

Subject card

Subject name and code	Basic genetics of marine organisms - lecture, PG_00118096						
Field of study	Oceanography						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2027/2028		
Education level	Bachelor'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	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		2.0		
Learning profile	academic		Assessment form		exam		
Conducting unit	Department of Marine Ecosystems Functioning -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Katarzyna Smolarz				
	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		10.0		20.0	60
Subject objectives	The aim of the course is to discuss the basic issues of modern genetics using examples of marine organisms and to familiarize students with the basic cytogenetic and genetic techniques used in the genetics of marine organisms.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	OCEANL3-W03	knows and understands at an advanced level the relationships between living and non-living elements of the aquatic environment in relation to issues related to genetics, is aware of the comprehensive nature of aquatic environments, their complexity and natural variability (program content: A6)	[SW4] test/exam - oral or written
	OCEANL3-W01	knows and understands terminology used in genetics and related exact and natural sciences to an advanced degree (in Polish, English and/or Latin) (program content: A1-9)	[SW4] test/exam - oral or written
	OCEANL3-U03	is able to develop, describe and present the results of genetic and cytogenetic tests and formulate conclusions on this basis (program content: A1-A9)	[SU4] test/exam - oral or written
	[OCEANL3-K01] is willing to plan and implement, individually or as a team, the subsequent stages of the entrusted task, is willing to take responsibility for the results of these works, effectively cooperates in the team and performs various roles in it	is ready to plan and implement, individually or in a team, subsequent stages of the entrusted task, is ready to take responsibility for the results of these works, cooperates effectively in a team and performs various roles in it (program content: A1-A9)	[SK1] oral statement/conversation/discussion
Subject contents	Topics of the lecture: A1. Basic issues of modern genetics widely illustrated on examples of marine organisms. A2. Nuclear and mitochondrial DNA, self-replication of genetic material and gene expression, genome structure. A3. Properties and interaction of genes (penetration, expressiveness, inheritance of quantitative and qualitative features). A4. Characteristics of chromosomes as gene carriers (structure, functions, division, gene location, karyotype), evolution of karyotypes. A5. Hereditary and non-hereditary variation. A6. Numerical and structural chromosome aberrations, gene mutations and environmental factors with genotoxic and mutagenic effects, genotoxicity tests. A7. Biochemical and molecular techniques used in marine ecology, genetic markers, measures of genetic variability and their application in practice. A8. Allelic and non-allelic inheritance, multifactorial, heritability. A9. Basics of population genetics.		
Prerequisites and co-requisites	basic knowledge of biology, organic chemistry and statistics		

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	final test	51.0%	100.0%
Recommended reading	Basic literature	Charon K.M., Świtoński M., 2006, Genetyka zwierząt, PWN Freeland R.J., 2008, Ekologia molekularna, PWNA. Krzanowska H., Łomnicki A., Rafiński J., Szarski H., Szymura J.M., 2002, Zarys mechanizmów ewolucji, PWN Freeland R.J., 2008, Ekologia molekularna, PWN	
	Supplementary literature	1. Beebee T., 2004, An introduction to molecular ecology, Wyd. Oxford University Press 2. Brown T. A., 2001, Genomy, Wyd. PWN, Warszawa 3. Turner P.C., McLennan A.G., Bates A.D., White M.R.H., 2004, Krótkie wykłady: Biologia molekularna, PWN 4. Winter P.C., Hickey G.I., Fletcher H.L., 2006, Krótkie wykłady: Genetyka, PWN	
	eResources addresses		
	Example issues/ example questions/ tasks being completed	none	
Work placement	Not applicable		

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