|  |  |
| --- | --- |
|  |  |
|  | |
| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Course code: FFS30** | | | **Naziv predmeta: ORGANIC CHEMISTRY II** | | | | **Level: Integrated studies** | **Year: II (SECOND)** | | **Semester: IV (FOURTH)** | | **ECTS credits: 7 (SEVEN)** | | **Status: MANDATORY** | | **Number of hours weekly:**  **LECTURES (L): 3 (THREE)**  **PRACTICAL (P): 4 (FOUR)** | | **Total number of hours: 105 (L: 45; P: 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** | | | Introduce students to: types of organic reactions, mechanisms of ionic and radical reactions, structures, reactivity and influence of reactants (electrophiles, nucleophiles) on the formation of reaction intermediates and synthetic product. Also introduce students to the classification of the structure, properties and effects of natural compounds. In the laboratory, introduce students  to the parhway and conditions required for proper organic synthesis to produce the desired product. | | | | **1.1. Course content** | | | | | | | **a) Theoretical teaching**  For characteristic groups of organic compounds, student go through the reactions-mechanism of nucleophilic substitution, SN 1 /SN 2, elimination E1 /E2 and SN versus E competition, additions, combined reactions, free radical reactions and their mechanism and mechanism representation by arrows, transition states, relative configuration and reaction diagrams profiles. Electrophilic aromatic substitution and the influence of the substituents on the reaction mechanisms with respect to their relative reactivity as activators (electron donors) and deactivators (electron acceptors), their regioselectivity as ortho, para and meta directors are discussed. We We then devise strategies toward the synthesis of polysubstituted arenes, such analgesics. The mechanisms of reactions of keto-enol tautomerism and the reaction mechanisms of acetal and hemiacetal formation and their stereochemistry are presented. In the second part, students are introduced to the chemistry of natural compounds important for pharmacy, through the classification, structure and properties of carbohydrates, lipids, steroids, terpenes, prostaglandins, fats, oils, phospholipids, amino acids (peptide bond, di, tri and poly peptides formation), proteins and nucleic acids (components of DNA, RNA). | | | | | | | **b) Practical teching** | | | | | | | *Experimental -* *Laboratory practice:* Students are introduced to the part of preparative organic chemistry where compounds are synthesized by the saponification, acylation, halogenation, sulfonation, nitration, polymerization reactions. True work in small groups organic compounds used in pharmacy such aspirin, acetanilide, soap, etc. are synthesized. The reaction mechanisms characteristic for the corresponding functional groups are monitored too.  Extractions of the active components from the plant material are also carried out.  For the qualification and quantification of the synthesized compounds and extracts, the methods studies in the course of Organic Chemistry I are used.  *Auditory classis:*  Familiarizing students with the different names of specific organic compounds formed by synthesis or extraction from natural materials through examples using functional, trivial and IUPAC names, and comparing them with names used by pharmacopoeia. | | | | | | | **c) Seminar paper** | | | | | | | The seminar paper deals with the individual topics covered by the Organic Chemistry II curriculum. The given topic is addressed by a group of students and presented in writing and / or verbal form. | | | | | | | **1.2. Outcomes of study** | | | Students are introduced to the basic principles of organic synthesis. They understand and distinguish the reaction mechanisms and recognize the reactants, the chemistry of their action and the influence of reaction conditions on the formation of certain synthetic products. Identification of accessory products and their activities. Independent laboratory work and critical analyses of the results obtained | | | | **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 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 | | | | | |