



Subject card

Subject name and code	, PG_00071161						
Field of study	Recycling and Energy Recovery						
Date of commencement of studies	October 2023	Academic year of realisation of subject				2025/2026	
Education level	first-cycle studies	Subject group					
Mode of study	Full-time studies	Mode of delivery				at the university	
Year of study	3	Language of instruction				Polish	
Semester of study	6	ECTS credits				2.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Department of Sanitary Engineering -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Grzegorz Boczkaj				
	Teachers		dr hab. inż. Grzegorz Boczkaj				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	0.0	0.0	0.0	10.0	30
	E-learning hours included: 0.0						
	eNauczanie source addresses: Moodle ID: 5078 Nowe zanieczyszczenia środowiska https://enauczanie.pg.edu.pl/2025/course/view.php?id=5078						
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		0.0		30
Subject objectives	The aim of this course is to present issues related to emerging environmental pollutants, such as microplastics and nanoplastics, PFAS compounds, pharmaceuticals, pesticides, odors, and other organic and inorganic compounds.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W05] analyzes practical issues in the field of recovery of raw materials and energy, using knowledge and understanding of: materials, devices and tools, processes and technologies.	The student analyzes practical issues in the field of raw materials and energy recovery, using knowledge and understanding of: materials, devices and tools, processes and technologies in the aspect of environmental pollution.			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation		
	[K6_W06] integrates and extracts data from multiple sources to analyze complex engineering and technology problems.	The student integrates and acquires data from multiple sources to analyze complex engineering and technological problems related to environmental pollution.			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation		
	[K6_U06] uses information technology to improve data analysis and design support.	The student applies information technology to improve data analysis and support design in the field of environmental pollution.			[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task		
	[K6_U07] creates solutions aimed at implementing legal regulations and managing raw materials/waste on the premises of the company, as well as organizing work in accordance with legal standards and health and safety regulations.	The student creates solutions aimed at implementing legal regulations and managing raw materials/waste on the enterprise premises, as well as organizing work in accordance with legal standards and health and safety regulations, taking into account the issue of environmental pollution.			[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		

Subject contents	<p>Course content – lecture</p> <p>Topics covered include:</p> <ul style="list-style-type: none"> - sources of pollutants, - their physicochemical characteristics and toxicity, - their occurrence in the environment, - techniques and methods for their identification and quantification, - techniques and methods for reducing their emission and degradation. 		
	<p>Course content – seminar</p> <p>An analysis of available information on the occurrence of pollutants and toxic substances in various elements of the environment and everyday life will be conducted. Methods for identifying them and minimizing their negative effects will also be discussed.</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written exam	60.0%	70.0%
	Seminar presentation	60.0%	30.0%
Recommended reading	Basic literature	<p>M. Vasanthi, V. Sivasankar, T. G. Sunitha, Organic Pollutants: Toxicity and Solutions, Springer 2022</p> <p>D. Barceló, Emerging Organic Contaminants and Human Health, Springer 2012</p> <p>F. G Calvo-Flores, J. Isac-García, J. A. Dobado, Emerging Pollutants: Origin, Structure and Properties, WileyVCH Verlag GmbH & Co. KGaA 2018</p>	
	Supplementary literature	Scientific publications, reports of environmental protection organizations.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Discussion of a selected environmental pollutant or group of pollutants in terms of sources of formation, toxicity, physicochemical characteristics, methods of determination, techniques/methods of degradation or removal from the environment.		
Practical activities within the subject	Not applicable		

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