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|  | **Course title: DRUG BIOCHEMISTRY** |
| **Level: Undergraduate**  | **Year:** **IV**  | **Semester:** **VIII**  | **ECTS credits:** **4** |
| **Status:** **Obligatory** | **Number of hours weekly: 2+2****(Lectures + practical classes)**  | **Total hours of teaching: 75** |
| **Teaching staff:** | Prof. Dr. Tanja Dujić, Associate Professor, Clinical Pharmacy SpecialistSelma Imamović, MPharm, Teaching and Research Assistant |
| **Course objectives** | This course is designed to introduce students to the various aspects of drug metabolism and disposition, and their importance in a patient-centred therapeutic approach.Students will:- Learn about basic concepts of drug distribution in the body, drug metabolism and excretion of drug metabolites- Understand how drug metabolism can be predicted and used in order to design new drugs less susceptible to interactions with other drugs and to avoid side effects- Be able to propose tests to evaluate the ability and degree of metabolism of a drug- Be able to see the benefits of such testing for the purpose of personalised patient treatment as well as more effective and safer treatment |
| **1.1. Curriculum**

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| a) Lectures |
| b) Practical classes - Introduction to Drug Biochemistry: Drug Metabolism and Disposition- Drug biotransformation: Phase 1 and 2 reactions- Phase 1 of biotransformation of drugs: key enzymes- CYP450: tissue distribution, genetic polymorphisms- Phase 2 of biotransformation of drugs: key enzymes- Drug transporters- Factors affecting biotransformation of drugs- Pharmacogenetics basics: Impact of genetic variations on drug metabolism and disposition- Induction and inhibition of enzymes in drug metabolism- Drug interactions- Drug side effects; influence of genetic polymorphisms of drug-metabolising enzymes and drug transporters- Extrahepatic drug metabolism; Stereochemical aspects of drug metabolism- New aspects in drug metabolism; Use of personalised medicines- Drug discovery and development: Modern trends in pharmacy- Selected topics from clinical practice - Discussion and learning through problem-solving related to cases from clinical practice |

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| **1.2. Learning outcomes** | On the basis of acquired knowledge related to the basics of drug metabolism and disposition and their regulation, the student will become acquainted with the basic concepts of drug distribution in the body, drug metabolism and excretion of drug metabolites; Be able to answer how drug metabolism can be predicted and used to design new drugs less susceptible to interactions with other drugs and to avoid side effects; Will be able to propose tests to assess the ability and degree of metabolism of a drug; Be able to see the benefits of such testing for the purpose of personalised patient treatment as well as more effective and safer treatment |
| **2. Course organisation** |
| **2.1. Structure of the course**  | LecturesPractical classesSeminars  | 40% 40% 20%  |
| **2.2. Grading**  | Final Exam (2h)Seminar Seminar presentationClass attendance and participation**Total** | 50%25%20%5%100% |
| **3. LITERATURE** |  |
| Mandatory:1. Textbook: S.Semiz, A.Čaušević "Farmakogenetski aspekti biohemije lijekova", Sarajevo, 2012.2. Script: A.J. Čaušević, T.Dujić, M. Malenica "Metabolizam lijekova ", Sarajevo 2006.Additional:1. Drug Metabolism - Current Concepts, C. Ionescu and M.R. Caira, Springer, 2005.2. Enzyme systems that metabolize drugs and other xenobiotics, Costas Ioannides, John Wiley & Sons, Ltd., 2002.3. Online-e.g., PubMed |
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