajaS. H. Pine, J. B. Hendrickson, D. J. Cram, G. S. Hammond, Organska kemija, prevod, I. Ranogajec, 3.izdanje, Školska knjiga, Zagreb, 1994.R. T. Morrison, R. N. Boyd, Organska kemija, prevod, D. Kolbah, Sveučilišna naklada Liber, Zagreb,1979.R. Palić, N. Simić, Organska hemija, PMF-Niš, Niš, 2007.G. Stojanović, Osnovi organske hemije, PMF, Niš, 2002. |
| **Active teaching classes** | **Lectures** 60 | **Laboratory work** 15 |
| **Teaching mode** Lectures, theoretical exercises, consultations |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** |
| **Pre exam duties** | **Points** | **Final exam**  | **Points** |
| Activity during lectures | 5 | Written examination | 40 |
| Practical teaching | 5 | Oral examination |  |
| Teaching colloquia | 50 |  |  |
| Seminar |  |  |  |