

Karta przedmiotu / Course description

Biopharmacy

Informacje ogólne o przedmiocie / General information about the course	
1. Kierunek studiów / Major of study: Pharmacy	2. Poziom kształcenia / Study level: : unified MSc
	3. Forma studiów / Form of study: intramural
4. Rok / Year: IV	5. Semestr / Semester: VII
6. Nazwa przedmiotu / Course name: Biopharmacy	
7. Status przedmiotu / Course status: required	
8. Jednostka realizująca przedmiot, adres, e-mail: Name of Department, mailing address, e-mail: Department of Biopharmacy, Jedności 8 St., 41-200 Sosnowiec; tel. (32) 364 12 49; echodurek@sum.edu.pl	
9. Treści programowe przedmiotu Course contents: <p>The aim of the biopharmacy course is to familiarize students with aspects which determine the fate of drug in the human body (LADME), influence of physiological and pathological factors, physicochemical properties of active ingredients and excipients, dosage form and the route of administration on the drug release and bioavailability. During the classes students are acquiring practical skills in determination of dissolution process, bioavailability in accordance to pharmacopeial and non-pharmacopeial requirements. Course is preparing for pharmacists professional practice in the field of biopharmaceutical quality, efficacy and safety assessment of drugs.</p> <p>Learning outcomes / reference to learning outcomes indicated in the standards For knowledge – student knows and understands: D.W1., D.W2., D.W3., D.W6., D.W7., D.W9., D.W10., D.W11. For skills student can do: D.U1., D.U2., D.U3., D.U4., D.U5., D.U7., D.U8., D.U9., D.U10. For social competencies student is ready to: - noticing and recognizing own limitations, self-assessment of deficits and educational needs; - use of objective sources of information; - formulating conclusions from own measurements or observations.</p>	
10. liczba godzin z przedmiotu / Number of hours for the course	20h
11. liczba punktów ECTS dla przedmiotu / Number of ECTS points for the course	2
12. Formy i tematy zajęć / Forms and topics of classes	Number of hours
12.1. Seminars	
The LADME-system and its importance in biopharmacy. Basic principles of absolute and relative bioavailability. Role of physical and physicochemical factors influencing the fate of drug in the organism and therapeutic effect. Biopharmaceutical Classification System (BCS), bioequivalence issues. Drug dissolution and permeation studies according to FDA guidelines.	3h
Transport mechanisms and the absorption process. Significance of drug release, role of physical and physicochemical factors. <i>In vitro</i> release study of different formulations. Biopharmaceutical features of different a route of administration: oral, ophthalmic, inhalation, parenteral, topical, intravaginal and rectal.	2h

12.2 Laboratory classes	
The evaluation of the theophylline release from sustained release formulations	4h
Determination of drug release process from dermatological ointment bases	3h
The use of the hydraulic model to study the relationship between V_d , $t_{0.5}$, AUC, C_0 , Cl, D and k_{el}	3h
Application of cell culture methods in biopharmacy	5h
13. Literatura / Readings <ol style="list-style-type: none"> 1. Talevi, Alan, and Pablo A. M. Quiroga. (Ed): ADME Processes in Pharmaceutical Sciences: Dosage, Design, and Pharmacotherapy Success. Cham, Switzerland: Springer, 2018. 2. Korth-Bradley, Joan M. (Ed): Handbook of Basic Pharmacokinetics...Including Clinical Applications, 7th Edition. Washington, USA: American Pharmacists Association, 2010. 3. European Pharmacopoeia - 10th edition 	
14. Kryteria oceny – szczegóły / Detail evaluation criteria Zgodnie z zaleceniami organów kontrolujących / In accordance with the recommendations of the inspection bodies Zaliczenie przedmiotu - student osiągnął zakładane efekty uczenia się / Completion of the course – student has achieved the assumed learning outcomes Szczegółowe kryteria zaliczenia i oceny z przedmiotu są zamieszczone w regulaminie przedmiotu / Detail criteria for completion and evaluation of the course are specified in the course regulations	