

Subject card

Subject name and code	Fundamentals of Sea Ecology, PG_00048404						
Field of study	Podstawy ekologii morza (Ćw. audytoryjne)						
Date of commencement of studies	October 2022	Academic year of realisation of subject				2024/2025	
Education level	Bachelor'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	3	Language of instruction				Polish	
Semester of study	5	ECTS credits				1.0	
Learning profile	academic	Assessment form				credit	
Conducting unit	Laboratory of Biosystematics and Ecology of Aquatic Invertebrates -> Department of Evolutionary Genetics and Biosystematics -> Faculty of Biology -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Anna Iglíkowska				
	Teachers		dr hab. Anna Iglíkowska				
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		0.0		0.0	15
Subject objectives	<ul style="list-style-type: none"> - providing basic knowledge on the functioning of marine ecosystems - understanding the mechanisms shaping selected ecological processes in seas and oceans - presenting the current state of knowledge regarding ecological problems and threats in the marine environment - indicating the importance of protecting the marine environment and its resources 						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[OZPL3_K08] The graduate is ready to systematically update his/her natural knowledge and to apply it in practice	- is able to conduct a critical discussion on the presented program content (O_K08); - understands the need to promote pro-ecological attitudes and behaviors (O_K08)	[SK1] wypowiedź ustna/rozmowa/ dyskusja [SK8] obserwacja samodzielnej lub zespołowej pracy studenta
	[OZPL3_U02] The graduate can read with comprehension scientific texts in the field of natural sciences in Polish and simple texts in English	- reads with understanding scientific texts on the ecology of the seas and oceans in Polish and simple texts in English (O_U02)	[SU1] wypowiedź ustna/rozmowa/ dyskusja [SU3] opracowanie tekstowe/ praca pisemna [SU8] obserwacja samodzielnej lub zespołowej pracy studenta
	[OZPL3_K05] The graduate is ready to understand the need to improve their own competences, update their knowledge and improve their skills	- feels the need to update knowledge on ecological problems of seas and oceans (O_K05) - recognizes the connection between sustainable exploitation of marine resources and ecosystem stability (O_K05)	[SK1] wypowiedź ustna/rozmowa/ dyskusja [SK8] obserwacja samodzielnej lub zespołowej pracy studenta
	[OZPL3_U11] The graduate is able to present in Polish and in a foreign language on specific issues in the field of biology during oral presentations	- characterizes individual ecosystems within the marine environment and notices differences between them (O_U11) - explains and understands the mechanisms of selected ecological processes in the seas and oceans (O_U11)	[SU1] wypowiedź ustna/rozmowa/ dyskusja [SU3] opracowanie tekstowe/ praca pisemna [SU4] test/egzamin - ustny lub pisemny
	[OZPL3_U07] The graduate is able to draw correct conclusions on the basis of analysis and synthesis of data from various sources	- interprets information about ecological changes in the marine environment and predicts their consequences for society (O_U07)	[SU1] wypowiedź ustna/rozmowa/ dyskusja [SU4] test/egzamin - ustny lub pisemny [SU8] obserwacja samodzielnej lub zespołowej pracy studenta
	[OZPL3_W07] The graduate has an advanced understanding of the methods and means of nature and environmental protection, including nature monitoring	- lists and describes procedures related to the protection of the marine environment and its resources (O_W07)	[SW4] test/egzamin - ustny lub pisemny [SW1] wypowiedź ustna/rozmowa/ dyskusja [SW2] prezentacja/projekt/referat/ raport
[OZPL3_W09] The graduate possesses an advanced comprehension of the current state of knowledge and the latest trends in biology, as well as their relationship to other natural disciplines	- supplements knowledge on current ecological problems and predicted changes in the marine environment (O_W09)	[SW4] test/egzamin - ustny lub pisemny [SW1] wypowiedź ustna/rozmowa/ dyskusja	
Subject contents	1. General characteristics of the marine environment. 2. Abiotic factors shaping the marine environment. Ocean Circulation. 3. Cycle of elements in the marine environment. 4. Primary and secondary production. 5. Characteristics of ecological zones of the oceans (estuaries, shelf, continental slope, pelagic and deep ocean floor). 6. Bottom sediments and benthic environment. 7. Ecology of the seas of the polar regions. 8. The impact of climate change and increased CO ₂ emissions on the marine environment. 9. Pollution of seawater. The problem of microplastics. 10. Protection of the marine environment. 11. Marine environment and society. Exploitation of marine resources.		
Prerequisites and co-requisites	To complete this course, it is necessary to pass following courses: Invertebrate Zoology, Plant and Animal Ecology.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	presentation (speech)	51.0%	10.0%
	essay	51.0%	10.0%
	final test	51.0%	50.0%
	test	51.0%	20.0%
	work card	51.0%	10.0%

Recommended reading	Basic literature	<p>Literature required to complete the course (pass the exam):</p> <ol style="list-style-type: none"> 1. Wolnomiejski, N., Pawlikowski, T. 2006. Zarys ekologii i ochrony mórz. Część 1. Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika. 2. Bolałek, J. 2016. Ochrona środowiska morskiego od teorii do praktyki. Wydawnictwo Uniwersytetu Gdańskiego. 3. Różańska, Z. 1999. Ekologia środowiska morskiego. Wydawnictwo ART. 4. Kaiser, M.J., Attrill, M.J., Jennings, S., Thomas, D. 2020. Marine Ecology Processes, Systems, and Impacts. Oxford University Press. 5. Duxbury, A.C., Duxbury, A.B., Sverdrup, K.A. 2002. Oceany Świata. Wydawnictwo PWN, Warszawa. 6. Selected scientific papers shared with students during the classes.
	Supplementary literature	<p>Additional literature:</p> <p>Iglikowska, A., Borszcz, T., Drewnik, A., Grabowska, M., Humphreys-Williams, E., Kędra, M., Krzemińska, M., Piwoni-Piórewicz, A., Kukliński, P. 2018. Mg and Sr in Arctic echinoderm calcite: Nature or nurture?. <i>Journal of Marine Systems</i> 180: 279-288</p>
	eResources addresses	

<p>Example issues/ example questions/ tasks being completed</p>	<p>Task 1. Which of the following factors and processes are influenced by the global transmission belt:</p> <ul style="list-style-type: none"> a) Climate formation b) Exchange of thermal and mechanical energy c) Distribution of marine plant and animal species d) Supply of nutrients that stimulate the development of phytoplankton e) All of the above. <p>Task 2. Thermocline is:</p> <ul style="list-style-type: none"> a) a layer of rapid change of density or potential density of water in seas and oceans b) a transitional layer of water in sea or ocean between less salty water above it and more salty below it. It is characterized by a large vertical salinity gradient c) a layer of water in which the temperature changes rapidly with increasing depth. <p>Task 3. Explain what the bioluminescence is:</p> <p>.....</p>
<p>Work placement</p>	<p>Not applicable</p>

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