University of Gdańsk

Subject card

Subject name and code	Water treatment - lecture, PG_00117573		
Field of study	Water Management and Protection of Water Resources		
Date of commencement of studies	October 2024	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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	3.0
Learning profile	practical	Assessment form	
Conducting unit	Laboratory of Biochemical Analytics and Nanodiagnostics -> Department of Environmental Technology -> Faculty of Chemistry -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. Adam Lesner	
	Teachers		

Lesson types							
	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	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	7.0	25.0	62

Subject objectives	The goal is to familiarize the student with all the basic processes of water treatment.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GWOZWL3-W06] basic problems of water construction water construction and the processes of water and wastewater treatment	The student describes, using the correct nomenclature, the basic unit processes, water treatment technologies and technical solutions for achieving the specified effects.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[GWOZWL3-W03] organization and legal basis of environment protection, nature protection and water management, as well as the principles of organization and operation of hydrological and meteorological services and the basics of Integrated Environmental Monitoring	The student lists using correct terminology the principles and organizations of water protection and water monitoring	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion
[GWOZWL3-W02] the importance of knowledge in the sciences allowing to understand the processes and phenomena occurring in the hydrosphere, as well as knowledge of the social sciences and of the Earth's geographic environment - as a a system of interrelated and interacting components	The student, in an appropriate manner using specialized terminology, describes natural phenomena related to the dynamics of water resources and human influence on the natural hydrological cycle	[SW4] test/exam - oral or written
[GWOZWL3-W09] potential threats and sources of pollution of surface and groundwater resulting from the development of civilization, in particular strong anthropopression	The student lists and classifies in terms of origin and physicochemical propertiesand types of pollution.	[SW4] test/exam - oral or written

Subject contents

LECTURE:A.1. Basic concepts of water theory in the natural environmentA.2. Physicochemical characteristics of surface and groundwater and their temporal changes (State Environmental Monitoring).A. 3. Assessment of changes in surface and groundwater quality under the influence of natural and anthropogenic environmental transformationsA.4. Basic processes in water purificationA.5. Removal of specific pollutants from water (POPs, heavy metals)A.6. Environmental law in the aspect of waterLABORATORY EXERCISES:B.1. Physicochemical analyses of waterB.2 Examples of technological processes used in wastewater and water treatmentB.3. Analysis of the course of the water treatment process based on the technologies used in selected treatment stations in the Pomeranian province

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
lab test	51.0%	20.0%
written exam or oral presentaion	51.0%	80.0%

Recommended reading

Basic literature	Kowal A.L., Świderska Bróż M., 2000, Oczyszczanie wody, Wyd. Naukowe PWN, Warszawa Wrocław Surgiel P., Kurbiel J., Ćwiczenia laboratoryjne z oczyszczania wody, Politechnika Świętokrzyska, Kielce, 2001 Malina G., Szczepański A., Likwidacja zanieczyszczeń substancjami ropopochodnymi w środowisku wodno-gruntowym, Biblioteka Monitoringu Środowiska, Warszawa, 1994 Dojlido J.R., Chemia wód powierzchniowych, wyd. Ekonomia i Środowisko, Białystok, 1995 Wytyczne dotyczące jakości wody do picia. Wydanie czwarte. Izba Gospodarcza Wodociągi Polskie, Bydgoszcz 2014 (tłumaczenie języka angielskiego Wytycznych WHO z roku 2011).
Supplementary literature	Bajkiewicz Grabowska E., Mikulski Z., 2008. Hydrologia ogólna. PWN Warszawa. Niemirycz E., 2008, Halogenated organic compouds in the environment in relation to climate change, Environmental Monitoring Library, MŚ, Warszawa Żurek J., Bagiński Z., red., Prawo ochrony środowiska Wspólnoty Europejskiej, tom 7: Woda. MOŚZNiL, Warszawa, 1996

	eResources addresses	
Example issues/ example questions/ tasks being completed	1. removal of gaseous pollutants, 2. flotation and sedimentation. Compare3 Reverse osmosis. The mechanism of action and its application are also discussed.	
Work placement	Not applicable	

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