KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego

UNIA EUROPEJSKA
EUROPEJSKI FUNDUSZ SPOŁECZNY

Course title	ECTS code
Polar ecosystems	not defined

Name of unit administrating study

null

Studies

faculty	field of study		
Faculty of Biology	Medical Biology	type	first tier studies (BA), second tier studies (MA)
		form	full-time
		specialty	all
		specialization	all
Faculty of Biology	Biology	type	first tier studies (BA), second tier studies (MA)
		form	full-time
		specialty	all
		specialization	all
Faculty of Biology	Genetics and Experimental Biology	type	first tier studies (BA)
		form	full-time
		specialty	all
		specialization	all
Faculty of Biology	Natural Resources Conservation	type	first tier studies (BA)
		form	full-time
		specialty	all
		specialization	all

Teaching staff

dr Katarzyna Zmudczyńska-Skarbek; dr hab. Katarzyna Wojczulanis-Jakubas; dr Dorota Kidawa; dr hab. Wojciech Pokora, profesor uczelni; dr Adrian Zwolicki, profesor uczelni; prof. dr hab. Dariusz Jakubas

Forms of classes, the realization and number of hours

Forms of classes

Lecture

The realization of activities

classroom instruction, online classes

Number of hours

Lecture: 30 hours

ECTS credits

2
WORKING HOURS ASSESSMENT
Working with a lecturer:
- participation in the lectures: 30 h
- consultations: 2 h

Student's independent work:
- preparation for seminars/discussion: 9 h
- preparation for the exam: 9 h

TOTAL: 50 h

The academic cycle

2022/2023 winter semester

Type of course

an elective course

Language of instruction

english

Teaching methods

- discussion
- lecture
- multimedia-based lecture
- text analysis and discussion

Form and method of assessment and basic criteria for eveluation or examination requirements

Final evaluation

Graded credit

Assessment methods

- written exam (test)
- The final grade is increased by 0.5 or 1 if the student's participation in the seminars / discussions was active or very active (respectively).

The basic criteria for evaluation

	• passing the test • activity in seminars/discussions The final grade is increased by 0.5 or 1 if the student's participation in the seminars / discussions was active or very active (respectively).

Method of verifying required learning outcomes

Required courses and introductory requirements

A. Formal requirements

N/A

B. Prerequisites

Basic knowledge in ecology and biogeography

Aims of education

1. Understanding the basics of polar ecosystems.
2. Characterization of polar terrestrial, freshwater, and marine habitats, including local flora and fauna.
3. Understanding the adaptations of polar organisms to climatic conditions.
4. Understanding the consequences of climate change and human impact for polar organisms.

Course contents

1. Definitions of polar regions
2. Abiotic factors in polar ecosystems (temperature, sunlight, precipitation, ocean currents)
3. Organisms' adaptations to functioning in polar regions
4. Terrestrial and freshwater habitats
5. Ice and snow habitats
6. Marine ecosystems (open oceans, sea ice, and marine benthos)
7. Birds and mammals
8. Nutrient sources and nutrient transfer between ecosystems (including the role of biotic vectors)
9. Climate change effects
10. Human impact (pollution, fishing, tourism etc.) and conservation

Bibliography of literature

A. Literature required for the final passing the exam:

A.1. Literature used during classes:

1. Thomas et al. 2008. The biology of Polar Regions. Oxford University Press
2. Thomas 2021. Arctic Ecology. Wiley Blackwell
3. Sakshaug E, Johnsen G, Kovacs K (eds) 2009. Ecosystem Barents Sea. Tapir Academic Press, Trondheim
4. CAFF 2013. Arctic Biodiversity Assessment. Status and trends in Arctic biodiversity. Conservation of Arctic Flora and Fauna, Akureyri
5. Peer-review articles on polar ecosystems, e.g.
   - Zwolicki A., Zmudczyńska-Skarbek K., Wietrzyk-Pełka P., Convey P. 2020. High Arctic Vegetation. Encyclopedia of the World's Biomes: 465-479 https://www.elsevier.com/books/encyclopedia-of-the-world-s-biomes/goldstein/978-0-12-816096-1
   - Jakubas D, Wojczulanis-Jakubas K, Iliszko LM, Kidawa D, Boehnke R, Błachowiak-Samołyk K, Stempniewicz L. 2020. Flexibility of little auks foraging in various oceanographic features in a changing Arctic. Scientific Reports, 10: 8283
   - Zmudczyńska-Skarbek K., Balazy P. 2017. Following the flow of ornithogenic nutrients through the Arctic marine coastal food webs. Journal of Marine Systems 168: 31–37
   - Zwolicki A., Zmudczyńska-Skarbek K., Richard P., Stempniewicz L. 2016. Importance of marine-derived nutrients supplied by planktivorous seabirds to High Arctic tundra plant communities. PLoS ONE, 11: e0154950. doi:10.1371/journal.pone.0154950

A.2. Literature studied independently by the student

Peer-review articles on polar ecosystems

B. Additional literature

Documentaries:

Frozen Planet, BBC, 2011

Little big auk, International Link Forest Film, 2013

The learning outcomes (for the field of study and specialization)	**Knowledge** The student: - understands the basic physiological processes and their link to organism's adaptation to changing environmental conditions (B_W04)

	- defines the basic rules and describes the mechanisms of life functioning at the levels of population, biocenosis and ecosystem as well as temporal and spatial determinants of biological diversity (B_W05) - knows the basic rules, methods and techniques for conducting field research in the natural environment and the possibilities of their use in nature protection (B_W15)
	Skills
	The student is able to: - synthesize data gained from various sources and make adequate conclusions on this basis (B_U05) - read and understand simple scientific biological texts in English (B_U06) - independently search and use available sources of biological information, including electronic sources (B_U07)
	Social competence
	The student: - is ready to evaluate her/his own knowledge and understands the need for constant learning and self-development and is open to new ideas (B_K01)
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