University of Gdańsk

Subject card

Subject name and code	Fundamentals of Sea Ecology, PG_00103757		
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	
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 Iglikowska	
	Teachers	dr hab. Anna Iglikowska	

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
- 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
[BIOLL3_W15] the graduate knows and understands to an advanced degree the rules, methods and techniques of field research in the natural environment and the possibilities of their use in nature conservation	- lists and describes procedures related to the protection of the marine environment and its resources (B_W15)	[SW4] test/egzamin - ustny lub pisemny [SW1] wypowiedź ustna/rozmowa/ dyskusja [SW2] prezentacja/projekt/referat/ raport
[BIOLL3_W10] the graduate knows and understands to an advanced degree the development and current state of knowledge and the latest trends in biology, as well as their relationship with other natural disciplines	- supplements knowledge on current ecological problems and predicted changes in the marine environment (B_W10)	[SW4] test/egzamin - ustny lub pisemny [SW1] wypowiedź ustna/rozmowa/ dyskusja
[BIOLL3_W05] the graduate knows the rules and describes the mechanisms of life at the population, biocenosis and ecosystem levels, as well as the temporal and spatial determinants of biodiversity	- characterizes individual ecosystems within the marine environment and notices differences between them (B_W05) - identifies and explains mechanisms of selected ecological processes in the seas and oceans (B_W05)	[SW4] test/egzamin - ustny lub pisemny [SW1] wypowiedź ustna/rozmowa/ dyskusja [SW3] opracowanie tekstowe/ praca pisemna
[BIOLL3_U06] the graduate can read with understanding simple scientific biological texts 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 (B_U06)	[SU1] wypowiedź ustna/rozmowa/ dyskusja [SU3] opracowanie tekstowe/ praca pisemna [SU8] obserwacja samodzielnej lub zespołowej pracy studenta
[BIOLL3_U05] the graduate is able to synthesise data from a variety of sources and draw appropriate conclusions on this basis	- interprets information about ecological changes in the marine environment and predicts their consequences for society (B_U05)	[SU1] wypowiedź ustna/rozmowa/ dyskusja [SU4] test/egzamin - ustny lub pisemny [SU8] obserwacja samodzielnej lub zespołowej pracy studenta
[BIOLL3_K09] the graduate is ready to use the acquired knowledge to plan and design professional activities and to think and act in an entrepreneurial manner	- understands the need to promote pro-ecological attitudes and behaviors (B_K09)	[SK1] wypowiedź ustna/rozmowa/ dyskusja [SK8] obserwacja samodzielnej lub zespołowej pracy studenta
[BIOLL3_K02] the graduate is ready to critically self-assess his/ her own competence and update knowledge and improve skills	- feels the need to update knowledge on ecological problems of seas and oceans (B_K02) - recognizes the connection between sustainable exploitation of marine resources and ecosystem stability (B_K02) - is able to conduct a critical discussion on the presented program content (B_K02)	[SK1] wypowiedź ustna/rozmowa/ dyskusja [SK8] obserwacja samodzielnej lub zespołowej pracy studenta

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. 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 the following courses: Invertebrate Zoology and General Ecology.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
presentation (speech)	51.0%	10.0%
test	51.0%	20.0%
final test	51.0%	50.0%
work card	51.0%	10.0%
essay	51.0%	10.0%

Recommended reading	Basic literature	Literature required to complete the course (pass the exam): 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	Additional literature: 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?. Journal of Marine Systems 180: 279-288.
	eResources addresses	

Example issues/ example questions/ tasks being completed	Task 1. Which of the following factors and processes are influenced by the global transmission belt: 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. Task 2. Thermocline is: 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. Task 3. Explain what the bioluminescence is: .....
Work placement	Not applicable

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