



Subject card

Subject name and code	SCIENTIFIC APPROACH TO CLIMATE CHANGE, PG_00064333						
Field of study	Chemical Technology						
Date of commencement of studies	February 2027		Academic year of realisation of subject		2026/2027		
Education level	second-cycle studies		Subject group		Optional subject group Specialty subject group Subject group related to scientific research in the field of study		
Mode of study	Full-time studies		Mode of delivery		blended-learning		
Year of study	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Energy Conversion and Storage -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Anna Dettlaff				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	0.0	30
	E-learning hours included: 14.0						
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	30		2.0		18.0	50
Subject objectives	The aim of the course is to provide students with a comprehensive understanding of the scientific aspects involved in climate change issues.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_U03] designs innovative technological solutions for obtaining useful goods based on the state of the knowledge in accordance with the latest scientific literature		is able to use knowledge about the impact of human activity on the greenhouse effect to design and implement measures to reduce its intensity.		[SU3] Assessment of ability to use knowledge gained from the subject		
	[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		has the knowledge to search for, select, and critically analyze available sources of information on climate change and interpret them creatively.		[SW1] Assessment of factual knowledge		
	[K7_K02] understands the non-technical aspects and implications of graduate activity, including the impact on the environment		is aware of the environmental, social and economic consequences of climate change and understands the need to design technologies in accordance with sustainable development principles.		[SK1] Assessment of group work skills		

Subject contents	Course content – lecture 1. Concept of the greenhouse effect. Solar radiation and its laws. 2. Scientific methods for assessing and monitoring climate change (homogenisation of temperature data, ocean temperature measurements, palaeoclimatology). 3. Historical and current climate change. 4. Carbon cycle in nature: fast and slow carbon cycle (carbon thermostat, inorganic carbon in the oceans). 5. Mechanisms and feedbacks controlling climate change 6. Natural and anthropogenic causes of climate change. Impact of technological development on climate. 7. Consequences of climate change on the environment. 8. Scenarios of changes in temperature, sea level, precipitation. Climate models. Reports		
	Course content – project 1. Climate myths and greenwashing 2. Climate change mitigation 3. Social aspects of climate change 4. Climate decision-making in practice		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Realization of the project	50.0%	50.0%
	Lecture - test	60.0%	50.0%
Recommended reading	Basic literature	Klugmann-Radziemska E., Lewandowski W., Wilamowska-Zawłocka M., Dettlaff A., Januszewicz K., Ryms M., Kuczyńska-Łażewska A., Energetyka i ochrona środowiska. Generowanie i magazynowanie energii. Odpady energetyczne. Analiza cyklu życia, PWN, 2023 Popkiewicz M., Kardaś A., Malinowski S., Nauka o Klimacie, Wydawnictwo Nieoczywiste, 2021	
	Supplementary literature	M. Budziszewska, A. Kardaś, Z. Bohdanowicz, Klimatyczne ABC. Interdyscyplinarne podstawy współczesnej wiedzy o zmianie klimatu, Wydawnictwa Uniwersytetu Warszawskiego, 2023	
	eResources addresses		
Example issues/ example questions/ tasks being completed	How can the study of elemental isotopes give information about past climate?What feedbacks do you know that control the Earth's climate?What are Milanković cycles? What do they influence?		
Practical activites within the subject	Not applicable		

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