

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 2025		Academic year of realisation of subject		2026/2027		
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	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-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 properties and types of pollution.	[SW4] test/exam - oral or written
	[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 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
Subject contents	LECTURE: A.1. Basic concepts of water theory in the natural environment A.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 transformations A.4. Basic processes in water purification A.5. Removal of specific pollutants from water (POPs, heavy metals) A.6. Environmental law in the aspect of water LABORATORY EXERCISES: B.1. Physicochemical analyses of water B.2 Examples of technological processes used in wastewater and water treatment B.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., Świdorska Bróz 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 Wyttyczne dotyczące jakości wody do picia. Wydanie czwarte. Izba Gospodarcza Wodociągi Polskie, Bydgoszcz 2014 (tłumaczenie języka angielskiego Wyttycznych 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. Compare 3 Reverse osmosis. Mechanism of action and application.	
Work placement	Not applicable	

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