University of Gdańsk

Subject card

Subject name and code	Aquaculture - lecture, PG_00192230						
Field of study	Marine Biotechnology						
Date of commencement of studies	October 2026		Academic year of realisation of subject	2026/2027			
Education level	Master's studies		Subject group	Obligatory subject group in the field of study 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	English			
Semester of study	1		ECTS credits	2.0			
Learning profile	academic		Assessment form	exam			
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	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		1.0		19.0	50
Subject objectives	The aim is to obtain knowledge about modern aquaculture as an example of biotechnology, the main breeding species, new strategies for sustainable food production, characterized by low CO2 emissions, and modern methods of feeding fish, taking care of their health and well-being, as well as issues of reproduction and genetics.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[MBMU2-KW01] Has an in-depth knowledge and understanding of the significance, limitations and potential applications of natural marine resources in the context of the complex biological, environmental and technological factors influencing the development of biotechnology.	Has organized and in-depth knowledge of aquaculture, its potential and the possibility of using biotechnological solutions in it	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
[MBMU2-KU03] Can use and critically analyze available scientific information; can prepare and present - orally or in writing - a paper covering detailed problems in the field of marine biotechnology on the basis of the scientific information or their own work, with the use of scientific language, including specialized terminology and conceptual apparatus; has the ability to conduct discussions	Is able to fluently use and critically analyze available scientific information on aquaculture; based on them and on the basis of his/ her own work, he/she can prepare and present an oral presentation and/or a written study covering detailed issues in the field of aquaculture, using scientific language, including specialized terminology and conceptual framework; has the ability to conduct discussions, also in a foreign language, with various recipients	[SU1] oral statement/conversation/ discussion [SU5] implementation of a problem task
[MBMU2-KK01] Is ready to critically evaluate his knowledge and continuously improve, update and upgrade his skills in the field of marine biotechnology	He is ready to critically evaluate his own knowledge and constantly improve it, update it and raise his qualifications in the field of marine biotechnology	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report

Subject contents

Aquaculture as an example of biotechnology. Milestones in the development of aquaculture. Main species raised in aquaculture. Aquaculture and the fight against hunger. Methods of breeding fish and aquatic invertebrates; from earthen ponds to recirculating aquaponic systems. Fish nutrition. Fish health and welfare - vaccinations and selection programs aimed at obtaining fish resistant to viral and bacterial diseases. Reproduction and genetics in aquaculture reproductive technologies. Selection programs in aquaculture. Production of transgenic fish, aquatic invertebrates and plants. Fish as model organisms. Conservation aquaculture. Fish processing. Aquaculture prospects and limitations. Carbon footprint generated by aquaculture challenges and trends to reduce CO2 emissions.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
exam part 1	51.0%	50.0%
exam part 2	51.0%	50.0%

Recommended reading

Basic literature	Pillay T.V.R and Kutty M.N. 2005. Aquaculture; Principles and practices (second edition). Blackwell Publishing. https://www.agrifs.ir/sites/default/files/AQUACULTURE.pdf Beaumont A.R. and Hoare K. 2003. Biotechnology and Genetics in Fisheries and Aquaculture. Blackwell Sciences. https://www.agrifs.ir/sites/default/files/Biotechnology_and_Genetics_in_Fisheries_and_Aquaculture_0.pdf Overturf K. Molecular research in Aquaculture. Wiley. 2007. Dunham R. Aquaculture and Fisheries Biotechnology. Genetic approach. CABI publishing. 2004. John Liu. Aquaculture Genome Technologies 2007. Zakęś Z. Biotechnology in aquaculture. IRS Publishing House. 2008 Zwierzchowski L (ed). Animal biotechnology. Ed. Scientific PWN. 1997. Demska-Zakęś K. Innovative techniques for biological assessment and protection of valuable species of farmed fish and crayfish.
Supplementary literature	Scientific articles published in a specialized scientific journal such as: Aquaculture, Aquaculture Research, Aquaculture International, etc. Scientific Reports, PloS One, etc.
eResources addresses	

Example issues/ example questions/ tasks being completed

Work placement

Not applicable

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