



## Subject card

Subject name and code	Fundamentals of Environmental Protection, PG_00054683						
Field of study	Biotechnology						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
Education level	first-cycle 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	1	Language of instruction			Polish		
Semester of study	1	ECTS credits			1.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Analytical Chemistry -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Bożena Zabiegała					
	Teachers	prof. dr hab. inż. Bożena Zabiegała dr hab. inż. Mariusz Marć prof. dr hab. inż. Agata Kot-Wasik dr inż. Paweł Kubica					
Lesson types and methods of instruction	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	1.0		9.0		25
Subject objectives	To familiarize students with the basics of the issues related to the protection of the environment. Increase of the level of awareness regarding the environment.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_W12	The student knows and is able to describe the processes taking place in the troposphere and stratosphere. He is able to assess the impact of anthropogenic human activity on the elements of the environment. He understands the essence of climate change.			[SW1] Assessment of factual knowledge		
	K6_U12	The student can respond properly in the case of a threat in working environment and can apply safety rules, especially with regard to the risks associated with the direction of study.			[SU2] Assessment of ability to analyse information		
	K6_K05	The student is aware of the importance of any activity taken to reduce emissions of pollutants into the environment and the improvement of the environmental status			[SK5] Assessment of ability to solve problems that arise in practice		

Subject contents	Basic concepts and definitions of the wider knowledge of the environment. Circulation of matter in nature. Homeostasis. Classification of emission sources. Types of environmental pollution. Eutrophication of surface waters. The greenhouse effect. The ozone hole. Radioactive pollution. State of the environment in Poland - the level of air pollution, soil and foodstuffs. Toxicity and ecotoxicity of different groups of inorganic and organic pollutants. Methods of assessing the impact of ekotoksyn on living organisms and the abiotic part of the environment. Effect of the manufacturing processes of consumer goods on the quality of the environment. Sustainable development. Ways to prevent pollution of the environment: - restoring the natural balance of footing - the role of forests and protective garments; - closed water circuits. - The use of biotechnology in eliminating pollution of the environment. Environmental pollution monitoring systems. International conventions on environmental protection. Legislation and organization of environmental protection in Poland.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture - Credit based on the result of the test held during the last lecture	60.0%	100.0%
Recommended reading	Basic literature	1. A. Siedlecki, L. Gorgoń: Podstawowe procesy przemysłu chemicznego, PWN, Warszawa, 1985, rozdz. V. 2. A. Głowiak, E. Kempa, T. Winnicki, Podstawy ochrony środowiska, PWN, Warszawa 1989. 3. M. Ryng, Bezpieczeństwo techniczne w przemyśle chemicznym, WNT, Warszawa 1985. 4. Z. Przeździecki, Biologiczne skutki chemizacji środowiska, PWN, Warszawa, 1984. 5. E.J. Jasińska-Zubielewicz, Ergonomia. Toksykologia przemysłowa i środowiskowa. Wydawnictwa Politechniki Warszawskiej, Warszawa, 1988. 6. W. Hermanowicz, Chemia sanitarna, Arkady, Warszawa, 1984. 7. H. Remmert, Ekologia, PWRL, Warszawa, 1985.	
	Supplementary literature	1. R.F. Dasmann, J.P. Milton, P.H. Freeman, Ekologiczne podstawy rozwoju ekonomicznego. PWN, Warszawa, 1980. 2. J. Warych, Oczyszczanie przemysłowicy gazów odlotowych, WNT, Warszawa, 1988. 3. Environmental Science, praca zbiorowa (red. L. Ryden, P. Miguła, M. Andersson) The Baltic Sea University, Uppsala, 2003. 4. Zarys ekotoksykologii (praca zbiorowa pod redakcją J. Namieśnika i J. Jaśkowskiego) EKO-Pharma, Gdańsk, 1995. 5. Pestycydy. Występowanie, oznaczanie i unieszkodliwianie (praca zbiorowa pod redakcją prof. dr hab. inż. Marka Biziuka) Wydawnictwa Naukowo-Techniczne, Warszawa 2001.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Basic definitions related to environmental protection, e.g. sustainable development, ecosystem, biosphere, anthroposphere, anthropopressure.  Description of processes occurring in the environment, e.g. discussion of processes occurring in the stratosphere, troposphere, hydrosphere.  Explanation of the greenhouse effect phenomenon. Explanation of processes occurring in the atmosphere taking into account the scale: global, continental or local.		
Work placement	Not applicable		