University of Gdańsk

Subject card

Subject name and code	The basics of chemical oceanography - laboratory exercises, PG_00118074		
Field of study	Oceanography		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	undergraduate studies	Subject group	
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	2.0
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. Katarzyna Łukawska-Matuszewska	
	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	2.0	30.0	62

Subject objectives	To learn methods for determining nutrients in seawater. Developing the ability to plan and carry out analytical work and interpreting the results based on the knowledge gained in class and the literature. To learn about the interrelationships between physical, biological and chemical processes in the sea.

Learning outcomes

Course outcome	Subject outcome	Method of verification
OCEANL3-U03	Is able to develop the results of chemical analysis and formulate conclusions based on them	[SU3] text preparation/written work
[OCEANL3-K01] is willing to plan and implement, individually or as a team, the subsequent stages of the entrusted task, is willing to take responsibility for the results of these works, effectively cooperates in the team and performs various roles in it	Is willing to be responsible for own work in the chemistry laboratory, to conform to the rules of teamwork, and to be responsible for the tasks performed in the team	[SK3] text preparation/written work [SK5] implementation of a problem task [SK8] observation of student's independent or team work
OCEANL3-U04	Is able to search for information in the literature on chemical oceanography in Polish and English, as well as on the Internet and in databases	[SU2] presentation/project/paper/ report [SU3] text preparation/written work
OCEANL3-W02	Knows and understands basic chemical processes occurring in the marine environment	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report [SW3] text preparation/written work
OCEANL3-W05	Knows the analytical techniques, research methods and statistical tools used in the work of an oceanographer to describe and interpret chemical processes in the marine environment	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW3] text preparation/written work
OCEANL3-W04	Knows and understands the research problems in chemical oceanography and is aware of their connections with other disciplines of science	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report [SW3] text preparation/written work
[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 willing to take responsibility for the safety of one's own work and that of others in the chemical laboratory, is aware of the risks and hazards of the work performed in the chemical laboratory	[SK8] observation of student's independent or team work
OCEANL3-U11	Is able to work independently and in a laboratory group, is able to perform various tasks and functions in a group	[SU8] observation of student's independent or team work

Subject contents

- Methods of sampling and preservation of seawater samples for chemical analysis;
- Spectrophotometric methods in the analysis of nutrients (Lambert Beer's law, calibration methods - point calibration, linear calibration);
- Performance of calibration based on chemical standards and determination of nutrients in seawater samples in the coastal zone of the Gulf of Gdańsk;
- Analysis of obtained results using statistical and graphical methods, error analysis, synthetic presentation of results in the form of a report, comparison with data available on Internet data portals (monitoring data and cruise reports of IMGW, hydrodynamic model, SatBaltic system);
- Analysis and discussion of the obtained results, taking into account the factors affecting the variability of a parameter in the marine environment;
- Independent organization of the workplace, selection of analytical procedures for conducting analyses of nutrients in seawater;
- Variability of concentration and cycling of nutrients in the marine environment.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
test	51.0%	15.0%
reports	51.0%	30.0%
short tests	51.0%	40.0%
abstract on a given topic	51.0%	15.0%

Recommended reading

Basic literature

Falkowska L., Bolałek J., Łysiak-Pastuszak E., 1999, Analiza chemiczna wody morskiej, cz. 2., Wyd.UG, Gdansk (In Polish)
Bolałek J., Falkowska L., 1999, Analiza chemiczna wody morskiej, cz. 1., Wyd. UG, Gdańsk (In Polish)

Korzeniewski K., 1995, Podstawy oceanografii chemicznej, Wyd. UG, Gdańsk (In Polish)

	Supplementary literature	Horne R.A., 1969, Marine chemistry, Wiley, New York Riley J.P.., Chester R., 1971, Introduction to marine chemistry, Academic Press, London Riley J.P., Skirrow G., 1975, Chemical oceanography, Wyd. Academic Press, London Millero F.J., 2002. Chemical Oceanography 2nd ed. CRC Press, Boca Raton, Boston, London, New York, Washington, DC, 490. Stumm W., Morgan J.J., 1981, Aquatic chemistry, Wiley, New York Sienko M.J., Plane R.A., 1980, Chemia. Podstawy i własności, Wyd. PWN, Warszawa (In Polish) Publications provided by the teacher
	eResources addresses	Uzupełniające Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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