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|  | **Course title:**  **PHARMACEUTICAL CHEMISTRY I** | | | |
| **Level:**  **Integrated study of 1st and 2nd Cycle of Studies** | **Year:**  **III** | **Semester:**  **V** | **ECTS credits:**  **8** | |
| **Status:**  **Obligatory** | **Number of hours weekly: 3+4+1**  **Lectures - 3**  **Laboratory classes - 4**  **Seminar paper – 1** | | **Total hours of teaching: 120** | |
| **Teaching staff:** | Corresponding professor: Prof. dr Davorka Završnik  Associates:  Prof. dr Samija Muratović  Prof. dr Selma Špirtović-Halilović  Prof. dr Elma Veljović  Amar Osmanović, MPharm | | | |
| **1. Course objectives** |  | | | |
| * 1. **Aim of the course:**   Student will learn about the properties of pharmacotherapeutic groups of drugs classified by ATC classification:  (1) Structural formulas of drugs belonging to particular groups  (2) Physicochemical properties of drugs  (3) Drug preparation methods (isolation, biosynthesis and synthesis) for selected drugs  (4) Influence of drug structure on the mechanism of action (structure-activity relationship)  (5) Influence of drug structure on the pharmacological/toxicological/therapeutic profile of the drug  **1.2. Curriculum**  **a) Lectures**  In the first part, students get acquainted with the concept of drug, drug names, basic physicochemical properties significant for the activity of drugs. Individual drug groups are explained according to the ATC classification. Students are introduced to the most important pharmacotherapeutic drug groups, studying the drugs with respect to chemical and stereochemical characteristics. Each drug is presented with its chemical and generic name, a structural formula, specific preparation method (isolation, biosynthesis, synthesis) and its characteristics - efficacy, pharmaceutical form and administration, mechanism of action, metabolism, pathways of excretion, resistance, side effects, interactions with other medicines. New drugs are systematically monitored and introduced. Pharmaceutical chemistry I covers drugs that affect the digestive tract and metabolism, drugs that affect the blood and blood-forming organs, antiseptics and disinfectants, contrast agents, and chemotherapeutics (uroantiseptics, antivirals, cytostatics, anti-infectives, antiprotozoals, and anthelmintics), antipsoriatics.  **b) Laboratory classes**  Laboratory classes include testing of the physicochemical properties of medicinal substances, purification processes, computer determination of lipophilicity parameters and topological indices, identification of inorganic, organo-inorganic, organic and liquid medicinal compounds, and a degree of purity testing.  **c) Seminar paper**  Seminar paper on a given topic, which follows the current topic is prepared by groups of students, and the presentation of the work is public – in the amphitheatre, followed by a thematic discussion. | | | | |
| **1.2. Learning outcomes** | Upon completion of this course and passing the exam the student will be able to:  1. Identify the chemical structure of the drug and classify it in the appropriate therapeutic group;  2. Recognize the physicochemical and stereochemical characteristics of drugs;  3. Identify which parts of the molecule are important for drug activity;  4. Describe the mechanism of action, use and mode of administration of individual drugs based on their structure;  5. Synthesize drugs and identify drug structure. | | | |
| **2. Course organisation** | | | | |
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| **2.1. Structure of the course** | 1. Theoretical classes  2. Laboratory classes  3. Seminars | | | 1. 37.5 %  2. 50.0 %  3. 12.5 % |
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| **2.2. Evaluation** | 1. Colloquium  2. Seminar paper  3. First partial exam  4. Second partial exam  5. Presence and activity in lectures | | | 1. 10 %  2. 7 %  3. 38 %  4. 42 %  5. 0-3 % |
| **3. LITERATURE** |  | | | |
| Obligatory:  1. Farmaceutska kemija 1, Završnik D., Muratović S, Špirtović-Halilović S., Veljović E., Osmanović A., Bojić M., Medić-Šarić- M., Sarajevo 2015.  Optional:  1. Vladimirov S., Ţivanov-Stakić D. Farmaceutska hemija I deo, Farmaceutski fakultet Beograd, 2006.  2. Vladimirov S., Ţivanov-Stakić D. Farmaceutska hemija II deo, Farmaceutski fakultet Beograd, 2006.  Additional:  1. Wilson, C., Gisvold, O., Block, J. and Beale, J. Wilson and Gisvold's textbook of organic medicinal and pharmaceutical chemistry. Philadelphia: Lippincott Williams & Wilkins, 2011.  2. Foye, W., Lemke, T. and Williams, D. Foye's principles of medicinal chemistry. Philadelphia: Lippincott Williams & Wilkins, 2008.  3. Burger's Medicinal Chemistry and Drug Discovery. Sixth Edition, John Wiley & Sons, Inc., 2003. | | | | |
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