



WNoŻiR



<i>Field of study</i>		Aquaculture and Fisheries				
<i>Mode of study</i>		stationary	<i>Level</i>	first cycle		
<i>Graduate's qualification</i>		inżynier				
<i>Fields of science</i>		agricultural sciences				
<i>Disciplines of science</i>		animal science and fisheries (100%)				
<i>Educational profile</i>		general academic				
<i>Module</i>						
<i>Course unit</i>		Invertebrates aquaculture				
<i>Code</i>		WNOZIR/AQF/S1/				
<i>Field of specialisation</i>						
<i>Administering faculty</i>		Department of Aquatic Bioengineering and Aquaculture				
<i>ECTS</i>		5.0	<i>ECTS (forms)</i>	5.0		
<i>Form of course credit</i>		examination	<i>Language</i>	english		
<i>Electives</i>			<i>Elective group</i>			
<i>Form of instruction</i>	<i>Cod</i>	<i>Semester</i>	<i>Hours</i>	<i>ECTS</i>	<i>Weight</i>	<i>Credit</i>
lecturing course	A	4	30	2.0	0.50	credits
lecture	W	4	30	3.0	0.50	examination
<i>Leading teacher</i>		Sadowski Jacek (Jacek.Sadowski@zut.edu.pl)				
<i>Other teachers</i>		Biernaczyk Marcin (Marcin.Biernaczyk@zut.edu.pl)				
<i>Prerequisites</i>						
<i>W-1</i>	The student entering the course should have basic knowledge of biology, physiology and systematics of aquatic organisms, hydrochemistry and mathematics.					
<i>Module/course unit objectives</i>						
<i>C-1</i>	To acquaint students with the issues of breeding selected groups of aquatic invertebrates, presenting methods and techniques used in both the extensive and intensive breeding method. Clarification of the environmental aspects of the farming operation.					
<i>Course content divided into various forms of instruction</i>						<i>Number of hours</i>
<i>T-A-1</i>	Oyster farming methods					4
<i>T-A-2</i>	Mussel farming methods					4
<i>T-A-3</i>	Scallop farming methods					2
<i>T-A-4</i>	Snail rearing methods of the <i>Haliotis</i> genus					2
<i>T-A-5</i>	Farming methods for mussels from the <i>Tridacnidae</i> family					2
<i>T-A-6</i>	Saltwater shrimp farming methods					4
<i>T-A-7</i>	Freshwater shrimps farming methods					4
<i>T-A-8</i>	Crayfish farming methods					2
<i>T-A-9</i>	Lobster and crawfish farming methods					2
<i>T-A-10</i>	Octopus farming methods					2
<i>T-A-11</i>	Diseases of aquatic organisms used in aquaculture					2
<i>T-W-1</i>	World invertebrate aquaculture. Nomenclature and naming used in the rearing process.					2
<i>T-W-2</i>	Production statistics for individual groups of aquatic organisms according to FAO data					4
<i>T-W-3</i>	Systematic review of aquatic organisms. The most important groups of organisms and producers.					4
<i>T-W-4</i>	Crustacean farming methods, technical devices and environmental requirements					4
<i>T-W-5</i>	Mollusc farming methods, technical devices and environmental requirements					4
<i>T-W-6</i>	Reproduction and acquisition of restocking material of individual groups of organisms					3
<i>T-W-7</i>	Potential development opportunities and restrictions on rearing. Threats to the environment					3
<i>T-W-8</i>	Operation of "Integrated multi-trophic aquaculture" systems					2
<i>T-W-9</i>	Legal regulations regarding the acquisition and rearing of aquatic organisms in force in the world. Veterinary and sanitary requirements.					2
<i>T-W-10</i>	Trade and forms of selling seafood					2
<i>Student workload - forms of activity</i>						<i>Number of hours</i>
<i>A-A-1</i>	Participation in classes					30



