University of Gdańsk

Subject card

Subject name and code	Barcoding of marine organisms, PG_00121044		
Field of study	Oceanography		
Date of commencement of studies	October 2025	Academic year of realisation of subject	2026/2027
Education level	Master'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	2	Language of instruction	English
Semester of study	3	ECTS credits	1.0
Learning profile	academic	Assessment form	credit
Conducting unit	Department of Marine Ecosystems Functioning -> Faculty of Oceanography and Geography -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Filip Pniewski	
	Teachers	dr Filip Pniewski	

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						

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	4.0	6.0	25

Subject objectives	The goal of the course is to familiarize students with the concept of barcoding and its application to the study of biodiversity of marine organisms.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[OCEANMU2-K04] is ready to critically evaluate his/her knowledge and received content in the field of natural sciences in in particular in the field of the studied specialty, a in problematic situations, supports oneself with knowledge experts	Student is ready to critically evaluate his/her knowledge and received content on the barcoding of marine organisms (curriculum content: 4-5)	[SK1] oral statement/conversation/ discussion
[OCEANMU2-W01] knows and understands in-depth specialized terminology used in oceanography and related sciences (in Polish and a selected foreign language)	Student knows and understands to a deeper degree specialized terminology (in Polish and English) in the field of molecular diversity of marine life (curriculum content: 1-5)	[SW1] oral statement/ conversation/discussion
[OCEANMU2-U04] is ready to develop in an analytical and synthetic way research and analysis results and based on them creating conclusions	Student is able to analytically and synthetically elaborate on the results of bioinformatic analyses, and on their basis, make correct inferences on species identification and species richness of marine organisms communities (curriculum content: 5)	[SU1] oral statement/conversation/ discussion [SU8] observation of student's independent or team work
[OCEANMU2-U08] is able to prepare a study of a given issue/ problem in Polish and a selected foreign language in written form (short scientific text, documented research work) and orally (paper, presentation) and discuss with specialists on topics related to oceanographic issues, with particular emphasis on the studied specialty	Student is able to present in English a study of a selected issue in an oral form (e.g., presentation) on the application of barcoding in practice and scientific research, as well as discuss various barcoding topics (curriculum content: A5)	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report
[OCEANMU2-W05] knows and understands the principles of planning and conducting field and laboratory research as well as advanced methods and tools of scientific research, especially in the field of the studied specialty	Student knows and understands to an in-depth degree the basic principles of planning and conducting research on biodiversity of marine organisms with particular emphasis on barcoding using mathematical, statistical and information technology tools (curriculum content: 2-3)	[SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report

Subject contents

1. The concept and basic terminology of barcoding of living organisms.
2. Basic molecular tools used in barcoding and bioinformatics data analysis.
3. Data interpretation - advantages and disadvantages of barcoding.
4. Barcoding in the study of biodiversity of marine organisms - case studies.
5. barcoding in practice.

Prerequisites and co-requisites

Knowledge of English at an intermediate level.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Active participation in the class	51.0%	100.0%

Recommended reading

Basic literature

1. Schander, C., Willassen, E. (2005). What can biological barcoding do for marine biology? Marine Biology Research, 1: 79-83.
2. Casiraghi, M., Labra, M., Ferri., E., Galimberti, A., Da Mattia, F. (2010). DNA barcoding: theoretical aspects and practical applications. In: Nimis
3. P. L., Vignes Lebbe R. (eds.). Tools for Identifying Biodiversity: Progress and Problems pp. 269-273.
4. Collins, R.A., Cruickshank, H.R. (2013). The seven deadly sins of DNA barcoding. Molecular ecology resources, 13: 969-975.3.
5. Tautz, D., Arctander, P., Minelli, A., Thomas, R.H., Vogler, A.P. (2003). A plea for DNA taxonomy. Trends in ecology and evolution, 18(2): 70-74.4.
6. Herbert, P.D.N., Cywinska, A., Ball, S.L., deWaard, J.R. (2003). Biological identifications through DNA barcodes. The Royal Society London B,
270: 313-321.

	Supplementary literature	1. Hobbs, C.,A.,D., Potts, R.W.A., Walsh, M.B., Usher, J., Griffiths, A.M. (2019). Using DNA barcoding to investigare pattern of species utilisation in UK shark products reveals threatened species on sale. Scientific Reports, 9:1092, https://doi.org/10.1038/s41598-018-38270-3. 2. Diaz-Tapia, P., Ly, M., Verbruggen, H. (2020). Extensive cryptic diversity in the widely distributed Polysiphonia scopulorum (Rhodomelaceae, Rhodophyta): molecular species delimitation and morphometric analyses. Molecular Phylogenetics and Evolution 152: 106909.
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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