GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Environmental chemistry, PG_00057712		
Field of study	Green Technologies		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2023/2024
Education level	first-cycle studies	Subject group	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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department Of Inorganic Chemistry -> Faculty Of Chemistry -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Katarzyna Kazimierczuk	
	Teachers	dr hab. Katarzyna Kazimierczuk dr hab. inż. Rafał Grubba dr inż. Natalia Jatkowska dr inż. Ilona Kłosowska-Chomiczewska prof. dr hab. inż. Andrzej Wasik dr inż. Małgorzata Rutkowska dr inż. Tomasz Majchrzak prof. dr hab. inż. Bożena Zabiegała prof. dr hab. inż. Agata Kot-Wasik	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	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	60	10.0	55.0	125

Subject objectives	Familiarize students with the basics of chemical processes occurring in the natural environment, physical chemistry of the atmosphere, water and soil. Presentation of geochemical cycles of the most important elements in the environment. Familiarization with the most important environmental pollutants, their sources and methods of detection.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U04] capable of formulating and solving design tasks in the field of environmental technology to recognize their non-technical aspects, including environmental, economic and legal. Is capable of applying the principles of occupational health and safety. Is able to make initial assessment of engineering solutions and actions	The student notices nontechnical, including environmental, aspects of technologies used in environmental protection. Applies the principles of occupational health and safety.	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools
[K6_W03] has a basic knowledge of soil, air and water pollutants, design and supervision of environmentally friendly technologies and technologies which do not produce waste, knows technology of cleaning and neutralization of industrial waste and wastewater management, has a basic understanding of the theoretical basis of methods and types of apparatus used in chemical analysis of environmental pollutants	The student has basic knowledge in the field of soil, air and water protection against pollution and the theoretical basis of methods and types of apparatus used in the analysis of environmental pollution.	[SW1] Assessment of factual knowledge
[K6_W02] has a basic knowledge of chemistry including general chemistry, inorganic, organic, physical, analytical, including the knowledge necessary to describe and understand the phenomena and chemical processes occurring in the environment; measurement and the determination of the parameters of these processes.	The student has basic knowledge in the field of chemistry necessary to describe and understand phenomena and chemical processes occurring in the natural environment. Knows the basics of the methods used for measuring the level of environmental pollution.	[SW1] Assessment of factual knowledge

Subject contents

Atmospheric chemistry. Aquatic chemistry. Soil chemistry. Persistent organic pollutants in the environment. Carbon cycle. Nitrogen cycle. Phosphorus cycle. Oxygen and sulfur cycle. The role of the chemical elements in living organisms. Heavy metals and micronutrients. Environmental analytics. Methods of measuring the degree of pollution. Remote pollution measurement methods.

Prerequisites and co-requisites

Passed course of Inorganic Chemistry

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
written exam	60.0%	70.0%
laboratory reports	60.0%	30.0%

Recommended reading

Basic literature	Gary W van Loon and Stephen J Duffy, Environmental Chemistry, Oxford University Press
Supplementary literature	S. Manahan, Environmental Chemistry, CRC Press, 2009
eResources addresses	Adresy na platformie eNauczanie: 2023/24 Chemia Środowiska _dla_kierunku_Zielone Technologie_semestr_III - Moodle ID: 22449 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=22449

Example issues/ example questions/ tasks being completed

- Characterize photochemical smog.
- List alternative sources of phosphorus.
- Discuss the carbon cycle in nature.

Work placement

Not applicable

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