



Subject card

Subject name and code	, PG_00059187						
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		Obligatory subject group in the field of study		
Mode of study	Part-time studies		Mode of delivery		at the university		
Year of study	4		Language of instruction		Polish		
Semester of study	7		ECTS credits		7.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Department of Sanitary Engineering -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Ewa Wojciechowska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	20.0	0.0	10.0	0.0	50
	E-learning hours included: 0.0						
	eNauczanie source address: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26819						
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	50		5.0		120.0	175
Subject objectives	The aim of the course is to provide knowledge on the tasks of sewer networks, the principles of their design, construction and operation, as well as the materials used to build sewer networks.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U12] can design installations, networks and facilities: water supply, sewage, heating and gas		Student is able to design a separate sewer network for a residential area.		[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		
	[K6_W07] has a structured and theoretically founded knowledge in the field of materials used in the sanitary industry, their physico-chemical properties; knows and understands the basic processes of their production		Student has knowledge on materials used for construction of sewer pipelines and armament.		[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	[K6_U03] can prepare documentation regarding the implementation of an engineering task/project and prepare a text or presentation including a discussion of the results of the implementation		Student is able to prepare design documentation consisting of technical description, calculations, and technical drawings presenting sewerage and drainage networks.		[SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task		
	[K6_U13] knows the rules of application and can choose the materials of the sanitary industry		Student knows types and properties of materials used for construction of sewerage and drainage systems.		[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information		
	[K6_W09] has ordered, theoretically founded knowledge in the field of water supply, sewage, heating, ventilation and air conditioning, and the principles of shaping the microclimate of rooms; knows legal regulations, standardization issues and recommendations for the design of water supply, sewage, heating and gas networks and installations		Student knows types of sewer systems, rules of their design, construction and maintenance.		[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		

Subject contents	Course content – lecture		
	Functions and types of sewer networks. Gravity, gravity-pumped, pressure, and vacuum sewer networks. Calculating domestic and industrial wastewater flows. Calculating stormwater flows for urban areas. Sustainable stormwater management. Principles of hydraulic calculations and sewer pipe diameter selection. Sewer pipe profiles and materials. Interaction of pipes with the subsoil. Sewer network reinforcement. Operational tasks in sewer networks. Trenchless methods for the construction and repair of sewer pipes.		
	Course content – exercises		
	Principles of design flow calculations. Principles of hydraulic calculations and sewer network dimensioning. Pump selection.		
	Course content – project		
	Design project of a separate sewer system for the town. Performing calculations, preparation of technical descriptions, and drawing sewer profiles.		
Prerequisites and co-requisites	No requirements		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	design project of separate sewer system	100.0%	50.0%
	exam	50.0%	50.0%
Recommended reading	Basic literature	Kotowski A.: Podstawy bezpiecznego projektowania kanalizacji. Wydawnictwo Seidel Przywecki, Warszawa 2012	
		Licznar P.: Generatory syntetycznych szeregów opadowych. Wydawnictwo Uniwersytetu Przyrodniczego, Wrocław 2009	
		Mielcarzewicz E.: Odwadnianie terenów zurbanizowanych i przemysłowych. Systemy odwadniania. PWN, Warszawa 1990	
		Weinerowska Bords K.: Rola uproszczeń w modelach obliczeniowych kanalizacji deszczowej. Wydawnictwo Politechniki Gdańskiej, Gdańsk 2010	
		Kanalizacja. Praca zbiorowa pod red. Z.Suligowskiego. Wydawnictwo Seidel Przywecki, Warszawa 2012	
		Madryas C., Kolonko A., Szot A., Wysocki L.: Mikrotunelowanie. Dolnośląskie Wydawnictwo Edukacyjne. Wrocław 2006	
		Suligowski Z.: Infrastruktura kanalizacyjna w gospodarce komunalnej. Wydawnictwo PG, Gdańsk 2006 .	
		Technologie bezwykopowe w inżynierii środowiska. Praca zbiorowa pod red. A.Kuliczowskiego. Wydawnictwo Seidel Przywecki, Warszawa 2010	
	Supplementary literature	Websites of sewer pipe and manhole manufacturers. Diameter selection calculators and nomograms	
		Standards and Norms	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Classify sewer systems based on the type of wastewater and flow regime. Types of materials used in sewer pipe construction and pipe connection methods. Calculation of the flow of sanitary wastewater discharged from a residential area with a given population.		
Practical activities within the subject	Not applicable		