University of Gdańsk

Subject card

Subject name and code	Hydrochemistry - laboratory classes, PG_00201222		
Field of study	Aquaculture – Business And Technology		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study
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	3.0
Learning profile	practical	Assessment form	credit
Conducting unit	Laboratory of Toxic Substances Transformation -> Department of Chemical Oceanography and Marine Geology -> Faculty of Oceanography and Geography -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Łukasz Nuckowski	
	Teachers	dr Łukasz Nuckowski dr Iga Nehring prof. dr hab. Romuald Grzybowski dr hab. Waldemar Grzybowski, prof. UG	

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	3.0	27.0	75

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] has an advanced understanding of 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
Lab reports	51.0%	15.0%
Entry tests	51.0%	15.0%
colloquiums	51.0%	70.0%

Recommended reading

Basic literature	Bolałek J., Falkowska L., 1999. Analiza chemiczna wody morskiej cz. 1, Wydawnictwo Uniwersytetu Gdańskiego, 93.Falkowska L., Bolałek J., Łysiak-Pastuszak 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., Jamrógiewicz 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	

Example issues/ example questions/ tasks being completed

Work placement

Not applicable

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