University of Gdańsk

Subject card

Subject name and code	Waters Chemistry - laboratory classes, PG_00201403		
Field of study	Water Management and Protection of Water Resources		
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 practical vocational preparation
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 hab. Waldemar Grzybowski, prof. UG	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	35.0	0.0	0.0	35

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	35	2.0	38.0	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 water chemistry. To implement the principles of correctness of chemical conversions and the principles of obtaining and recording the result of measurements.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GWOZWL3-K05] take responsibility for the safety of his own work and that of others, dealing with emergencies, exercising caution in the laboratory and in the field, responsibility for entrusted equipment and apparatus.	Is ready to take responsibility for the safety of his own work and that of others in the water chemistry laboratory, to be careful in the laboratory, to be responsible for the equipment and apparatus entrusted to him/her.	[SK8] observation of student's independent or team work
[GWOZWL3-W01] in advanced basic biological, physical and chemical processes and phenomena, as well as analyzes their mutual relations and course in relation to natural environment and socio-ecological systems.	Knows and understands basic chemical processes and phenomena in the aquatic environment.	[SW4] test/exam - oral or written
[GWOZWL3-U01] make basic observations of processes and phenomena occurring in the hydrosphere and carry out basic measurements of selected processes of water purification on a laboratory scale.	Able to make basic observations of processes and phenomena occurring in the aquatic environment and perform basic physical and chemical measurements of water on a laboratory scale.	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written [SU8] observation of student's independent or team work
[GWOZWL3-U15] by solving in groups the assigned problem situations, is able to appropriately set priorities to achieve task defined by themselves or others.	Able to solve basic problem issues in water chemistry in groups.	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written [SU8] observation of student's independent or team work
[GWOZWL3-U02] select and independently apply basic research techniques and tools, with adhering to established analytical procedures in the field of environmental research in water management, adequately to the considered research problem.	Able to select and independently apply basic research techniques and tools, with established analytical procedures, in the field of water research, adequate to the considered research problem.	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written [SU8] observation of student's independent or team work

Subject contents

Laboratory safety, familiarization with laboratory equipmentBasic principles of obtaining and recording the measurement resultChemical calculations, preparation of solutionsBasic physical and chemical properties of natural waters density, conductivity, color, pH, oxygen concentrationApplication of colorimetric methods in the analysis of biogensGravimetric methods in the analysis of suspended matter

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Test	51.0%	70.0%
Lab reports	51.0%	15.0%
Entry test	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-Pastuszak E., 1999. Analiza chemiczna wody morskiej cz. 2, WydawnictwoUniwersytetu 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	Supplementary reading list studied independently by the student: 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	

Document generated electronically. Does not require a seal or signature.