

Subject card

Subject name and code	Applied phycology - laboratory exercises, PG_00075911						
Field of study	Aquaculture – Business And Technology						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2027/2028		
Education level	Bachelor's studies		Subject group				
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		2.0		
Learning profile	practical		Assessment form		credit		
Conducting unit	Department of Marine Ecosystems Functioning -> Faculty of Oceanography and Geography -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Filip Pniewski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	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		10.0		20.0	60
Subject objectives	The aim of the course is to familiarise the student with methods for biochemical characterisation of algal biomass obtained from mass cultures.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[AKWAL3-U02] can make observations and perform simple physical / biological / chemical measurements that are typical in socio-economic activity based on natural sciences		Student is able to make observations and simple standard measurements to monitor the growth and characterisation of cyanobacterial and algal biomass for economic purposes (topics covered in exercises)		[SU2] presentation/project/paper/report		
	[AKWAL3_W06] knows and discusses techniques, research methods and tools used in aquaculture		Student knows the techniques, methods and research tools used in cyanobacterial and algal aquaculture.		[SW4] test/exam - oral or written		
	[AKWAL3-K05] student is ready to appreciate the practical application of acquired knowledge		Student is ready to appreciate the practical application of the knowledge acquired in the field of cyanobacteria and algal aquaculture (topics covered in exercises)		[SK8] observation of student's independent or team work		
Subject contents	1. Cultivation of microalgae in bioreactors. 2. Preparation of bioreactors for operation, preparation of starting cultures. 3. Characterisation of algal growth, measurement of biomass growth rate, evaluation of production efficiency of selected substances synthesised by algae and cyanobacteria (e.g. pigments, lipids, polysaccharides, etc).						
Prerequisites and co-requisites	none						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
			100.0%		15.0%		
			51.0%		25.0%		
			51.0%		60.0%		

Recommended reading	Basic literature	1. Richmond, A., 2004, Handbook of microalgal culture. Biotechnology and applied phycology. Blackwell Publishing, Oxford, UK. 2. Johansen, M.N., 2012, Microalgae. Biotechnology, microbiology and energy. NOVA Science Publisher INC., New York. 3. Richmond, A., 2000, Handbook of microalgal mass culture. CRC Press, Baco Raton, Florida. 4. Khanal, S.K., Surampalli, R.Y., Zhang, T.C., Lamsal, B.P., Tyagi, R.D., Kao, C.M., 2010, Bioenergy and biofuel from biowaste and biomass. ASCE, Reston, Virginia.NOVA Science Publisher INC., New York.
	Supplementary literature	1. Anderson R.A., 2005, Algal culturing techniques. Elsevier Academic Press, Oxford, UK.NOVA Science Publisher INC., New York. 2. Fogg, G.E., Thake, B., 1987, Algal Cultures and Phytoplankton Ecology. The University of Wisconsin Press, Madison, Wisconsin.
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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