Adaptation in the time of sea-level rise

Educational subject description sheet

Basic information

Study programme Geohazards and Climate Change **Speciality** - **Organizational unit** Faculty of Geographical and Geological Sciences **Study level** Second-cycle programme **Study form** Full-time **Education profile** General academic	**Didactic cycle** 2023/24 **Subject code** 07GCCS.28P.02887.23 **Lecture languages** English **Course type** Elective **Block** Basic subjects

Subject coordinator	Karolina Leszczyńska
Lecturer	Karolina Leszczyńska

Period	**Activities and hours**	**Number of ECTS points**
Semester 4	• Lecture: 15, Graded credit	2

Goals

Code	Goal
C1	The aim of the course is to present the basic knowledge on the sea-level changes, their factors, causes and consequences. Student will be able to critically read and asses the sources of information on the sea-level change.

Entry requirements

Student has the basic knowledge in the field of Earth sciences.

Subject learning outcomes

Code	Outcomes in terms of	Learning outcomes	Examination methods
Knowledge – Student:			
W1	understands the mechanisms of short-term (seasonal and decadal) and long-term sea-level changes;	GCC_K2_W01, GCC_K2_W09	Project
W2	based on historical and contemporary examples knows what are the consequences of the sea-level change to human civilization;	GCC_K2_W08, GCC_K2_W09	Project
W3	based on historical and contemporary examples knows what are the local, regional and global adaptation strategies and what are the challenges in their implementation.	GCC_K2_W08, GCC_K2_W09	Project
Skills – Student:			
U1	defines and explains the seal-level change;	GCC_K2_U14	Project
U2	differentiates and characterises the global and regional sea-level rise;	GCC_K2_U14	Project
U3	enumerates and explains factors of the sea-level rise;	GCC_K2_U14	Project
U4	identifies what are the consequences of the sea-level rise on local, reginal and global society;	GCC_K2_U13, GCC_K2_U14	Project
U5	identifies possible adaptation strategies of local, regional and global society to sea-level change.	GCC_K2_U06, GCC_K2_U13, GCC_K2_U14	Project
Social competences – Student:			
K1	is prepared and has the intellectual tools to discuss the causes and effects/consequences of the global and regional sea-level rise on the local, regional and global society.	GCC_K2_K02, GCC_K2_K03, GCC_K2_K05, GCC_K2_K06, GCC_K2_K07	Project

Study content

No.	Course content	Subject learning outcomes	Activities
1.	The mechanisms of and differences between the short-term (seasonal, annual to decadal) and long term sea-level as well as regional and global SLR will be presented.	W1, U1, U2, U3	Lecture
2.	Various factors contributing to the SLR such as thermal expansion, non-polar glaciers, Greenland and Antarctica and mass exchange will be discussed.	W1, U1, U2, U3	Lecture
3.	The effects and threats for the local, reginal and global society associated with the changing sea-level will be presented and discussed.	W2, U4, K1	Lecture
4.	The examples of historical and contemporary influence of sea-level change on the local, regional and global society will be presented and the strategies for adaptation will be discussed.	W2, W3, U4, U5, K1	Lecture

Additional information

Activities	Teaching and learning methods and activities
Lecture	Lecture with a multimedia presentation of selected issues, Problem-based lecture, Discussion

Activities	Credit conditions
Lecture	Final grade is the result obtained from the assessment of the project prepared by the student - the case study of the adaptation of local community to sea-level change (100% of the assessment). Grading scale: 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. Shukla, P.R. et al. Eds., IPCC, 2019: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems. (selected fragments)
2. Warrick, R. A. 2009 Climate and sea-level change. (selected faragments)

Optional

1. Haigh, I. D., Marcos, M., Dangendorf, S., Calafat, F., eds. (2017). Sea Level Variability and Change. Lausanne: Frontiers Media. doi: 10.3389/978-2-88945-150-0

Calculation of ECTS points

Activities	Activity hours*
Lecture	15
Preparation of a project	20
Reading the indicated literature	15
Preparation for classes	5
Student workload	**Hours** 55
Number of ECTS points	**ECTS** 2

* academic hour = 45 minutes

Efekty uczenia się dla kierunku

Kod	Treść
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_K03	The graduate is ready to communicate, discuss and argue burning issues, hazards and problems associated with the climate, climate and environment changes for wider, non-scientific audience
GCC_K2_K05	The graduate is ready to prioritize in order to successfully complete of the task
GCC_K2_K06	The graduate is ready to think and act creatively
GCC_K2_K07	The graduate is ready to undertake the cooperation within the crisis management teams and solve the conflicts
GCC_K2_U06	The graduate can critically assess the sources of information on climate and environmental change and associated geohazards
GCC_K2_U13	The graduate can use in practice the environmental management principles leading to improvement of quality of life
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_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_W09	The graduate knows and understands thoroughly, relationship between climate and environmental change and necessity of formulation of the adaptation strategies