

Subject card

Subject name and code	Principles of Ecotoxicology, PG_00168492						
Field of study	Podstawy ekotoksykologii						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2027/2028		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
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	15.0	0.0	0.0	30
	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	30		0.0		20.0	50
Subject objectives	To familiarize students with the effects of chemical compounds and their mixtures on individual organisms, populations and ecosystems and with methods for assessing these effects.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BJORL3_W01] has a general knowledge of the basic concepts and principles of nuclear physics and chemistry, understands their historical development and their importance not only for nuclear safety and radiation protection, but also for understanding the modern world; has a basic knowledge of biology and ecology	Knows basic conceptual categories and toxicological and ecotoxicological terminology. Is able to correctly describe the basic phenomena and biological processes occurring in an organism exposed to poisons. Is able to explain the consequences of disorders in the body caused by the toxic effects of compounds. Is able to describe the effects of chemical substances and their mixtures on the environment. Knows experimental methods for determining the toxicity and ecotoxicity of chemical substances. Knows the basic principles of conducting ecotoxicological tests.	[SW4] test/egzamin - ustny lub pisemny [SW2] prezentacja/projekt/referat/raport
	[BJORL3_W05] has knowledge of the elementary components of matter and the types of fundamental interactions between them, the manifestations of these interactions in phenomena occurring at scales ranging from subatomic to subatomic, knows the time and energy scales associated with these phenomena; knows the basics of biology and ecology in understanding the biological and ecological aspects of nuclear safety and radiation protection	Understands conclusions based on observations and analysis of data obtained in toxicological and ecotoxicological tests. Understands the need to ensure chemical safety in the context of maintaining biodiversity and the proper structure and functioning of ecosystems.	[SW4] test/egzamin - ustny lub pisemny [SW2] prezentacja/projekt/referat/raport [SW3] opracowanie tekstowe/praca pisemna
	[BJORL3_U03] is able to use the formalism of physics and chemistry to describe phenomena in the microworld; is able to use the methodology of biology and ecology to an elementary extent when describing the effects of radiation on biological objects and in the environment	Is able to substantively, using appropriate methodology and terminology, describe and assess the toxic impact of chemical substances on organisms, populations and ecosystems.	[SU2] prezentacja/projekt/referat/raport [SU3] opracowanie tekstowe/praca pisemna [SU4] test/egzamin - ustny lub pisemny
Subject contents	Topics of the lecture 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 organisms 6. Methods of assessing the harmful effects of pollutants on the environment 7. Ethics in toxicological research Exercise issues 1. Experimental methods for assessing the toxic effects of compounds and their mixtures on living organisms according to OECD procedures. 2. Dose-effect relationship, methods of expressing doses of substances, dose conversion (LC50, LD50, NOEC, LOEC).		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	report from the experimental part	51.0%	20.0%
	written exam with test and open questions regarding the experimental part	51.0%	30.0%
	written exam with test and open questions covering material from lectures	51.0%	50.0%
Recommended reading	Basic literature 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.		

	Supplementary literature	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.
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Example issues/ example questions/ tasks being completed	not applicable	
Work placement	Not applicable	

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