University of Gdańsk

Subject card

Subject name and code	Fundamentals of Sea Ecology, PG_00154448		
Field of study	Biology		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2026/2027
Education level	undergraduate studies	Subject group	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	
Conducting unit	Pracownia Biosystematyki i Ekologii Bezkręgowców Wodnych -> Katedra Genetyki Ewolucyjnej i Biosystematyki -> Faculty of Biology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Anna Iglikowska	
	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

- 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_W05] The graduate knows the rules and describe the mechanisms of life at the population, biocenosis and ecosystem levels and the temporal and spatial determinants of biodiversity	- characterizes individual ecosystems within the marine environment and notices the differences between them (B_W05); - identifies and explains the mechanisms of selected ecological processes in seas and oceans (B_W05);	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW3] text preparation/written work
[BIOLL3_W10] The graduate is familiar with the development and current state of knowledge and the latest trends in biology, as well as their relationship with other natural disciplines	- updates knowledge regarding current ecological problems and expected changes in the marine environment (B_W10);	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
[BIOLL3_U06] The graduate can read with comprehension simple scientific biological texts in Polish and simple texts in English	- reads and understands scientific texts on ecology of seas and oceans in Polish and simple texts in English (B_U06);	[SU1] oral statement/conversation/ discussion [SU3] text preparation/written work [SU8] observation of student's independent or team work
[BIOLL3_U05] The graduate will be able to synthesise data from a variety of sources and draw appropriate conclusions	- interprets information about ecological changes in marine environment and predicts their consequences for society (B_U05);	[SU1] oral statement/conversation/ discussion [SU4] test/exam - oral or written [SU8] observation of student's independent or team work
[BIOLL3_W15] The graduate knows and understands 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/exam - oral or written [SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[BIOLL3_K02] The graduate is prepared to critically self-assess their own competences and to update and improve their knowledge and skills	- feels the need to update knowledge on ecological problems of seas and oceans (B_K02); - notices the connection between the sustainable exploitation of marine resources and stability of the ecosystem (B_K02); - is able to conduct a critical discussion on the presented course content (B_K02);	[SK1] oral statement/conversation/ discussion [SK8] observation of student's independent or team work
[BIOLL3_K09] The graduate will be able to use the knowledge acquired to plan and organise professional activities and to think and act in an entrepreneurial way	- understands the need to promote pro-ecological attitudes and behaviours (B_K09);	[SK1] oral statement/conversation/ discussion [SK8] observation of student's independent or team work

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
essay	51.0%	10.0%
work card	51.0%	10.0%
test	51.0%	20.0%
final test	51.0%	50.0%
presentation (speech)	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	Uzupełniające Adresy na platformie eNauczanie:

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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