University of Gdańsk

Subject card

Subject name and code	The basics of marine environment chemistry - laboratory exercises, PG_00054238		
Field of study	Oceanography		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	undergraduate 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	academic	Assessment form	
Conducting unit	Katedra Oceanografii Chemicznej i Geologii Morza -> Faculty of Oceanography and Geography		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Marta Staniszewska	
	Teachers	dr hab. inż. Marta Staniszewska dr Iga Nehring dr Łukasz Nuckowski	

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	5.0	55.0	90

Subject objectives

Acquiring basic skills in working in a chemical laboratory, including the principles of basic analytical techniques, principles of correct nomenclature, knowledge of the properties of basic groups of inorganic compounds, knowledge of equilibria in electrolyte solutions, basic stoichiometry and chemical conversions, and principles of safety in the laboratory.

Learning outcomes

Course outcome	Subject outcome	Method of verification
OCEANL3-U01	is able to use current terminology in the field of basic chemistry of the marine environment	[SU3] text preparation/written work [SU4] test/exam - oral or written
[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 be responsible for the safety of his/her own work and that of others, knowing the risks and threats arising from work performed in a chemical laboratory	[SK8] observation of student's independent or team work
OCEANL3-U11	can work individually and cooperate in groups during classes in the chemical laboratory	[SU8] observation of student's independent or team work
OCEANL3-W01	knows and understands specialized terminology related to general and inorganic chemistry at an advanced level	[SW4] test/exam - oral or written [SW3] text preparation/written work

Subject contents	B.1 Basic equipment, safety and rules of work in a chemical laboratory. Basic laboratory activities.B.2 Basic groups of inorganic compounds, oxides, hydrides, acids, bases, salts. Obtaining, properties, nomenclature, formulas. Basic chemical reactions, redox reactions.B.2. Predicting the properties of basic inorganic compounds based on their structure and position in the periodic table of elements. Nonelectrolytes and electrolytes. Strong and weak electrolytes. Electrolytic dissociation. Protolytic reactions.B.3 Solutions: expressing and calculating concentrations of solutions, converting concentrations. Units, multiples, submultiples. Preparation of solutions of specific concentration.B.4. Basics of quantitative analysis. Basic rules for obtaining the correct result and its recording; precision, accuracy, significant and certain figures. Measurement error.B.5 Salt hydrolysis. Testing the pH of selected salts. pH indicators. pH of the solution. Measurement of specific conductivity and redox potential.B.6 Titration methods, alkacymetric titration.B.7 Gravimetric methods. Rules for the proper use of laboratory balances. Precipitation, dissolution, separation of precipitate from solution. Evaporation of aqueous solutions.
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
test 2	51.0%	20.0%
test 3	51.0%	20.0%
test 4	51.0%	15.0%
report 1	51.0%	10.0%
test 1	51.0%	20.0%
work card	51.0%	5.0%
report 2	51.0%	10.0%

Recommended reading

Basic literature	Warnke Z. (ed.), Calculations in general chemistry UG Publishing House Kocjan, Analytical chemistry. Volume 1. Qualitative analysis. Classical quantitative analysis, PZWL, 2014
Supplementary literature	Minczewski J., Marczenko Z., 2011. Analytical chemistry. Chemical methods of quantitative analysis, Vol. 2, PWN
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	Ability to select appropriate laboratory glassware for preparing aqueous solutions.Ability to prepare solutions of a given concentration.Knowledge of how to measure the pH of aqueous solutions and how to use a burette.Knowledge of the scheme for preparing biological and sediment samples for gravimetric analyses.Knowledge of basic parameters (including sample moisture, organic matter content) and processes (including drying, freeze-drying and roasting of samples) Knowledge of basic groups of inorganic compounds, their properties, nomenclature and formulas. Predicting the properties of basic inorganic compounds based on their structure and position in the periodic table. Ability to use the periodic table. Recording basic chemical reactions.
Work placement	Not applicable

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