GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	SCIENTIFIC APPROACH TO CLIMATE CHANGE, PG_00064333		
Field of study	Chemical Technology		
Date of commencement of studies	February 2025	Academic year of realisation of subject	2024/2025
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	at the university
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		
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	0.0	30
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	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	The student has advanced knowledge of the impact of human activities on the aggravation of the greenhouse effect and is able to apply solutions to mitigate them.	[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	Students will be able to search, select and critically analyse 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	The student 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

<table>
<tr><td>Subject contents</td><td>LECTURE
1. Concept of the greenhouse effect. Earth's energy balance. 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.

PROJECT
Tackling climate change. Climate myths. Report of the Intergovernmental Panel on Climate Change.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Project</td><td>40.0%</td><td>40.0%</td></tr>
<tr><td>Test</td><td>60.0%</td><td>60.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>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</td></tr>
<tr><td>Supplementary literature</td><td>M. Budziszewska, A. Kardaś, Z. Bohdanowicz, Klimatyczne ABC. Interdyscyplinarne podstawy współczesnej wiedzy o zmianie klimatu, Wydawnictwa Uniwersytetu Warszawskiego, 2023</td></tr>
<tr><td>eResources addresses</td><td>Uzupełniające
Adresy na platformie eNauczanie:</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>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?</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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