

Course title: <b>Biopharmaceutics</b>		
Programme: <b>Biotechnology</b>		Code:
Type of course:	Course level: <b>II level</b>	Semester: <b>II</b>
Form of classes: <b>Lectures, tutorials</b>	Number of hours per week/meeting: <b>2L, 1T</b>	Credit points: <b>4</b>
Education profile: <b>Generally academic</b>		Course language: <b>English</b>
Enrolment: <b>yes/ <del>no</del></b>		

## SYLLABUS

### I. COURSE CHART

#### COURSE OBJECTIVES

- C.1.** Providing basic knowledge about classification, occurrence of pharmaceuticals and their kinetics
- C.2.** Providing of basic knowledge of biopharmaceuticals kinetics, especially their elimination by the liver and selected methods of application
- C.3.** Learning techniques of using biopharmaceuticals in human treatment, case study - basics of drug selection, principle of action and therapeutic effects

#### PRELIMINARY COURSE REQUIREMENTS FOR KNOWLEDGE, SKILLS AND OTHER COMPETENCES

- 1. Knowledge from chemistry
- 2. Knowledge from biology of living organisms
- 3. Basic knowledge from mathematics

#### LEARNING OUTCOMES

- EK 1 -** Know the basic knowledge about classification, occurrence of pharmaceuticals and their kinetics
- EK 2 -** Know basic knowledge of biopharmaceuticals kinetics, especially their elimination by the liver and selected methods of application
- EK 3 -** Can use biopharmaceuticals techniques in human treatment, create the case study - basics of drug selection, principle of action and therapeutic effects

#### COURSE CONTENT

Form of classes - lectures	Hours
Biopharmaceutics – introduction and theory principals	4
Introduction to biopharmaceutics and pharmacokinetics	4

Biopharmaceutics classification system and importance	4
Drug elimination and clearance	4
Pharmacokinetics of oral adsorption	4
Drug elimination and hepatic clearance	4
Targeted drug delivery systems and biotechnological products	4
Test of theory from lectures	2
<b>Form of classes - tutorials</b>	<b>Hours</b>
Biopharmaceuticals - a basic tool for modern pharmacotherapy - introduction	2
Case study based on bibliographic data: - The first stage - the choice of disease for treatment, adjustment of drugs - The second stage - the principle of action of applied drugs, the effects of treatment	7
Test and presentation from the first stage	2
Test and presentation from the second stage	2
Final test and results	2

### COURSE STUDY METHODS

1. blackboard, interactive whiteboard
2. multimedia presentation
3. Literature from on-line bibliographic databases

### METHODS OF ASSESMENT ( F - formative; S - summative)

<b>F1.</b> – activity in classes
<b>S1.</b> – test from the lectures
<b>S2.</b> – test and presentation from the tutorials
<b>S3.</b> - evaluation of the tutorials reports performance including analysis and verification of the obtained results

### STUDENT WORKLOAD

Form of activity	Workload (hours)
<b>Participation in lectures</b>	<b>28 h</b>
<b>Participation in classes</b>	<b>13 h</b>
<b>Laboratory</b>	<b>- h</b>
<b>Participation in project classes</b>	<b>- h</b>
<b>Participation in seminar</b>	<b>- h</b>
<b>Preparation course on e-learning</b>	<b>- h</b>
<b>Test</b>	<b>8 h</b>
<b>Entrance test for laboratory classes</b>	<b>- h</b>
<b>Project's defence</b>	<b>- h</b>
<b>Exam</b>	<b>- h</b>
<b>Consultation hours</b>	<b>10 h</b>
<b>DIRECT TEACHING, hours/ ECTS</b>	<b>59 h / 2,5 ECTS</b>
<b>Preparation for tutorials</b>	<b>30 h</b>
<b>Preparation for laboratories</b>	<b>- h</b>
<b>Preparation for projects</b>	<b>- h</b>
<b>Preparation for seminars</b>	<b>- h</b>

Preparation for e-learning classes	- h
Participation in e-learning classes	- h
Working on project	- h
Preparation for tests	15 h
Preparation for exam	- h
<b>SELF-STUDY, hours/ ECTS</b>	<b>45 h / 1,5 ECTS</b>
<b>TOTAL (hours)</b>	<b>∑ 104 h</b>
<b>TOTAL ECTS</b>	<b>4 ECTS</b>

#### **PRIMARY AND SUPPLEMENTARY TEXTBOOKS**

Biopharmaceutics & Pharmacokinetics, 2008. Biopharmaceutics & Pharmacokinetics. Pragati Books Pvt. Ltd.
Essentials Of Biopharmaceutics And Pharmacokinetics, 2010. Essentials Of Biopharmaceutics And Pharmacokinetics. Elsevier Health Sciences.
Biopharmaceutics Modeling and Simulations, 2012. Biopharmaceutics Modeling and Simulations. John Wiley & Sons.

#### **SUBJECT COORDINATOR (NAME, SURNAME, E-MAIL ADDRESS)**

1. dr inż. Krzysztof Fijałkowski, krzysztof.fijalkowski@pcz.pl
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#### **NAME OF LECTURER (s) (NAME, SURNAME, E-MAIL ADDRESS)**

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<b>Learning outcome</b>	<b>In relation to the learning outcomes specified for the field of study</b>	<b>Course objectives</b>	<b>Course content</b>	<b>Course study methods</b>	<b>Methods of assesment</b>
<b>EK 1</b>	K_W04, K_W05, K_K08	C.1-2	lectures/tutorials	1-2	S1
<b>EK 2</b>	K_W04, K_W05, K_K08	C.1-2	lectures/tutorials	1-2	S1
<b>EK 3</b>	K_U02, K_U06, K_K08	C.3	tutorials	3	F1, S2-3

## **II. OTHER USEFUL INFORMATION**

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1. All the information on the class schedule is posted on the student information board and

online at: [www.is.pcz.pl](http://www.is.pcz.pl)

2. The information about the consultation hours is provided to students on the first class meeting and posted online at ...
3. The information on course completion and grade is provided to students on the first class meeting.