



Subject card

Subject name and code	Climate change and extreme weather, PG_00058843						
Field of study	Environmental Engineering						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2025/2026		
Education level	first-cycle studies		Subject group		Optional 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	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 Geotechnical and Hydraulic Engineering -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Patrycja Mikos-Studnicka				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
	Additional information: Lectures and tutorials.						
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		4.0		20.0	54
Subject objectives	Getting basic knowledge about climate and climate change. Recognizing meteorological processes, factors influencing climate and climate change. Determining correlation between urbanization and climate change, and the environment and climate change. Gaining knowledge about ways to adapt to climate change.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U01] has the ability to self-education, can obtain information from literature, databases and other sources, uses information technology, Internet resources; can integrate the obtained information, make their interpretation, as well as draw conclusions and formulate and justify opinions	The student is able to use climate databases and interpret the analyzed data. Understands how climate information is presented.	[SU4] Assessment of ability to use methods and tools
	[K6_U16] can, when formulating and solving engineering tasks in environmental engineering, evaluate, select and apply appropriate methods and tools, recognize their non-technical aspects, including environmental, economic and legal aspects	The student is able to indicate methods of adaptation to climate change, is able to indicate solutions for mitigating climate change. Understands the economic and legal aspects of implementing solutions for adaptation to climate change.	[SU3] Assessment of ability to use knowledge gained from the subject
	[K6_K02] understands the need to formulate and communicate to the public information and opinions on the achievements of environmental engineering and other aspects of the sanitary industry engineer's activity; is aware of the importance and understands the non-technical aspects and effects of engineering activities; makes efforts to provide such information and opinions in a widely understandable way, presenting different points of view	The student understands the need for social involvement in climate change adaptation actions. He can understand the different positions of the parties involved in climate change adaptation.	[SK1] Assessment of group work skills
	K6_W12	The student knows and understands meteorological processes and factors that shape climate. He can indicate the causes of climate change, and can determine their impact on humans and the environment.	[SW1] Assessment of factual knowledge
Subject contents	<p>Course content – lecture</p> <ol style="list-style-type: none"> 1. Introduction, rules of assessment, climate introduction 2. The Earth's climate system, facts and myths, forcing and feedback, carbon cycle 3. Climate extremes 4. Climate change, how to recognize it, change indicators 5. The Arctic - an early warning system and climate change research laboratory 6. Emerging environmental pollutants and climate change and extreme phenomena 7. Climate mosaic in groups as an exercise 8. Climate change in urban areas 9. Climate scenarios 10. Climate models 11. Mutual influence of climate change and plants 12. Impact of climate change and extreme phenomena on the economy 		
Prerequisites and co-requisites	Basic knowledge of geography and physics at secondary school level		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Tasks to do at home	100.0%	20.0%
	final test	60.0%	80.0%

Recommended reading	Basic literature	<p>1. Budziszewska M., A. Kardaś, Z. Bohdanowicz, Climate ABC. Interdisciplinary foundations of contemporary knowledge on climate change</p> <p>2. Adaptation handbook for cities. Guidelines for preparing the Municipal Adaptation Plan to climate change - update 2023</p> <p>3. ATLAS of the effects of EXTREME PHENOMENA IN POLAND (2001-2019)</p> <p>4. KLIMADA 2.0 Knowledge base on climate change and adaptation to its effects and channels for its dissemination in the context of increasing the resilience of the economy, environment and society to climate change and counteracting and minimizing the effects of extraordinary threats</p>
	Supplementary literature	<p>1. Newton D.E., The Climate Change Debate: A Reference Handbook, ABC-CLIO 2020</p> <p>2. Falarz M., (red), 2021 Climate Change in Poland. Past, Present, Future, Springer</p> <p>3. Martyn D., 2000, Climates of the globe, PWN</p>
	eResources addresses	<p>Supplementary</p> <p>https://klimada2.ios.gov.pl/files/2023/Atlas_skutkow_zjawisk_ekstremalnych_w_Polsce.pdf - ATLAS of the effects of EXTREME PHENOMENA IN POLAND (2001-2019)</p>
Example issues/ example questions/ tasks being completed	<p>1. Climate diagram analysis</p> <p>2. Time series trend analysis</p> <p>3. Analysis of the city's adaptation potential</p>	
Practical activities within the subject	Not applicable	

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