University of Gdańsk

Subject card

Subject name and code	Barcoding of Marine Organisms - lecture, PG_00204939						
Field of study	Oceanography						
Date of commencement of studies	October 2027		Academic year of realisation of subject		2028/2029		
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						
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		1.0		9.0	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-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 specialist terminology used in the field of barcoding marine organisms (programme content: 1-5)	[SW1] oral statement/ conversation/discussion
[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
[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 the principles of planning and conducting research, research methods and bioinformatic tools used in research on the biodiversity of marine organisms (curriculum content: 2, 3)	[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 process the results of bioinformatic analyses and draw conclusions regarding species identification (curriculum content: 5)	[SU1] oral statement/conversation/ discussion [SU8] observation of student's independent or team work
[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

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.
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Example issues/ example questions/ tasks being completed

Work placement	Not applicable

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