University of Gdańsk

Subject card

Subject name and code	Ecotoxicology, PG_00117759						
Field of study	Chemistry						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study Optional subject group Subject group related to scientific research in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		1.0		
Learning profile	academic		Assessment form		exam		
Conducting unit	Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Ewa Mulkiewicz				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	15		2.0		8.0	25
Subject objectives	The aim of the course is to familiarize students with the effects of environmental pollutants and their mixtures on individual organisms, populations and ecosystems, as well as with methods for assessing these effects.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[CHEMMU2_U04] Applies acquired knowledge of chemistry and related scientific disciplines.	Knows the basic conceptual categories and toxicological and ecotoxicological terminology. Understands and is able to correctly describe basic phenomena and biological processes occurring in an organism exposed to environmental pollutants. Understands and is able to describe the effects of chemical substances and their mixtures on environment.	[SU4] test/exam - oral or written
[CHEMMU2_W05] Has extended knowledge in the field of the specialisation studied.	Is able to use current scientific terminology in presenting and discussing problems in the field of toxicology and ecotoxicology. Is able to skillfully use available sources of information in the field of ecotoxicology, critically assessing the resources used; knows scientific journals in the field of ecotoxicology.	[SW4] test/exam - oral or written
[CHEMMU2_K03] Understands the need for systematic work on various projects of a long-term nature and knows how to set priorities for the implementation of undertaken tasks.	Understands the need for continuous education and expansion of knowledge in the field of toxicology and ecotoxicology. Is aware of the need to improve qualifications in the methods used to assess the harmfulness of chemical compounds to the body and the environment. Understands the need to independently search for information about new substances and their effects on the body and the environment in online databases and scientific literature.	[SK4] test/exam - oral or written
[CHEMMU2_W10] Uses knowledge of the principles of operation of the basic scientific and research apparatus used in chemistry.	Knows experimental methods for assessing the toxicity and ecotoxicity of chemical substances and their mixtures. Knows and explains the basic principles of conducting ecotoxicological tests.	[SW4] test/exam - oral or written
[CHEMMU2_W07] Selects experimental and theoretical techniques to the extent necessary to understand the description and modelling of medium complexity chemical processes.	Is able to plan and conduct a toxicological and/or ecotoxicological experiment based on available guidelines. Understands conclusions based on observations and analysis of collected data obtained in toxicological and ecotoxicological tests.	[SW4] test/exam - oral or written

Subject contents

1. Pollutants and their fate in ecosystems.

2. Toxicokinetic profile of the substance (absorption, distribution, metabolism, elimination).

3. Impact of pollutants on organisms (biochemical and physiological effects of pollutants).

4. Ecological effects of pollution (at the population and ecosystem level).

5. Methods for assessing the toxic effect of a compound on organism.

6. Methods for assessing the harmful effects of pollutants on the environment.

7. Ethics in toxicological research

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="2">Possessing basic knowledge in the field of chemistry and natural sciences</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>written exam with test and open questions</td><td>51.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>Walker C.H., Hopkin S.P., Sibly R.M., Peakall D.B. Podstawy Ekotoksykologii, PWN, Warszawa, 2002.

Laskowski R., Migula P. Ekotoksykologia od komórki do ekosystemu, Państwowe Wyd. Rolnicze i Leśne,
Warszawa, 2004.

Traczewska T. Biologiczne metody oceny skażenia środowiska, Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław, 2011.</td></tr>
<tr><td>Supplementary literature</td><td>VanLoon G.W., Duffy S.J. Chemia środowiska, Wydawnictwo Naukowe PWN, 2008.

Zakrzewski S.F. Podstawy toksykologii środowiska, Wydawnictwo Naukowe PWN, 1997.

Namieśnik J., Jaśkowski J. Zarys ekotoksykologii, EKO-Pharma, Gdańsk, 1995.

Manahan S.E. (z jęz. ang. tł. Władysław Boczoń, Henryk Koroniak). Toksykologia środowiska : aspekty chemiczne i biochemiczne, Wydawnictwo naukowe PWN, 2018.

Manahan S.E. Environmental science and technology : a sustainable approach to green science and technology. CRC Press LLC, 2006.</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2"></td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
</table>

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