University of Gdańsk

Subject card

Subject name and code	Fish Genetics - lecture, PG_00201289		
Field of study	Aquaculture – Business And Technology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2028/2029
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Subject group related to practical vocational preparation
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	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	1.0	9.0	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-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
[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-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] has an advanced understanding of 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] has an advanced understanding of 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

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 1	51.0%	25.0%
test 2	51.0%	25.0%
test 3	51.0%	50.0%

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

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