



Subject card

Subject name and code	Water and sewage management in the energy sector, PG_00055880						
Field of study	Power Engineering						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	first-cycle studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department Of Environmental Engineering Technology -> Faculty Of Civil And Environmental Engineering -> Wydziały Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Krzysztof Czerwionka				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0	0.0	45
	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	45		6.0		49.0	100
Subject objectives	To acquaint students with models of water and wastewater management and the basic processes of water and wastewater treatment in the energy sector.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W14] has a theoretical knowledge in the field of chemistry, biology, physics and mathematics including knowledge necessary to understand the technological processes related to water treatment, wastewater treatment, waste management in energy facilities, circular economy		The student has a structured knowledge of the basics of chemistry, biology, physics and mathematics necessary to understand the technological processes related to water treatment, wastewater treatment, waste management in energy facilities, closed-loop management.		[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation		
	[K6_U10] can use correctly selected methods and measuring devices for determination of basic parameters during the water treatment process and wastewater treatment control; can perform basic laboratory tests leading to the assessment of water quality, pollutant load in wastewater		The student is able to choose the methods and measuring devices and perform basic water and sewage quality tests. The student is able to use the obtained results to evaluate the course of water and wastewater treatment processes.		[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task		
Subject contents	Wykład: Stan aktualny i kierunki transformacji systemu energetycznego Polski w aspekcie gospodarki wodno-ściekowej. Potencjalny wpływ energetyki na środowisko wodne. Modele gospodarki wodno-ściekowej w energetyce. Podstawowe zabiegi i procesy w oczyszczaniu wody (podziemna i powierzchniowa). Stabilność chemiczna i biologiczna wody. Ścieki wytwarzane w elektrowniach węglowych. Oczyszczanie ścieków. BAT w energetyce. Gospodarka wodno-ściekowa w biogazowniach. Laboratorium: Parametry jakości wody (wody powierzchniowe i podziemne); wymagania jakości wody stosowanej w układach chłodzenia oraz do celów kotłowych. Podstawowe zabiegi i procesy w oczyszczaniu wody: dekarbonizacja i koagulacja metodami chemicznymi, wymiana jonowa, filtracja, procesy membranowe.						
Prerequisites and co-requisites	Basic knowledge of chemistry, biology, physics and mathematics.						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	laboratory - class work assessment, test	60.0%	40.0%
	lectures - test	60.0%	60.0%
Recommended reading	Basic literature	Bartkiewicz B., Umiejewska K., Oczyszczanie ścieków przemysłowych PWN, 2022 Kowal A.L.Odnowa wody. Podstawy teoretyczne procesów, Wyd. Politechniki Wrocławskiej, 1997 Świderska-Bróż M., Kowal A.L., Oczyszczanie wody, PWN, 2009 Bodzek M., Konieczny K.,Wykorzystanie procesów membranowych w uzdatnianiu wody, Projprzem-eko, 2005	
	Supplementary literature	Szymkiewicz R., Dolna Wisła - rzeka niewykorzystanych możliwości, Wyd. PG, 2018	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Assessment of energy demand for water.		
	Comparison of cooling systems used in Poland; the problem of the discharge of heated water to the receiver.		
	Selection of water treatment methods to achieve boiler water quality.		
	Quality parameters of wastewater generated in conventional coal-fired power plants.		
Work placement	Not applicable		

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