

<b>Course title</b> Ekotoksykologia/Ecotoxicology		<b>ECTS code</b> 13.3.0507	
<b>Name of unit administrating study</b> Faculty of Chemistry			
<b>Studies</b>			
<b>Field of study</b>	<b>Type</b>	<b>Form</b>	
Chemistry	Master	Full-time studies	
<b>Teaching staff</b> dr inż. Ewa Mulkiwicz			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b>	
<b>A. Forms of classes, in accordance with the UG Rector's regulations</b> lecture, laboratory classes		classes 45 h tutorial classes 5 h student;s own work 25 h TOTAL: 75 h - 3 ECTS	
<b>B. The realization of activities</b> In-class learning			
<b>C. Number of hours</b> lecture 15 h, laboratory classes 30 h			
<b>The academic cycle</b> 2019/2020 summer semester			
<b>Type of course</b> obligatory		<b>Language of instruction</b> Polish	
<b>Teaching methods</b> Lecture with multimedial prsentation Laboratory experiments		<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>	
		<b>A. Final evaluation, in accordance with the UG study regulations</b> Course completion (with a grade), exam	
		<b>B. Assessment methods</b> written exam with test and open questions test conducting research and presentation of their results determining the final grade based on partial grades received during the semester	
		<b>C. The basic criteria for evaluation or exam requirements</b> Lecture: <ul style="list-style-type: none"> <li>• positive evaluation of the written exam covering the issues listed in the lecture program content, grading scale in accordance with the UG studies regulations</li> </ul> Laboratory exercises <ul style="list-style-type: none"> <li>• performance of the experimental part covered by the program of laboratory classes</li> <li>• positive evaluation of partial tests covering topics implemented during laboratory exercises</li> <li>• positive assessment of the final written test consisting of test and open questions covering the issues listed in the content of the laboratory classes</li> </ul>	
<b>Required courses and introductory requirements</b> Basic knowledge in chemistry and natural sciences			
<b>Aims of education</b> To familiarize students with the effects of chemical compounds and their mixtures on individual organisms, populations and ecosystems, as well as methods of estimating these effects			

## Course contents

### A. Lecture issues

- A.1. Pollution and their fate in ecosystems
- A.2. Toxicokinetic profile of a substance (absorption, distribution, metabolism, elimination)
- A.3. Impact of pollution on organisms (biochemical and physiological effects of pollution)
- A.4. Ecological effects of pollution (at population and ecosystem level)
- A.5. Methods for assessing the toxic effect of a compound on organisms
- A.6. Methods for assessing the harmful effects of pollution on the environment
- A.7. Ethics in toxicological studies

### B. Laboratory issues

- B.1. Experimental methods for assessing the toxic effects of compounds and their mixtures on living organisms according to OECD procedures.
- B.2. Dose-effect relationship, determination of IC50, EC50, LC50, LD50, LOEC, NOEC

## Bibliography of literature

### A. Literature required to pass the course

#### A.1. Literature used during classes:

Walker C.H., Hopkin S.P., Sibly R.M., Peakall D.B., 2002. Podstawy Ekotoksykologii, PWN, Warszawa  
Laskowski R., Migula P., 2004. Ekotoksykologia – od komórki do ekosystemu, Państwowe Wyd. Rolnicze i Leśne, Warszawa

#### A.2. Literature for individual studies:

Brandys J., 1999, Toksykologia – wybrane zagadnienia, Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków  
Namieśnik J., Jaśkowski J., 1995, Zarys ekotoksykologii, EKO-Pharma, Gdańsk  
Piotrowski J.K., 2006. Podstawy toksykologii. WNT, Warszawa

## Knowledge

Knows the basic conceptual categories and toxicological and ecotoxicological terminology  
Understands and is able to correctly describe the basic phenomena and biological processes occurring in the body exposed to poisons  
Can explain the consequences of disorders in the body caused by the toxic effects of compounds  
Understands the inference based on observation and analysis of collected data obtained in toxicological and ecotoxicological tests  
Understands and can describe the effects of chemical substances and mixtures on the environment  
Knows experimental methods for determining the toxicity and ecotoxicity of chemical substances and their mixtures  
Knows and explains the basic principles of ecotoxicological tests  
Understands the need to apply the principles of ethics in experimental animal studies

## Skills

Searches and understands literature in the field of toxicology and ecotoxicology in Polish  
Searches for necessary information in online databases, critically assessing resources used; knows scientific journals in the field of ecotoxicology  
Learns independently, expands knowledge of issues raised during classes, is able to skillfully use available

sources of information in the field of ecotoxicology

Is able to use current scientific terminology in presenting and discussing problems in the field of toxicology and ecotoxicology

Is able to plan and carry out a toxicological or ecotoxicological experiment based on available guidelines

Is able to interpret and discuss the results of toxicological and ecotoxicological experiment obtained

**Social competence**

Knows the limitations of own knowledge in the field of toxicology and ecotoxicology, understands the need for continuous training and professional development

Is aware of the need to improve qualifications in the field of methods used to assess the harmfulness of chemical compounds on the body and the environment

Understands the need to independently search for information on new substances and their effects on the body and the environment in online databases, scientific literature and popular science magazines

Is aware of the risks and threats arising from working with harmful compounds

Is aware of the dilemmas associated with carrying out ecotoxicological studies, understands the need for reflection on ethical topics