

**Subject card**

<b>Subject name and code</b>	Aquaculture - laboratory classes, PG_00192229						
<b>Field of study</b>	Marine Biotechnology						
<b>Date of commencement of studies</b>	October 2026	<b>Academic year of realisation of subject</b>			2026/2027		
<b>Education level</b>	Master's studies	<b>Subject group</b>			Obligatory subject group in the field of study		
<b>Mode of study</b>	full-time studies	<b>Mode of delivery</b>			at the university		
<b>Year of study</b>	1	<b>Language of instruction</b>			English		
<b>Semester of study</b>	1	<b>ECTS credits</b>			1.0		
<b>Learning profile</b>	academic	<b>Assessment form</b>			credit		
<b>Conducting unit</b>	Laboratory of Aquaculture -> Department of Marine Biology and Biotechnology -> Faculty of Oceanography and Geography -> Rector						
<b>Name and surname of lecturer (lecturers)</b>	<b>Subject supervisor</b>		dr inż. Marcin Kuciński				
	<b>Teachers</b>						
<b>Lesson types</b>	<b>Lesson type</b>	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	<b>Number of study hours</b>	0.0	0.0	15.0	0.0	0.0	15
	E-learning hours included: 0.0						
<b>Learning activity and number of study hours</b>	<b>Learning activity</b>	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	<b>Number of study hours</b>	15		1.0		9.0	25
<b>Subject objectives</b>	The goal is to gain practical knowledge about modern aquaculture as an example of biotechnology, including the main farmed species, new strategies for sustainable food production characterized by low CO2 emissions, and modern methods for fish nutrition, health and welfare management, as well as reproduction and genetics.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[MBMU2-KW02] Has an in-depth knowledge of the possibilities of biotechnological use of marine resources	Has got complex knowledge on the aquaculture use of water resources including fish	[SW2] presentation/project/paper/report
	[MBMU2-KU01] Can plan and conduct research in the laboratory and at sea, and to document procedures and results. Independently or under the supervision of an authorized staff member, carries out work using specialized equipment. Complies with occupational health and safety regulations.	Has the ability to plan and carry out research in the laboratory, document the experiments and their results; can draw conclusions based on the observations made during the field trip to the aquaculture farm and results obtained during the laboratory activities	[SU2] presentation/project/paper/report
	[MBMU2-KK02] Is ready to effectively plan and organize his individual and team work, especially in the laboratory and at sea; is ready to plan his individual career and act in an entrepreneurial manner	Is ready to plan and organize efficiently individual and team work, especially in laboratory and aquaculture farm, is ready to plan individual professional career and work in an enterprising way	[SK2] presentation/project/paper/report
[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	Can collect and interpret empirical data on the cultivated organisms; applies statistical methods and computer tools in data analysis; formulates conclusions based on empirical data	[SU2] presentation/project/paper/report	
Subject contents	Designing of the experimental RAS Aquaponic system for fish, invertebrates and plant production		
Prerequisites and co-requisites	none		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	A self-prepared project of a recirculating aquaculture system according to the recommendations and instructions provided by the course instructor, and an evaluation of the project's presentation	51.0%	75.0%
	Preparation of a presentation on the construction, operation, and design of aquaponic systems	51.0%	25.0%
Recommended reading	Basic literature	<p>Pillay T.V.R and Kutty M.N. 2005. Aquaculture; Principles and practices (second Edition). Blackwell Publishing. <a href="https://www.agrifs.ir/sites/default/files/AQUACULTURE.pdf">https://www.agrifs.ir/sites/default/files/AQUACULTURE.pdf</a></p> <p>Zakęś Z. Biotechnologia w akwakulturze. Wydawnictwo IRS. 2008</p> <p>Demska-Zakęś K. Innowacyjne techniki oceny biologicznej i ochrony cennych gatunków ryb hodowlanych i raków. Wydawnictwo IRS. 2008.</p>	
	Supplementary literature	Scientific articles published in specialized journals 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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