University of Gdańsk

Subject card

Subject name and code	Hydrochemistry - laboratory , PG_00201887		
Field of study	Oceanography		
Date of commencement of studies	October 2027	Academic year of realisation of subject	2027/2028
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research 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	2	ECTS credits	4.0
Learning profile	academic	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 hab. Dominika Saniewska, prof. UG	
	Teachers		

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	50.0	100

Subject objectives	
	To convey the basic concepts and terms of hydrochemistry. To introduce the principles of work safety and basic practical skills of working in a laboratory for analyzing water samples.To present the basic techniques (weighing, titration, potentiometric, spectrophotometric) and research tools used in hydrochemistry. To implement the principles of correctness of chemical conversions and the principles of obtaining and recording the measurement result.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[OCEANL3-U03] is able to process, describe, and present results, and draw conclusions	Able to analytically and synthetically elaborate the results of tests and analyses of physical and chemical properties of water, and on the basis of them conduct correct conclusions.	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[OCEANL3-W05] has an advanced knowledge of techniques, research methods, and tools (mathematical, statistical, and computational) used by oceanographers to describe and interpret processes and phenomena occurring in the marine environment	Has advanced knowledge of research techniques and methods (weighing, titration, potentiometric, spectrophotometric) and tools (mathematical, statistical, computer) used in hydrochemistry to describe and interpret phenomena and processes in the aquatic environment.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[OCEANL3-K05] is willing to take responsibility for the safety of his/ her own and others' work, is aware of the risks and threats resulting from the work performed	Is ready to take responsibility for the safety of his own work and that of others in the chemical laboratory, and is aware of the risks and dangers of performing the work of a hydrochemist in the laboratory.	[SK4] test/exam - oral or written
[OCEANL3-U11] is able to work individually and collaborate in a team, assuming various roles and performing different tasks	Able to work individually and cooperate in laboratory groups, performing various functions and tasks.	[SU2] presentation/project/paper/ report

Subject contents

1. Physical properties of natural waters and the methodological basis for the determination of: color, turbidity, density, specific conductivity.
2. Chemical properties of natural waters and methodological basis of determination: redox potential, pH, alkalinity, concentration of chlorides, water hardness, dissolved oxygen, ionic composition of water.
3. Spectrophotometric methods in the analysis of chemicals (Lambert Beer's law, calibration methods).
4. Solving calculus tasks (percent and molar concentrations, stoichiometry).

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Reports	51.0%	40.0%
Tests	51.0%	20.0%
Entry tests	51.0%	40.0%

Recommended reading

Basic literature

1. Brodecka-Goluch A. (red.), 2023. Fizykochemiczne badanie wód naturalnych-przewodnik do ćwiczeń laboratoryjnych. Gdańsk: Wydawnictwo Uniwersytetu Gdańskiego.

2. Bolałek J., Falkowska L., 1999, Analiza chemiczna wody morskiej cz. 1: Wydawnictwo Uniwersytetu Gdańskiego rozdział 1.

3. Hermanowicz W., Doilido J., Dożańska W., Kosiorowski B., Zebre J., 1999. Fizyczno-chemiczne badanie wody i ścieków. Arkady. Warszawa.

	Supplementary literature	1. Kajak Z., 1998, Hydrobiologia Limnologia, PWN, Warszawa, 336. 2. Namieśnik J., Łukasiak J., Jamrógiewicz Z., 1995, Pobieranie próbek środowiskowych do analiz, PWN Warszawa, 280. 3. Pazdro Z., Kozerski B., 1990, Hydrogeologia, Wyd. Geologiczne, Warszawa, 624. 4. Podręczniki do chemii analitycznej np.: Kocjan R., 2002, Chemia analityczna t. II, PZWL; 5. Minczenko J., Marczenko Z., 2011, Chemia analityczna. Chemiczne metody analizy ilościowej, T. 2, Wydawnictwo Naukowe PWN.
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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