

Subject card

Subject name and code	Hydrochemistry - laboratory exercises, PG_00156203						
Field of study	Aquaculture – Business And Technology						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2024/2025		
Education level	undergraduate studies		Subject group				
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		4.0		
Learning profile	practical		Assessment form				
Conducting unit	Pracownia Transformacji Substancji Toksycznych -> Katedra Oceanografii Chemicznej i Geologii Morza -> Faculty of Oceanography and Geography						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Paweł Tarasiewicz				
	Teachers		dr Paweł Tarasiewicz				
			mgr Magdalena Machuta				
			mgr Martyna Malinowska				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	45.0	0.0	0.0	45
	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	45		5.0		30.0	80
Subject objectives	To introduce the principles of work safety and basic practical skills of working in a laboratory for water sample analysis. Presentation of basic techniques (weighing, titration, potentiometric, spectrophotometric) and testing tools used in hydrochemistry. To implement the principles of correctness of chemical conversions and the principles of obtaining and recording the result of measurements. Water quality requirements in aquaculture.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[AKWAL3_W02] knows and understands chemical, biological, physical processes and phenomena, identifies them, analyses their mechanisms in relation to the aquatic environment, and is aware of the connections between various natural disciplines	Knows and understands chemical processes and phenomena, identifies and analyzes them in hydrochemistry.	[SW4] test/exam - oral or written
	[AKWAL3-U12] can interact and work in a group, and assume different roles	Able to interact and work in a group in a chemistry laboratory.	[SU2] presentation/project/paper/report [SU8] observation of student's independent or team work
	[AKWAL3-U01] can plan and perform simple tasks under supervision or independently in the analysis of the aquatic environment, using appropriate methods of description and identification	Can select and independently apply basic research techniques and tools, in the field of water research.	[SU2] presentation/project/paper/report [SU4] test/exam - oral or written [SU8] observation of student's independent or team work
	[AKWAL3-K01] is ready to assess the risks and threats stemming from working in the laboratory and is responsible for the equipment and teaching materials entrusted to them and for the safety of their own work and that of others	Is ready to assess the risks and hazards of working in a water chemistry laboratory and is responsible for the equipment and apparatus entrusted to him/her and for the safety of his own work and that of others.	[SK8] observation of student's independent or team work
Subject contents	1. Basic equipment and safety in the laboratory;2. Basic principles of obtaining and recording the result correctly;3. Chemical calculations: conversion of concentrations and units;4. Physical and chemical properties of natural waters and methods of their determination (including density, conductivity; temperature, chlorinity, salinity, pH, alkalinity, BOD, COD);5. Solubility of gases in natural waters; method of determining dissolved oxygen concentration in waters;6. Basics of spectrophotometric methods, calibration; use of spectrophotometric methods in determining the concentration of nutrient salts (phosphates);7. Introduction to gravimetric methods used in the analysis of suspended solids and bottom sediment samples (suspended solids concentration, moisture content and loss on roasting in sediments);8. Assessment of the ecological status of surface waters based on selected physico-chemical parameters of water quality.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	colloquiums	51.0%	70.0%
	Lab reports	51.0%	15.0%
	Entry tests	51.0%	15.0%
Recommended reading	Basic literature	Bolałek J., Falkowska L., 1999. Analiza chemiczna wody morskiej cz. 1, Wydawnictwo Uniwersytetu Gdańskiego, 93.Falkowska L., Bolałek J., Łysiak-Pastuszek E., 1999. Analiza chemiczna wody morskiej cz. 2, Wydawnictwo Uniwersytetu Gdańskiego, 82.Hermanowicz W. i in., 1999. Fizyczno-chemiczne badanie wody i ścieków. Arkady, Warszawa.Plane R., Sienko M.J., 1980. Chemia Podstawy i własności, Wydawnictwa Naukowo Techniczne, Warszawa, 787.Praca zbiorowa Obliczenia z chemii ogólnej skrypt UG.	
	Supplementary literature	Kajak Z., 1998. Hydrobiologia Limnologia, PWN, Warszawa, 336.Namieśnik J., Łukasiak J., Jamrógiwicz Z., 1995. Pobieranie próbek środowiskowych do analiz, PWN, Warszawa, 280.Pazdro Z., Kozerski B., 1990. Hydrogeologia, Wyd. Geologiczne, Warszawa, 624.Minczewski J., Marczenko Z., 2011. Chemia analityczna. Chemiczne metody analizy ilościowe, T. 2, PWN.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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