

Subject card

Subject name and code	Polar ecosystems, PG_00189317						
Field of study	Biology						
Date of commencement of studies	October 2025	Academic year of realisation of subject			2025/2026		
Education level	Master's studies	Subject group			Obligatory subject group in the field of study 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	1	Language of instruction			Polish Polish		
Semester of study	2	ECTS credits			1.0		
Learning profile	academic	Assessment form			credit		
Conducting unit	Laboratory of Vertebrate Ecology and Ethology -> Department of Vertebrate Ecology and Zoology -> Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Katarzyna Zmudczyńska-Skarbek				
	Teachers		dr Katarzyna Zmudczyńska-Skarbek				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	15.0	0.0	0.0	0.0	15
	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	15		2.0		8.0	25
Subject objectives	<ol style="list-style-type: none"> 1. Learning about the biogeography of polar ecosystems on Earth. 2. Understanding the basics of how polar ecosystems function. 3. Characterising/reviewing the fauna and flora of polar ecosystems. 4. Learning about the adaptations of polar organisms to climatic conditions. 5. Learning about the consequences of climate change for polar organisms. 						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BIOLMU2_K02] the graduate is ready to work effectively as a member of a team and to comply with the rules of teamwork and take responsibility for the tasks performed	actively participates in discussions on topics presented during classes, argues his/her point of view	[SK1] oral statement/conversation/discussion
	[BIOLMU2_U07] the graduate is able to critically confront biological information from a variety of sources and, on this basis, draw valid conclusions	is able to compare the results of research presented in scientific articles on the ecology of polar regions	[SU1] oral statement/conversation/discussion
	[BIOLMU2_W01] the graduate has an in-depth knowledge and understanding of natural phenomena and processes at different levels of complexity	understands the phenomena and processes occurring in polar ecosystems	[SW4] test/exam - oral or written
	[BIOLMU2_U02] the graduate is able to make proficient use of the scientific literature of the biological speciality studied	is able to analyse the results of research presented in scientific articles on the ecology of polar regions	[SU1] oral statement/conversation/discussion
[BIOLMU2_W04] the graduate has an in-depth knowledge of the chosen specialisation in the biological sciences	has knowledge of the functioning of terrestrial and marine ecosystems in polar regions	[SW4] test/exam - oral or written	
Subject contents	Biogeography of polar ecosystems (marine and terrestrial). Adaptations of plant and animal organisms to life in polar climates. Biodiversity of plant and animal organisms inhabiting polar regions. Microorganisms of polar regions. Arctic and Antarctic food webs. Sources of nutrients in polar regions. Pollution of polar regions and its consequences for organisms. Protection of biodiversity in polar regions. Consequences of climate change and anthropogenic pollution in polar regions.		
Prerequisites and co-requisites	Basic knowledge of ecology and biogeography. Knowledge of English sufficient to use the subject literature.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written assessment of the content presented during classes (multiple-choice test)	51.0%	100.0%
Recommended reading	Basic literature	1. Thomas et al. 2008. The biology of Polar Regions. Oxford University Press 2. Thomas 2021. Arctic Ecology. Wiley Blackwell 3. CAFF 2013. Arctic Biodiversity Assessment. Status and trends in Arctic biodiversity. Conservation of Arctic Flora and Fauna, Akureyri 4. Artykuły naukowe o tematyce polarnej, np. 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 Zmudczyńska-Skarbek K., Barcikowski M., Drobnik Sz.M., Gwiazdowicz D.J., Richard P., Skubała P., Stempniewicz L. 2017. Transfer of ornithogenic influence through different trophic levels of the Arctic terrestrial ecosystem of Bjørnøya (Bear Island), Svalbard. Soil Biology and Biochemistry 115: 475-489 Zmudczyńska-Skarbek K., Balazy P. 2017. Following the flow of ornithogenic nutrients through the Arctic marine coastal food webs. Journal of Marine Systems 168: 3137 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	
	Supplementary literature	Sakshaug E, Johnsen G, Kovacs (eds). 2009. Ecosystem Barents Sea. Tapir Academic Press, Trondheim	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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