Student workload - forms of activity		Number of hours
A-A-2	reparation for classes, including studying the literature on the subject	20
A-A-3	Preparation for completing the course	10
A-W-1	Participation in classes	30
A-W-2	Preparation for completing the course	60

Teaching methods / tools	
M-1	informative lecture with the use of multimedia presentations
M-2	Conversation lecture
M-3	didactic discussion

Evaluation methods (F - progressive, P - final)		
S-1	F	Assess student achievement by asking written or oral questions at the beginning and during the class
S-2	P	Assessment of the presentation prepared by the student on the method of breeding a selected group of aquatic organisms.
S-3	P	Written test after the end of the course

Designed learning outcomes	Reference to the learning outcomes designed for the fields of study	Reference to Learning Outcomes for qualifications at PQF 6, 7 or 8	Reference to learning outcomes for qualifications at level 6 or 7 that enable acquiring engineering competences	Course objectives	Course content	Teaching methods	Evaluation methods
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Knowledge

AQF_1A_C13_W01 The student knows the methods of aquatic invertebrate breeding, the devices used and environmental factors influencing the breeding process.	AQF_1A_W04	P6S_WG	P6S_WG	C-1	T-A-1 T-W-1 T-A-2 T-W-2 T-A-3 T-W-3 T-A-4 T-W-4 T-A-5 T-W-5 T-A-6 T-W-6 T-A-7 T-W-7 T-A-8 T-W-8 T-A-9 T-W-9 T-A-10 T-W-10 T-A-11	M-1 M-2 M-3	S-1 S-2 S-3
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Skills

AQF_1A_C13_U01 The student is able to choose the appropriate breeding technique for individual groups of aquatic organisms. He is able to develop the rules of the breeding operation and prepare the demand for the basic technical elements of breeding.	AQF_1A_U21	P6S_UW	P6S_UW	C-1	T-A-1 T-W-1 T-A-2 T-W-2 T-A-3 T-W-3 T-A-4 T-W-4 T-A-5 T-W-5 T-A-6 T-W-6 T-A-7 T-W-7 T-A-8 T-W-8 T-A-9 T-W-9 T-A-10 T-W-10 T-A-11	M-1 M-2 M-3	S-1 S-2 S-3
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Social competences

AQF_1A_C13_K01 The student is aware of the importance of invertebrate aquaculture and appreciates the nutritional value of seafood	AQF_1A_K03	P6S_KO P6S_KR		C-1	T-A-1 T-W-1 T-A-2 T-W-2 T-A-3 T-W-3 T-A-4 T-W-4 T-A-5 T-W-5 T-A-6 T-W-6 T-A-7 T-W-7 T-A-8 T-W-8 T-A-9 T-W-9 T-A-10 T-W-10 T-A-11	M-1 M-2 M-3	S-1
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Outcomes	Grade	Evaluation criterion
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Knowledge		
AQF_1A_C13_W01	2,0	The student has knowledge of the systematics of aquatic organisms, uses the appropriate nomenclature and knows about the ways of using particular groups of aquatic organisms. Has knowledge of basic breeding methods and technical and environmental requirements.
	3,0	
	3,5	
	4,0	
	4,5	
	5,0	



Skills

AQF_1A_C13_U01	2,0	
	3,0	The student is able to choose the appropriate devices and organize the facilities for breeding. The student is able to apply knowledge to carry out a complete breeding cycle of the most important groups of aquatic organisms.
	3,5	
	4,0	
	4,5	
	5,0	

Other social competences

AQF_1A_C13_K01	2,0	
	3,0	The student is aware of his knowledge and skills, but does not see the need for self-education.
	3,5	
	4,0	
	4,5	
	5,0	

Required reading

1. The State of World Fisheries and Aquaculture, FAO Fisheries and Aquaculture Department, Rzym, 2012
2. J. F. Wickins, D. O'C. Lee, Crustacean farming, Blackwell science, 2002

Supplementary reading

1. FAO, Materiały statystyczne oraz opracowania tematyczne dotyczące ryb i owoców morza, www.fao.org, 2012