



Subject card

Subject name and code	Climate and environmental challenges in today's world, PG_00069297						
Field of study	Chemical Technology						
Date of commencement of studies	February 2025		Academic year of realisation of subject		2025/2026		
Education level	second-cycle studies		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	general academic profile		Assessment form		assessment		
Conducting unit	Department of Energy Conversion and Storage -> Faculty of Chemistry -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Anna Dettlaff				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	15.0	45
	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	45		5.0		25.0	75
Subject objectives	To introduce students to the main climate and environmental threats and the role of science in their analysis, monitoring and prevention. The course emphasises the interdisciplinary nature of the challenges and the responsibility of engineers in designing environmentally friendly technologies.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W06] integrates knowledge from different disciplines, principles of intellectual property protection and patent law, relevant for appropriate interpretation and application in scientific, sustainable economic activities		The student integrates interdisciplinary knowledge in the fields of natural sciences, engineering and social sciences in order to properly interpret environmental and climatic processes, taking into account current legal regulations, intellectual property protection and the results of contemporary scientific research.		[SW1] Assessment of factual knowledge		
	[K7_U03] designs innovative technological solutions for obtaining useful goods based on the state of the knowledge in accordance with the latest scientific literature		The student is able to design innovative, sustainable technological solutions (e.g. environmental monitoring systems, water purification technologies, emission reduction strategies) using modern research tools and scientific data.		[SU3] Assessment of ability to use knowledge gained from the subject		
	[K7_K02] understands the non-technical aspects and implications of graduate activity, including the impact on the environment		Identifies and interprets key global and local environmental challenges (such as the presence of hazardous chemicals, climate change, biodiversity loss, water scarcity) and understands their social, ecological and technological consequences.		[SK5] Assessment of ability to solve problems that arise in practice		

Subject contents	Topics covered in lectures, the project, and the seminar: <ol style="list-style-type: none">1. Global and local environmental challenges2. Hazardous chemical substances in the environment (PFAS so-called forever chemicals, microplastics, and others)3. Environmental monitoring (including electrochemical sensors)4. Fundamentals of the Earths climate system (natural and anthropogenic factors influencing the climate, evidence and mechanisms of climate change)5. Biodiversity loss and land use change (urbanization pressure, habitat fragmentation, invasive species, deforestation, and others)6. Water as a strategic resource (eutrophication, water purification technologies)7. The future of the environment and the role of engineers in the transition toward sustainable development														
Prerequisites and co-requisites															
Assessment methods and criteria	<table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Seminar</td><td>50.0%</td><td>30.0%</td></tr><tr><td>Project</td><td>50.0%</td><td>30.0%</td></tr><tr><td>Lecture written exam</td><td>50.0%</td><td>40.0%</td></tr></table>	Subject passing criteria	Passing threshold	Percentage of the final grade	Seminar	50.0%	30.0%	Project	50.0%	30.0%	Lecture written exam	50.0%	40.0%		
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Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none">1. What are the sources and types of microplastics?2. What are the causes of biodiversity loss?3. What is climate change mitigation?														
Work placement	Not applicable														

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