

Subject card

Subject name and code	Genetics of marine organisms - lecture, PG_00054217						
Field of study	Oceanography						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
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	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		2.0		
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 Rafał Lasota				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	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	30		5.0		25.0	60
Subject objectives	Insight into current research in the field of broadly understood genetics of marine organisms. Application of genetics in other fields of knowledge (including marine ecology, aquaculture, protection of biodiversity and living marine resources).						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[OCEANMU2-W02] knows and understands complex processes and phenomena occurring in the marine environment, with particular emphasis on the coastal zone, as well as complex relationships between living and non-living elements of the aquatic environment		Knows and understands to an in-depth degree the course of complex genetic processes and phenomena occurring in the marine environment and the coastal zone, as well as the intricate relationships between living and non-living components of the aquatic environment in the context of the genetics of marine organisms.		[SW4] test/exam - oral or written		
	[OCEANMU2-K04] is ready to critically evaluate his/her knowledge and received content in the field of natural sciences in particular in the field of the studied specialty, a in problematic situations, supports oneself with knowledge experts		Is ready to critically assess the knowledge acquired and the content received in the field of genetics of marine organisms, particularly within the scope of the studied specialization, and in problematic situations, relies on the knowledge of experts.		[SK4] test/exam - oral or written		

Subject contents	Methods used in research on the genetics of marine organisms and their proper selection in solving scientific problems (molecular techniques, basic statistical and bioinformatic tools). Genetic diversity of natural populations and the main random and directional processes that shape it. Phylogeography of marine organisms. Occurrence and identification of cryptic species in the marine environment. Genetic processes associated with biological invasions (founder effect, genetic drift, adaptation to new environmental conditions), identification of source populations and migration routes. Cryptic invasions. Historical and contemporary processes determining the genetic structure of organisms in the Baltic Sea. Application of genetic methods in mariculture (improving the quality of productive traits). Interactions between farmed and natural populations in the context of changes in their genetic structure. Genetic changes in marine organisms caused by environmental pollution (impact on the genetic constitution of populations, gene and chromosomal mutations, genetic diseases, cancers). Application of genetic methods in the conservation and management of marine living resources (species identification and their distribution, determination of migration directions and intensity, protection of biodiversity at the genetic level, genetic resources). Introduction to marine metagenomics.		
Prerequisites and co-requisites	Knowledge of the fundamentals of molecular genetics and population genetics. Knowledge of English at an intermediate level.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	exam	51.0%	100.0%
Recommended reading	Basic literature	Charon K. M., Świtoński M. Genetyka i genomika zwierząt, Wyd. PWN, Warszawa, 2021 Brown A.C. Genomy. Wyd. PWN, Warszawa, 2019 Kartavtsev Y. Molecular Evolution and Population Genetics for Marine Biologists. CRC Press, 2015 Krzanowska H., Łomnicki A. (red.). Zarys mechanizmów ewolucji. Wyd. PWN, Warszawa, 2002	
	Supplementary literature	Beaumont A.R., K. Hoare. Biotechnology and Genetics in Fisheries and Aquaculture. Wiley-Blackwell, 2003 Freeland J.R. Ekologia molekularna. Wyd. PWN, Warszawa, 2008	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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