



UNIwersYTET
IM. ADAMA MICKIEWICZA
W POZNANIU

Anthropogenic climate change

Educational subject description sheet

Basic information

Study programme Geohazards and Climate Change		Didactic cycle 2024/25
Speciality -		Subject code 07GCCS.22P.02871.24
Organizational unit Faculty of Geographical and Geological Sciences		Lecture languages English
Study level Second-cycle programme		Course type Elective
Study form Full-time		Block Basic subjects
Education profile General academic		
Subject coordinator	Leszek Kolendowicz	
Lecturer	Leszek Kolendowicz, Bartosz Czernecki	
Period Semester 2	Activities and hours • Lecture: 15, Graded credit	Number of ECTS points 2

Goals

Code	Goal
C1	Transfer of detailed knowledge at the university level regarding the geoecosystem of the Earth, with with particular emphasis on changes in the energy balance of the atmosphere.
C2	Presentation of historical, contemporary and scenario effects of climate change caused by natural and anthropogenic factors.

Entry requirements

Confirmed knowledge and skills implemented in high school and at the bachelor level.

Subject learning outcomes

Code	Outcomes in terms of	Learning outcomes	Examination methods
Knowledge - Student:			
W1	understands and classifies manifestations of globalization processes, such as global changes environment and their impact on the ecological situation, natural and socio-economic regions and countries;	GCC_K2_W01, GCC_K2_W02, GCC_K2_W06, GCC_K2_W08, GCC_K2_W15, GCC_K2_W17, GCC_K2_W18	Written colloquium
W2	knows conflicts between natural and socio-cultural components of the Earth's landscape shell and thoroughly explains the reasons for their occurrence and optimal ways to solve them;	GCC_K2_W01, GCC_K2_W02, GCC_K2_W06, GCC_K2_W08, GCC_K2_W15, GCC_K2_W17, GCC_K2_W18	Written colloquium
W3	understands the need for forecasting (modelling) changes in the natural environment in terms of planned human activity;	GCC_K2_W01, GCC_K2_W02, GCC_K2_W06, GCC_K2_W08, GCC_K2_W15, GCC_K2_W17, GCC_K2_W18	Written colloquium
W4	knows environmental problems caused by anthropopressure.	GCC_K2_W01, GCC_K2_W02, GCC_K2_W06, GCC_K2_W08, GCC_K2_W15, GCC_K2_W17, GCC_K2_W18	Written colloquium
Skills - Student:			
U1	has the skills to use both the conceptual apparatus and methods of climate change analysis and the processes that cause them;	GCC_K2_U01, GCC_K2_U02, GCC_K2_U05, GCC_K2_U14	Written colloquium
U2	describes the world by explaining the causes of components differentiation of the natural environment and sociocultural and economic phenomena.	GCC_K2_U01, GCC_K2_U02, GCC_K2_U05, GCC_K2_U14	Written colloquium
Social competences - Student:			
K1	is aware of biodiversity and geodiversity and knows the need to apply rules of conduct based on feeling responsible for the state of ecosystems and resources earth.	GCC_K2_K01, GCC_K2_K02	Written colloquium

Study content

No.	Course content	Subject learning outcomes	Activities
1.	Building the atmosphere. The importance of energy streams in shaping the Earth's climate. 0-dimensional model energy balance.	W1, W2, W3, W4, U1, U2, K1	Lecture
2.	The importance of greenhouse gases in the radiation balance, the lifetime of greenhouse gases and their global warming potential.	W1, W2, W3, W4, U1, U2, K1	Lecture
3.	The carbon cycle in nature and its importance for the operation of the climate system.	W1, W2, W3, W4, U1, U2, K1	Lecture
4.	Models used for climatic projection and reconstruction. Climate change scenarios. IPCC Reports.	W1, W2, W3, W4, U1, U2, K1	Lecture
5.	The currently observed effects of climate change on the regional and global scale. Attribution of extreme phenomena to climate change. Consequences and possibilities counteracting contemporary climate change.	W1, W2, W3, W4, U1, U2, K1	Lecture
6.	Mechanisms of global climate policy against the background of sociological, business and political aspects.	W1, W2, W3, W4, U1, U2, K1	Lecture

Additional information

Activities	Teaching and learning methods and activities
Lecture	Lecture with a multimedia presentation of selected issues

Activities	Credit conditions
Lecture	<p>The final grade is the result obtained from the written test.</p> <p>Grading scale:</p> <ol style="list-style-type: none"> 1. very good (5.0) - from 90% of points, 2. good plus (4.5) - from 80% of points, 3. good (4.0) - from 70% of points, 4. sufficient plus (3.5) - from 60% of points, 5. satisfactory (3.0) - from 50% of points, 6. unsatisfactory (2.0) - below 50% of points.

Literature

Obligatory

1. IPCC climate change report 2022 https://report.ipcc.ch/ar6/wg2/IPCC_AR6_WGII_FullReport.pdf

Optional

1. Oreskes N., Conway E., 2011, Merchants of doubt, Bloomsbury Publishing USA

Calculation of ECTS points

Activities	Activity hours*
Lecture	15

Preparation for the assessment	20
Reading the indicated literature	20
Student workload	Hours 55
Number of ECTS points	ECTS 2

* academic hour = 45 minutes

Efekty uczenia się dla kierunku

Kod	Treść
GCC_K2_K01	The graduate is ready to implement and popularize actions serving the environmental protection
GCC_K2_K02	The graduate is ready to identify the influence of environmental processes onto the socio-economic processes, and also influence of anthropogenic activities onto the various components of the natural environment in various timescales
GCC_K2_U01	The graduate can vary between natural and anthropogenic causes of climate change and associated environmental changes and geohazards
GCC_K2_U02	The graduate can critically assess future climate change scenarios and associated environmental changes and geohazards
GCC_K2_U05	The graduate can an extended degree use the scientific terminology and vocabulary, read the advanced scientific literature with understanding
GCC_K2_U14	The graduate can describe in extended degree environmental components and their relationships
GCC_K2_W01	The graduate knows and understands thoroughly, the processes operating in the natural environment, their causes, mechanisms, consequences and associated geohazards
GCC_K2_W02	The graduate knows and understands thoroughly, climate functioning and mechanisms of atmospheric processes and the anthropogenic influence on the climate
GCC_K2_W06	The graduate knows and understands thoroughly climatic changeability in various time-scales (yearly, decadal, centennial and millennial) and its causes
GCC_K2_W08	The graduate knows and understands thoroughly, the influence of the climate change, extreme environmental events and geohazards on the socio-economic processes
GCC_K2_W15	The graduate knows and understands advanced vocabulary associated with climate change, natural environment and geohazards
GCC_K2_W17	The graduate knows and understands thoroughly, the literature in the field of climate change, geohazards as well as basic environmental and social research
GCC_K2_W18	The graduate knows and understands thoroughly, the most up to date trends in science and implementation of the newest scientific achievements in studies field