

Subject card

Subject name and code	Fish genetics - lectures, PG_00075916						
Field of study	Aquaculture – Business And Technology						
Date of commencement of studies	October 2025		Academic year of realisation of subject			2026/2027	
Education level	Bachelor's studies		Subject group				
Mode of study	full-time studies		Mode of delivery			at the university	
Year of study	2		Language of instruction			Polish	
Semester of study	4		ECTS credits			1.0	
Learning profile	practical		Assessment form			credit	
Conducting unit	Laboratory of Aquaculture -> Department of Marine Biology and Biotechnology -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Konrad Ocalewicz				
	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		5.0		5.0	25
Subject objectives	1: presenting students with the opportunity to use their knowledge of fish genetics to increase production by appropriately breeding and selection procedures carried out, 2: familiarizing the student with modern technologies for obtaining fish with specific production characteristics. 3: familiarizing students with the basic elements of genetic diagnostics.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[AKWAL3-K05] student is ready to appreciate the practical application of acquired knowledge	is ready to critically assess their knowledge of genetics in aquaculture and seek the opinion of experts in this area in case of difficulties in solving the problem on their own	[SK1] oral statement/conversation/discussion [SK2] presentation/project/paper/report [SK6] demonstration of practical skills
	[AKWAL3-K04] is ready to identify and recognize dilemmas connected with the profession and understands the need to improve professional competence	Understands the need to improve professional competences in the field of genetics in aquaculture.	[SK1] oral statement/conversation/discussion
	[AKWAL3_W03] knows and understands the conceptual categories and terminology related to the biological basis of aquatic organisms breeding, as well as concepts directly relevant to the practical applications of this knowledge	knows and understands at an advanced level - theoretical and practical assumptions of the use of genetics in aquaculture and their consequences.	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion
	[AKWAL3_W06] knows and discusses techniques, research methods and tools used in aquaculture	He knows the principles of optimization of fish selection and breeding methods and has acquired theoretical and practical knowledge of the selection and genetic methods used.	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion
	[AKWAL3-W12] knows and understands the role of aquaculture in the modern economy and its impact on the natural environment	knows and understands the fundamental dilemmas of modern civilization regarding the use of genetic tools in aquaculture and animal and plant production	[SW1] oral statement/conversation/discussion
	[AKWAL3-U04] can select and use available sources of information, and understand the literature on aquaculture in a broad sense	can solve complex and unusual problems in the field of fish genetics and perform tasks by appropriate selection of sources and information derived from them, assessment, critical analysis and synthesis of this information, selection and use of appropriate genetic methods and tools, including advanced molecular techniques.	[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written [SU5] implementation of a problem task
Subject contents	A1 organization of the fish genome, A2 genetic characterization of fish populations and breeding lines, A3 genetic and phenotypic variability of fish, A4 inheritance of quantitative and qualitative features, A5 breeding methods in aquaculture, A6 types of selection programs and selection progress A7 genetic markers in selection and breeding programs in fish aquaculture, A8 application of genomic engineering and biotechnological reproductive methods for the production of single-sex fish stocks and sterile fish, A9 inbreeding and production of homozygous and clonal fish		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test 3	51.0%	50.0%
	test 2	51.0%	25.0%
	test 1	51.0%	25.0%
Recommended reading	Basic literature	Fopp-Bayat D., Łuczyński M. Jankun M. 2011. Management of breeding stocks of natural and breeding fish populations - basics of genetics quantitative. Ed. Argi, vol. 1 and 2. John Liu. 2007. Aquaculture Genome Technologies. Ed. Blackwell Publishing. Gjedrem T. 2010. Selection and breeding programs in aquaculture.2010. Springer; Goryczko K. 2008. Trout. Breeding and breeding. Ed. Institute of Inland Fisheries Olsztyn. Articles on fish genetics, genomics and transcriptomics published in industry journals, e.g. Aquaculture, Aquaculture International, Aquaculture Research	
	Supplementary literature	Dunham R.A. 2004. Aquaculture and fisheries biotechnology. Genetic approaches. CABI Publishing	
	eResources addresses		
Example issues/ example questions/ tasks being completed	List and discuss the types of selection programs used in aquaculture.		
Work placement	Not applicable		