



## Subject card

Subject name and code	, PG_00061719						
Field of study	Environmental Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
Education level	second-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	1	Language of instruction			Polish polish		
Semester of study	2	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Sanitary Engineering -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Jakub Drewnowski				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	10.0	0.0	0.0	0.0	20
	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	20		3.0		52.0	75
Subject objectives	The aim of the course is to present basic theoretical knowledge of conventional and modern solutions used in water and sewage sanitary installations, rainwater management, the use of conventional and ecological systems. Students will gain practical knowledge of the range of available technical and material solutions. In addition to the presentation of theoretical knowledge, another objective of the course is to provide students with practical skills in the advanced design of sanitary installations.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	K7_U11		The student is able to find and properly use sources of information, legal acts and norms relating to the area problematic design of sanitary installations and networks			[SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task [SU1] Assessment of task fulfilment	
	[K7_W11] has knowledge to analyze, evaluate and optimize processes, objects and systems of environmental engineering and knows the principles of rational energy management and resources		The student is able to use the acquired knowledge in the field of basic sciences in order to understand the principles of operation and practical application of knowledge for the purposes of designing installations and sanitation networks, with particular emphasis on solutions based on the use of renewable water/energy sources			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects	
	K7_U12		The student is able to use the acquired knowledge in the field of basic sciences in order to understand the principles of operation and practical application of knowledge for the purposes of designing sanitary installations and networks.			[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task	

Subject contents	<p>LECTURES. Conventional and modern solutions in water supply systems as well as in sanitary sewage and rain systems. Conventional energy sources for the preparation of domestic hot water and central heating systems. Sanitary techniques using renewable water sources. Gas systems. Advanced design sanitary systems WOD-KAN and functional issues of fire protection systems</p> <p>Exercises. Development of a water and sewage system project based on the use of renewable energy sources and grey water accordance with the applicable legal provisions, good engineering practice and the scope of topics presented in the lectures.</p>		
Prerequisites and co-requisites	Completed the basic program in the field of environmental engineering.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Final test and passing the Exercises	60.0%	100.0%
Recommended reading	Basic literature	<p>1) Chudzicki, J., Sosnowski, S. (2011). Instalacje wodociągowe projektowanie, wykonanie i eksploatacja, Wydawnictwo Seidel-Przywecki, W-wa 2) Chudzicki, J., Sosnowski, S. (2011). Instalacje kanalizacyjne projektowanie, wykonanie, eksploatacja, Wyd. Seidel-Przywecki, W-wa 3) Gassner, A. (2008). Instalacje sanitarne, Wyd. Wydawnictwa Naukowo-Techniczne, W-wa 4) Zajada, R. Instalacje gazowe na paliwa gazowe, Wyd. COBO Profil 5) Bąkowski K. (2007). Sieci i instalacje gazowe, Wyd. Wydawnictwa Naukowo-Techniczne, W-wa 6) Stec, A., Słyś, D. (2016). Instalacje ekologiczne w budownictwie mieszkaniowym Wyd. KaBe, Krosno 7) Słyś, D., Kordana, S. (2013) Odzysk ciepła odpadowego w instalacjach i systemach kanalizacyjnych Wyd. KaBe, Krosno 8) Oszczak W., (2019) Kolektory słoneczne i fotoogniwa w Twoim domu Wyd. Komunikacji i Łączności sp. z o.o. 9) Dedykowane normy i akty prawne.</p>	
	Supplementary literature	<p>1. Katalogi wyrobów i firmowe poradniki dla projektantów: Geberit, PipeLife, Wavin, LPM Danfoss, COMAP, PURMO, KanTherm, PoWoGaz S.A., Metron, AQUATHERM, Cuprum, COPRAX, ROCKWOOL, Thermaflex i in.;</p> <p>2. Obowiązujące normy, przepisy i wytyczne, a w szczególności: Warunki Techniczne Wykonania i Odbioru Robót Budowlano Montażowych, Tom II: Instalacje Sanitarne i Przemysłowe, ARKADY, Warszawa 1988 oraz Wymagania Techniczne COBRTI INSTAL zeszyt 1-10, Warszawa, 1999 do 2005.</p>	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Preparation of drawing documentation and carrying out engineering calculations in the field of installation internal markets - conventional, based on the use of advanced systems and the principles of sustainable development through the management of grey sewage and rainwater..		
Work placement	Not applicable		