

Subject card

Subject name and code	Polar ecosystems, PG_00207334						
Field of study	Biology						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2026/2027		
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		
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						
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	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_W04] has in-depth knowledge of the chosen specialization in the biological sciences		has knowledge of the functioning of terrestrial and marine ecosystems in polar regions		[SW4] test/exam - oral or written		
	[BIOLMU2_W01] has a deep knowledge and understanding of natural phenomena and processes at various levels of complexity		understands the phenomena and processes occurring in polar ecosystems		[SW4] test/exam - oral or written		
	[BIOLMU2_U07] is able to critically compare biological information from various sources and draw justified conclusions on this basis		is able to compare the results of research presented in scientific articles on the ecology of polar regions		[SU1] oral statement/conversation/discussion		
	[BIOLMU2_U02] is able to proficiently use 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_K02] is ready to work effectively as a team member and to comply with the rules of teamwork and take responsibility for the tasks carried out		actively participates in discussions on topics presented during classes, argues his/her point of view		[SK1] oral statement/conversation/discussion		

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-Pelka 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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