

Subject card

Subject name and code	The impact of climate change on living organisms, PG_00154758						
Field of study	Biology						
Date of commencement of studies	October 2024		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		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		English		
Semester of study	3		ECTS credits		2.0		
Learning profile	academic		Assessment form				
Conducting unit	Department of Vertebrate Ecology and Zoology -> Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Dariusz Jakubas				
	Teachers		prof. dr hab. Dariusz Jakubas				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	E-learning hours included: 0.0						
	Additional information: Lecture with a multimedia presentation.						
	Students' talks with multimedia presentation preceded by own work and consultations with the lecturer.						
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		33.0	50
Subject objectives	Understanding the direct and indirect effects of climate change on organisms. Knowledge of the environmental risks of climate change. To expand the knowledge of specialized scientific literature, and language used in scientific works. To acquire the ability to analyse review or experimental papers written in English and to improve presentation and discussion skills						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BIOLMU2_U02] the graduate is able to make proficient use of the scientific literature of the biological speciality studied	Ability of finding papers focused on climate change related research and presenting them	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report
	[BIOLMU2_U07] the graduate is able to critically confront biological information from a variety of sources and, on this basis, draw valid conclusions	Ability to find and select reliable knowledge, especially in internet resources	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report
	[BIOLMU2_U03] the graduate can critically analyse and select biological information, especially from electronic sources	Ability to find and select reliable knowledge, especially in internet resources	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report
	[BIOLMU2_W01] the graduate has an in-depth knowledge and understanding of natural phenomena and processes at different levels of complexity	Understanding the direct and indirect effects of climate change on organisms	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion [SW2] presentation/project/paper/report
	[BIOLMU2_W08] the graduate has an in-depth knowledge and understanding of the wealth of contemporary experimental approaches and techniques in the biological sciences and their use to solve the tasks at hand	Ability of finding papers focused on climate change related research and presenting them	[SW1] oral statement/conversation/discussion [SW2] presentation/project/paper/report
	[BIOLMU2_U10] the graduate is able to prepare oral presentations in Polish and foreign languages on specific subjects within the chosen specialisation	Ability of finding papers focused on climate change related research and presenting them	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report
	[BIOLMU2_W04] the graduate has an in-depth knowledge of the chosen specialisation in the biological sciences	Understanding the direct and indirect effects of climate change on organisms. Knowledge of the environmental risks of climate change.	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion [SW2] presentation/project/paper/report
	[BIOLMU2_W05] the graduate understands the dynamic development of the biological sciences and is familiar with new research directions and disciplines	Ability of finding papers focused on climate change related research and presenting them	[SW2] presentation/project/paper/report
	[BIOLMU2_W03] the graduate has an in-depth knowledge and understanding of research problems at the frontiers of biological sciences that require the use of advanced tools	Ability of finding papers focused on climate change related research and presenting them	[SW2] presentation/project/paper/report
	[BIOLMU2_W02] the graduate knows and applies the principle of strict, empirically based interpretation of biological phenomena and processes in research work and practical activities	Ability to find and select reliable knowledge, especially in internet resources	[SW1] oral statement/conversation/discussion [SW2] presentation/project/paper/report
	[BIOLMU2_U08] the graduate is able to present research work in the field of the selected specialisation of biological sciences using verbal communication means and multimedia	Ability of finding papers focused on climate change related research and presenting them	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report
	[BIOLMU2_K05] the graduate is prepared to use recognised sources of scientific and popular information in the biological sciences to further his or her knowledge	Ability to find and select reliable knowledge, especially in internet resources	[SK2] presentation/project/paper/report

Subject contents	climate as an environmental change agent;		
	direct and indirect effects of climate change on different groups of organisms,		
	effects of climate change on biodiversity; effects of climate change on the physiology of organisms;		
	environmental changes in different habitats; consequences of sea level change;		
	match-mismatch concept;		
	groups of organisms most vulnerable to climate change;		
	scenarios for further climate change		
Prerequisites and co-requisites	knowledge of the English language sufficient to allow easy reading of scientific texts		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	quality of the prepared multimedia presentation	51.0%	50.0%
	written assessment of the lecture part	51.0%	50.0%
Recommended reading	Basic literature	Pearce-Higgins, J. W., & Green, R. E. (2014). Birds and climate change: impacts and conservation responses. Cambridge University Press Simpkins,	
		Poloczanska, E. S., Burrows, M. T., Brown, C. J., García Molinos, J., Halpern, B. S., Hoegh-Guldberg, O., ... & Sydeman, W. J. (2016). Responses of marine organisms to climate change across oceans. <i>Frontiers in Marine Science</i> , 3, 180581.	
		Fiedler, W. (2009). Bird ecology as an indicator of climate and global change. In <i>Climate Change</i> (pp. 181-195). Elsevier.	
	Supplementary literature	papers searched by students for purpose of preparing presentations	
	eResources addresses	Basic https://science.nasa.gov/climate-change/ - From the unique vantage point in space, NASA collects critical long-term observations of our changing planet https://www.ncei.noaa.gov/monitoring - NCEI Monthly Climate Reports summarize recent conditions and events, with an emphasis on providing historical context. https://www.carbonbrief.org/science/ - Carbon Brief is a UK-based website covering the latest developments in climate science, climate policy and energy policy. https://www.ipcc.ch/ - The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change https://www.ncei.noaa.gov/access/monitoring/monthly-report/ - The State of the Climate is a collection of monthly summaries recapping climate-related occurrences on both a global and national scale.	
Example issues/ example questions/ tasks being completed	birds as indicators of climat change		
	match-mismach concept		
	direct and indirect consequences of climate change for living organisms		
Work placement	Not applicable		

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