

Subject card

Subject name and code	Waters chemistry - laboratory exercises, PG_00054167						
Field of study	Water Management and Protection of Water Resources						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
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 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				
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				
	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		10.0		30.0	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-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
	[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-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-K05] take responsibility for the safety of their 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-U15] by solving in groups the assigned problem situations, 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
Subject contents	Laboratory safety, familiarization with laboratory equipment Basic principles of obtaining and recording the measurement result Chemical calculations, preparation of solutions Basic physical and chemical properties of natural waters density, conductivity, color, pH, oxygen concentration Application of colorimetric methods in the analysis of biogens Gravimetric 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
	Lab reports	51.0%	15.0%
	Colloquium	51.0%	70.0%
	Entry test	51.0%	15.0%
Recommended reading	Basic literature	Bolalek J., Falkowska L., 1999. Analiza chemiczna wody morskiej cz. 1, Wydawnictwo Uniwersytetu Gdańskiego, 93. Falkowska L., Bolalek J., Łysiak-Pastuszek 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	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	

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