



## Subject card

Subject name and code	Selected topics of Environmental Protection in Industry , PG_00066049						
Field of study	Engineering and Technologies of Energy Carriers						
Date of commencement of studies	February 2026		Academic year of realisation of subject		2026/2027		
Education level	second-cycle studies		Subject group		Optional subject group Humanistic-social subject group		
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		3.0		
Learning profile	practical profile		Assessment form		assessment		
Conducting unit	Department of Process Engineering and Chemical Technology -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Patrycja Makoś-Chelstowska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	0.0	30.0	0.0	0.0	50
	E-learning hours included: 0.0						
	eNauczanie source addresses: Moodle ID: 2872 25/26 Wybrane zagadnienia ochrony środowiska w przemyśle <a href="https://enauczanie.pg.edu.pl/2025/course/view.php?id=2872">https://enauczanie.pg.edu.pl/2025/course/view.php?id=2872</a>						
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	50		10.0		15.0	75
Subject objectives	Presentation of issues of environmental protection in relation to industry - in the field of applied technologies for environmental protection, monitoring of pollutant emissions as well as related to environmental impact assessment and related legal aspects.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_K05] is able to assess social problems related to the energy economy		The student is able to identify and analyze the impact of environmental protection technologies and renewable energy sources on society and the economy.		[SK5] Assessment of ability to solve problems that arise in practice		
	[K7_W04] explains the relationships in the life cycle of technical devices and the basic processes occurring in the life cycle of devices, objects and technical systems,		The student understands and is able to describe the life cycle of renewable energy technologies and their impact on the environment in various phases.		[SW3] Assessment of knowledge contained in written work and projects		
	[K7_U03] uses analytical, simulation and experimental methods of chemistry, physics and chemical engineering and technology to formulate and solve complex engineering tasks, including non-standard tasks, as well as simple research problems		The student is able to apply methods of analysing pollutant emissions and assessing the impact of technologies on the environment.		[SU4] Assessment of ability to use methods and tools		
	[K7_K02] is able to cooperate and work in a group, taking on different roles		The student actively participates in team-based analysis of environmental protection technologies and prepares a report.		[SK1] Assessment of group work skills		

Subject contents	Course content – lecture 1. Types of impact on environment and sources of environmental pollution in the industry 2. Physio-chemical basics of phenomena and technologies used for treatment of waste gases 3. Physio-chemical basics of phenomena and technologies used for treatment of water and wastewater 4. Remediation of polluted soils 5. Waste disposal and management 6. Review of legal acts related to environmental protection 7. Environmental management according to ISO 14001 8. Basics of environmental impact assessment 9. Production-integrated environmental protection in the chemical industry 10. A review of environmental aspects for selected industrial companies  Course content – laboratory 1)Technologies used in waste gas treatment 2) Water and wastewater treatment technologies 3) Remediation of contaminated soil 4) Waste disposal technologies 5) Visit to a waste disposal plant in Gdańsk for a practical introduction to the problem of odor nuisance and techniques for its identification		
Prerequisites and co-requisites	Knowledge about general, organic, inorganic, physical and analytical chemistry as well as physics.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written test	60.0%	60.0%
	Rating from the laboratory	60.0%	40.0%
Recommended reading	Basic literature	C. Christ (ed.), Production-integrated environmental protection and waste management in the chemical industry, WILEY-VCH, 1999  J.A. Tomaszek, P. Koszelnik, Progress in environmental engineering, CRC press, 2015  Standard ISO 14001  Legal acts related to environmental protection	
	Supplementary literature	Scientific publications related to the subject.  Reports of environmental impact assesment.  Environmental reports.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Phytoremediation: Definition, Mechanisms (e.g., Phytoextraction) Principles of Operation, Examples Factors Influencing the Selection of Soil Remediation Methods Gas Stream Deodorization Methods: Fundamental Concepts, Comparative Analysis in Terms of Cost, Gas Flow Rate, and Efficiency Biological Methods for Gas Purification Methods for Cleaning Exhaust Gases (Types, Principles of Operation, Efficiency) Environmental Protection Strategies in Industry Cleaner Production: Definition, Core Principles, and Main Assumptions Best Available Techniques (BAT): Definition, Core Principles, and Main Assumptions Physical Methods of Wastewater Treatment Objectives, Techniques, and Efficiency Chemical Methods of Wastewater Treatment Objectives, Techniques, and Efficiency (Coagulation, Flocculation, Advanced Oxidation of Contaminants) Biological Methods of Wastewater Treatment Aerobic and Anaerobic Processes		
Practical activites within the subject	Not applicable		

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