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| **Course code: FFS14** | | | | **Name of course: Organic Chemistry I** | | |
| **Level: Integrated studies** | **Year: II (SECOND)** | | | **Semester: III (THIRD)** | | **ECTS credits: 7 (SEVEN)** |
| **Status: MANDATORY** | | | **Number of hours weekly:**  **LECTURES (L): 3 (three) hours**  **SEMINARS (S): 4 (four) hours** | | **Total number of hours: 105 (L: 45; S: 60;)** | |
| **Teaching staff:** | | | | Dr. sci Hurija Džudžević -Čančar, associate. prof.  Dr. sci. Mirsada Salihović, associate. prof  Alema Dedić MA, senior assistant  Mediha Ĉubro, laboratory assistant | | |
| **1. Course aims:** | | | | The aim of this course is to enable students to gain knowledge of the structure, names, physicochemical properties, stereochemistry, and familiarization with the types and mechanisms of reactions characteristic for organic compounds as well as their application in pharmacy. Through practical classes that are an integral part of this course, the goal is to introduce students to basic laboratory techniques that will prepare them for preparative work, i.e organic synthesis, obtaining natural compounds, and qualitative analysis of organic compounds | | |
| **1.1. Course content** | | | | | | |
| **a) Theoretical teaching** | | | | | | |
| The first part deals with structures, type of bonds, electronic effects in organic molecules such resonance and inductivity, hybridization of C-atoms and formation of bonds as well as acidity-electrophile/basicity-nucleophile correlation of organic compounds in organic reactions. Through stereochemistry, students are introduced to isomerism, conformation, chirality, and optical activity of organic compounds. They are also acquainted with the general knowledge of all known functional groups by their nomenclature, physical and chemical properties. In the second part, students are introduced to compounds with characteristic functional groups, their application and methods of preparation and mechanisms of characteristics reactions such as nucleophilic and electrophilic substitution elimination, addition. Basic classes of organic compounds are presented, such as: alkanes, cycloalkanes, alkenes, dienes, alkynes, aromatic compounds alkyl halides, aryl halides, alcohols, phenols, ethers, thiols, sulfides (thioethers), carbonyl compounds, carboxylic acids, substituted carboxylic acids, carboxylic acid derivatives, amines, nitro compounds, heterocyclic compounds with N; O, S with special reference to the structure and importance of heterocyclic compounds of the porphyrin type, stimulants, neurotransmitters, antibiotics, analgesics, and antiviral agents. | | | | | | |
| **b) Practical teaching**  *Experimental -* *Laboratory practice:* students are introduced to laboratory work by becoming familiar with the rules of work and behavior, precautions and protections when working in the organic chemistry lab, as well as the accessories, utensils and chemicals. They further undergo experiments that enable them to purify, separate, characterize and identify organic compounds based on their chemical and physical properties using methods: recrystallization, extraction, sublimation, distillation and determination of the boiling point of solids and column, paper and thin layer chromatography.  *Auditorium seminars:* Familiarization with the various names of organic compounds through examples using functional, trivial and IUPAC names as well as pharmacopoeia names. | | | | | | |
| **c) Seminar paper** | | | | | | |
| The seminar paper topic deals with the individual parts covered by the curriculum of Organic Chemistry I. The given topic is addressed by a group of students and presented in written and/or oral form. | | | | | | |
| **1.2. Outcomes of study** | | | | Students are prepared to properly use the correct organic terminology, to name and correctly draw structures, and to associate the structure with the name of the organic compound. Use of stereochemistry, proper writing, recognition and analysis of characteristic reaction mechanisms. Independent work in the laboratory for isolation, purification and identification of organic compounds. | | |
| **2. 2. Teaching method:** lectures; experimental and auditory exercises; seminars; consultations | | | | | | |
| **Activity description (%)** | | | | | | |
| **2.1. Method of teaching** | | 1. theoretical teaching  2. practical teaching- auditory and experimental  3. seminars | | | 1. 37,5%  2. 12,5% + 37,5%  3. 12,5% | |
| ***Grade participation (%)*** | | | | | | |
| **2.2. Grading system** | | 1. LECTURE  ATTENDANCE/ACTIVITY  2. ACTIVITY IN LABARATORY  3. COLLOQUIA I  4. COLLOQUIA II  5. SEMINAR PAPER  6. FIRST MID TERM  7. SECOND MID TERM  8. FINAL EXAM – BOTH MID TERM EXAMS ARE TAKEN | | | 1. 6%  2. 5%  3. 5%  4. 10%  5. 10%  6. 32%  7. 32%  8. 64% | |
| **3. LITERATURE** | | | | | | |
| **Mandatory:**   Vollhardt, K. P., Schore, N. E. Organska hemija- *struktura i funkcija*, (prijevod), 4. izd., Data status, Beograd, 2004.   Pine, H. S., Hendrickson, B.J., Cram, J. D., Hammond, S. G. Organska kemija, Školska knjiga, Zagreb, 1994. (opcionalno)   Arsenijević, R. S. Organska hemija, 9. dopunjeno izdanje, Partenon, Beograd, 2005. (opcionalno)   Rapić, V. Nomenklatura organskih spojeva ,Školska knjiga Zagreb, 1995.   Dţudţević Ĉanĉar H., Salihović M. Praktikum Organske hemije I, interna skripta, 2013 . | | | | | | |
| **Complementary:** | | | | | | |
|  Carey, A. F. Organic Chemistry, fourth edition, Virginia, 2000.   Morrison & Boyd, Organic Chemistry, Prantice- Hall, New Jersey, 2002   |  |  |  | | --- | --- | --- | | **2.2. Grading system** | 1. LECTURE ATTENDANCE/ACTIVITY  2. ACTIVITY IN LABORATORY  3. COLLOQUIA I  4. COLLOQUIA II  5. SEMINAR PAPER  6. FIRST MID TERM  7. SECOND MID TERM  8. FINAL EXAM – BOTH MID TERM EXAMS ARE TAKEN | 1. 6%  2. 5%  3. 5%  4. 10%  5. 10%  6. 32%  7. 32%  8. 64% | | **3. LITERATURE** | | | | **Mandatory:**   Vollhardt K. P., Schore N. E., Organska hemija- *struktura i funkcija*, (prijevod), 4. izd., Data status, Beograd, 2004.   Arsenijević R. Stanimir: Organska hemija, 9. dopunjeno izdanje, Partenon, Beograd, 2005 . (opcionalno)   Pine H. S., Hendrickson B.J., Cram J. D., Hammond S. G. Organska kemija, Školska knjiga, Zagreb, 1994. (opcionalno)   Rapić V.: Nomenklatura organskih spojeva ,Školska knjiga Zagreb, 1995.   Nikolin, B. Nikolin: Praktikum organske hemije, Svjetlost, Sarajevo, 1984.   Petrović S., Mijin D.,Stojanović N, Hemija prirodnih organskih jedinjenja, Tehnološko -metalurški fakultet, Beograd, 2005. | | | | **Complementary:** | | | |  Carey A. F.,Organic Chemistry, fourth edition, Virginia, 2000.   Morrison & Boyd, Organic Chemistry, Prantice- Hall, New Jersey, 2002 | | | | | | | | | | |