University of Gdańsk

Subject card

Subject name and code	Analysis of polar pollution in the environment, PG_00121299		
Field of study	Environmental Protection		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	Master's studies	Subject group	Optional subject group
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	2.0
Learning profile	academic	Assessment form	credit
Conducting unit			
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. Jolanta Kumirska	
	Teachers	prof. dr hab. Jolanta Kumirska	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

E-learning hours included: 0.0

Additional information:

Lecture with multimedia presentation

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	5.0	15.0	50

Subject objectives

To introduce students with basic information about the types of polar environmental pollutants and their environmental fate.

To introduce students with the main problems related to the analysis of polar environmental pollutants and the most important techniques used in their analysis.

To develop the ability to independently select the appropriate analytical technique for a selected group of polar environmental pollutants.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[OŚMU2_K10] Has a need for continuous professional development.	Student has a need for continuous professional development, in particular in the field of polar environmental pollutants. Student is open to new solutions related to the analysis of these compounds.	[SK4] test/exam - oral or written [SK8] observation of student's independent or team work
[OŚMU2_K05] Critically assesses her/his own knowledge and the knowledge of the teams in which s/he works, can critically assess the content received.	Student knows international conventions on legal regulations regarding polar environmental pollutants.	[SK4] test/exam - oral or written
[OŚMU2_W05] Describes development directions and the latest discoveries in the field of scientific disciplines related to environmental protection.	Student knows the basic differences in analytical procedures for the determination of polar impurities of basic, acidic and amphoteric nature.	[SW4] test/exam - oral or written
[OŚMU2_W04] Chooses methods, techniques and research tools used in environmental protection.	Student characterizes the basic methods for determining the main polar environmental pollutants. Student knows the basic analytical methods used to analyze residues of pharmaceuticals used in medicine, veterinary drugs, and compounds formed as by-products in the water treatment process.	[SW4] test/exam - oral or written
[OŚMU2_W01] Describes complex phenomena and processes occurring in nature, including those related to the spread of anthropogenic pollution.	Studen knows the basic groups of polar environmental pollutants, sources of these pollutants and ways of spreading in the environment.	[SW4] test/exam - oral or written

Subject contents

Main polar environmental pollutants, sources of these pollutants and ways of spreading in the environment. Analytical methods used in the analysis of polar environmental pollutants. Basic differences in analytical procedures for the determination of polar impurities of basic, acidic and amphoteric nature. Analysis of residues of pharmaceuticals used in medicine in environmental matrices. Determination of veterinary drug residues. Assessment of the amount of herbicides and their metabolites, residues of aminopolycarboxylic complexing agents, amines and surfactants in environmental matrices. Determination of compounds formed as by-products in the water treatment process. Basic issues related to the assessment of the toxicity of polar compounds and the threats resulting from their presence in the environment. International conventions on legal regulation.

Prerequisites and co-requisites

lack

Convergent to: basic chemistry, organic chemistry, analytical chemistry

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
the sum of points from a written test covering the scope of material covered during lectures, including an assessment of the student's activity during classes (max. 10%).	51.0%	100.0%

Recommended reading

Basic literature	J. Namieśnik, W. Chrzanowski i P. Szpinek, 2003. Nowe horyzonty i wyzwania w analityce i monitoringu środowiskowym Centrum Doskonałości Analityki i Monitoringu Środowiskowego (CEERM), Gdańsk T. Reemtsma, M. Jekel, 2006. Organic Pollutions in the Water Cycle Properties, Occurrence, Analysis and Environmental Relevance of Polar Compounds. Wyd. WILEY-VCH Vergal GmbH&Co.KGaA, Weinheim. Current scientific publications on the analysis of polar environmental pollutants.
Supplementary literature	Diana S. Aga, 2008. Fate of Pharmaceuticals in the Environment and in Water Treatment Systems. Wyd. CRC Press Taylor & Francis Group, Boca Raton J. Namieślnik, Z. Jamrógiewicz, M. Pilarczyk, L. Torres, 2000. Przygotowanie próbek środowiskowych do analiz. Wyd. WNT W-wa R. Michalski, 2017. Analityka wód i ścieków wybrane zagadnienia. Wyd. Elamed, Polska.
eResources addresses	

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable

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