



Subject card

Subject name and code	Waste and sewage sludge management, PG_00058954						
Field of study	Environmental Engineering						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2026/2027		
Education level	first-cycle studies		Subject group		Optional subject group 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	4		Language of instruction		Polish		
Semester of study	7		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 -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Eliza Kulbat				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	15.0	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		50.0	101
Subject objectives	The aim of the course is to familiarise students with the basics of municipal waste management and sewage sludge treatment technologies.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_K02] understands the need to formulate and communicate to the public information and opinions on the achievements of environmental engineering and other aspects of the sanitary industry engineer's activity; is aware of the importance and understands the non-technical aspects and effects of engineering activities; makes efforts to provide such information and opinions in a widely understandable way, presenting different points of view	Student understands the need to inform the public about the achievements of environmental engineering and other aspects of the work of a sanitary engineer; understands the non-technical aspects and effects of engineering activities.	[SK5] Assessment of ability to solve problems that arise in practice
	[K6_U10] can design basic equipment for water treatment, wastewater treatment and sludge and waste management	Student is able to design basic equipment for water treatment, sewage treatment, and sludge and waste management.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject
	[K6_W10] has elementary knowledge in the field of running a business in the sanitary industry; knows the general principles of creating and developing forms of individual entrepreneurship; knows the basic principles of health and safety at work in the laboratory and at the construction site	Student has basic knowledge of running a business in the sanitary industry; knows the basic principles of health and safety at work applicable in laboratories and on construction sites.	[SW1] Assessment of factual knowledge
	[K6_U16] can, when formulating and solving engineering tasks in environmental engineering, evaluate, select and apply appropriate methods and tools, recognize their non-technical aspects, including environmental, economic and legal aspects	Student is able to evaluate, select and apply appropriate methods and tools, recognising their non-technical aspects, including environmental, economic and legal aspects.	[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information
Subject contents	Course content – lecture Waste management hierarchy in the EU. Organisation of municipal waste management in Poland principles and legal basis, Waste Act. Waste minimisation, product reuse and recycling. Characteristics of municipal waste. Waste storage basics of landfill design, operation and closure; biochemical processes of waste decomposition, characteristics and treatment of landfill leachate. Composting of biodegradable waste. Thermal waste treatment. Legal basis for sewage sludge management. Quantity and characteristics of sludge. Sludge thickening and dewatering - processes and equipment. Methods of sewage sludge stabilisation, methane fermentation and biogas production. Natural use of sewage sludge. Drying and incineration of sewage sludge. Methods of sludge management in small sewage treatment plants.		
	Course content – project Familiarisation with municipal facilities in the Tri-City municipal waste treatment plant, municipal waste incineration plant and municipal sewage treatment plant.		
Prerequisites and co-requisites	Knowledge of wastewater technology.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	test	60.0%	100.0%
Recommended reading	Basic literature	Rosik-Dulewska C., Podstawy gospodarki odpadami, PWN, W-wa 2015 Jędrzak A., Biologiczne przetwarzanie odpadów, PWN, W-wa 2015 Dymaczewski Z., Podręcznik eksploatatora oczyszczalni ścieków	
	Supplementary literature	Biliński B., Hardtle G., Marek K., Podręcznik gospodarki odpadami - teoria i praktyka, Wyd. Seidel-Przywecki Rutkowska B., Szulc W., Przyrodnicze wykorzystanie odpadów i ścieków, Wyd. SGGW 2025 Jakubus M., Komunalne osady ściekowe. Geneza-gospodarka, Wyd. UP w Poznaniu.	
	eResources addresses		

Example issues/ example questions/ tasks being completed	The impact of changes in municipal waste management on waste decomposition processes in the storage area. Control of the methane fermentation process.
Practical activities within the subject	Not applicable

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