

Course title: <b>Environmental toxicology</b>		
Programme: <b>Biotechnology</b>		Code: <b>0512</b>
Type of course: <b>Erasmus</b>	Course level: <b>1 = BSc</b>	Semester:
Form of classes: <b>Lectures, tutorials</b>	Number of hours per week/meeting: <b>30L, 15T</b>	Credit points: <b>4</b>
Education profile: <b>generally academic</b>		Course language: <b>english</b>
Enrolment: <b>yes/ ñ</b>		

## SYLLABUS

### I. COURSE CHART

#### COURSE OBJECTIVES

- C.1.** To provide knowledge on the issues of poison classification, mechanisms of their toxic effects and fate in the body.
- C.2.** To provide a toxicological basis to assess the risk to human health and the environment arising from the presence of toxic compounds in the environment.
- C.3.** To acquaint students with methods of reducing health risks caused by xenobiotics.

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

- 1** Knowledge of inorganic and organic chemistry, biochemistry and microbiology within the scope of the curriculum.

#### LEARNING OUTCOMES

- EU 1 -** The student is able to list and characterize the basic transformations of xenobiotics in the body and environment.
- EU 2 -** Is able to define toxic substances and their potential sources in the environment.
- EU 3 -** Has basic knowledge about the possibilities of using bioprocesses in selected branches of the economy.

#### COURSE CONTENT

Form of classes - lectures	Hours
Definition of toxicology and ecotoxicology, types, causes and structure of	2
Toxic determinants	4
Xenobiotic metabolism	2
Bioaccumulation	2

Heavy metals in the environment	2
Persistent organic pollutants	2
Toxic substances in the food chain	2
Fate of toxic substances in the ecosystem	4
Dekompozycja materii organicznej w ekosystemach lądowych	4
Pollutants in aquatic environmental compartments	2
Use of biotechnology to remove organic and inorganic environmental	4
<b>Form of classes - tutorials</b>	<b>Hours</b>
What are environmental health risks?	2
Specificity of environmental health threats	
Health effects of exposure of humans to environmental pollutants	4
Factors affecting the size of the risk. Hazard types and media transmitting risk	4
Domestic health hazards	2
Pesticides and herbicides at risk	3

### 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> – Evaluation of preparation for classes
<b>S2.</b> – Evaluation of the presentation

### STUDENT WORKLOAD

Form of activity	Workload (hours)
<b>Participation in lectures</b>	<b>30 h</b>
<b>Participation in classes</b>	<b>15 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>- 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>15 h</b>
<b>DIRECT TEACHING, hours/ ECTS</b>	<b>60 h / 2,4 ECTS</b>
<b>Preparation for tutorials</b>	<b>40 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>
<b>Preparation for e-learning classes</b>	<b>- h</b>

Participation in e-learning classes	- h
Working on project	- h
Preparation for tests	- h
Preparation for exam	- h
<b>SELF-STUDY, hours/ ECTS</b>	<b>40 h / 1,6 ECTS</b>
<b>TOTAL (hours)</b>	<b>∑ 100 h</b>
<b>TOTAL ECTS</b>	<b>4 ECTS</b>

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

Tomlin, Clive DS. The pesticide manual: a world compendium. No. Ed. 15. British Crop Production Council, 2009.
Walker, Colin Harold, et al. Principles of ecotoxicology. CRC press, 2012.
Hock, Bertold, and Erich F. Elstner, eds. Plant toxicology. CRC Press, 2004.
Roberts, Stephen M., Robert C. James, and Phillip L. Williams. Principles of toxicology: environmental and industrial applications. John Wiley & Sons, 2014.

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

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#### **NAME OF LECTURER (s) (NAME, SURNAME, E-MAIL ADDRESS)**

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Learning outcome	In relation to the learning outcomes specified for the field of study	Course objectives	Course content	Course study methods	Methods of assesment
EU 1	K_W01, K_W05, K_U02, K_K06	C.1-2	lectures tutorials	1-2	F1 ,S1, S2
EU 2	K_W01, K_W05, K_U02, K_K06	C.1-2	lectures tutorials	1-2	F1 ,S1, S2
EU 3	K_W01, K_W05, K_U02, K_K06	C.2	lectures tutorials	1-2	F1 ,S1, S2

## **II. OTHER USEFUL INFORMATION**

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.