

Subject card

Subject name and code	Life at the Bottom of the Sea - classes, PG_00201168						
Field of study	Marine Hydrography						
Date of commencement of studies	October 2027		Academic year of realisation of subject		2030/2031		
Education level	Bachelor'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	4		Language of instruction		Polish		
Semester of study	7		ECTS credits		1.0		
Learning profile	practical		Assessment form		credit		
Conducting unit	Laboratory of Ecophysiology and Bioenergetics -> Department of Marine Ecology -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Monika Normant-Saremba				
	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		1.0		9.0	25
Subject objectives	Developing knowledge about the interactions between organisms and the geological substrate, adaptations of animals to life on the seabed and threats caused by human activities.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[HML3-W02] knows and understands, at an advanced level, selected phenomena and processes occurring in the hydrosphere, atmosphere, lithosphere and biosphere, their interconnections and relations, as well as practical applications of this knowledge in professional activities related to the field of study		knows the basic principles of functioning of benthic organisms in seas and oceans and the possibilities of using this knowledge in professional activities related to the field of study		[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion		
	[HML3-U03] is able to recognise natural (including geological) and anthropogenic objects and link them to the processes leading to their formation		is able to recognize organisms living at the bottom of the sea and connect them with the biotopes inhabited		[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written		
	[HML3-W13] knows and understands global environmental problems resulting from the development of civilisation, in particular strong anthropopressure in the coastal regions of seas and oceans		knows the most important threats to organisms living at the bottom of the seas and oceans resulting from anthropogenic transformation of the environment and assesses its effects		[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report		

Subject contents	1. Organisms living on various types of substrate, with particular emphasis on the Baltic Sea and unique biotopes.		
	2. Adaptations of organisms to life at the bottom in the continental shelf and abyssal zone.		
	3. Methods of research on benthos in the marine environment.		
	4. The importance of the benthos for the ecosystem functioning and the human economy.		
	5. The impact of human activities on marine biodiversity, with particular emphasis on benthic communities.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Discussion	51.0%	10.0%
	Presentation	51.0%	30.0%
	Test	51.0%	60.0%
Recommended reading	Basic literature	Eleftheriou A., McIntyre A., 2005. Methods for the study of marine benthos, Blackwell Publishing.	
		Gray J. S., Elliott M., 2009. Ecology of Marine Sediments-from science to Management, Oxford University Press.	
		Szymczak Ewa (red.), 2020. Zaawansowane metody interdyscyplinarnych badań Morza Bałtyckiego: skrypt do zajęć dla studentów studiów magisterskich na kierunku Oceanografia. Praca zbiorowa, Gdańsk, Wydawnictwo Uniwersytetu Gdańskiego.	
	Supplementary literature	Bennun, L., van Bochove, J., Ng, C., Fletcher, C., Wilson, D., Phair, N., Carbone, G., 2021. Mitigating biodiversity impacts associated with solar and wind energy development. Guidelines for project developers. Gland, Switzerland: IUCN and Cambridge, UK: The Biodiversity Consultancy.	
		Gaston K.J., Spicer J. I., 2008. Biodiversity: An Introduction. 6th Edition, Blackwell Publishing.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Phytobenthos, zoobenthos, epibenthos, inbenthos, sessile and mobile benthos, reef-forming organisms, biofouling, bioturbation and bioirrigation, invasive and non-invasive studies of the qualitative and quantitative structure of the benthos, threats to seabed organisms: construction of underwater infrastructure, underwater noise, extraction of geological materials, carbon dioxide sequestration, underwater noise, eutrophication, acidification, introduction of invasive species.		
Work placement	Not applicable		

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