GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Innovative sanitation approaches, PG_00064739		
Field of study	Power Engineering, Power Engineering		
Date of commencement of studies	February 2027	Academic year of realisation of subject	2026/2027
Education level	second-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	1	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
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	dr hab. inż. Jakub Drewnowski	
	Teachers	dr hab. inż. Jakub Drewnowski dr inż. Joanna Majtacz	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	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	5.0	15.0	50

Subject objectives

The aim of the classes is to present the basic theoretical knowledge on conventional and modern solutions used in sanitary water and sewage installations, rainwater management, the use of conventional and ecological energy sources. Students will gain practical knowledge of the available technical and material solutions. In addition to presenting theoretical knowledge, another goal of the classes is for students to acquire practical skills in designing sanitary installations.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U13] evaluates the feasibility and potential for utilizing new technical and technological achievements in accomplishing tasks characteristic for the field of study	The student is able to use the acquired knowledge of basic sciences to understand the principles of operation and the practical application of knowledge for the design of internal installations with particular emphasis on solutions based on the use of renewable energy sources	[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject
[K7_W12] identifies and interprets the main developmental trends and significant new achievements in the field of engineering and technical sciences and disciplines relevant to the course of study	The student is able to find and properly use sources of information, legal acts and standards relating to the problem area of designing internal installations.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
[K7_W02] demonstrates structured and theory supported knowledge encompassing key issues in the field of Power Engineering, enabling modeling and analysis of energy systems, machines and devices, transmission grids and internal installations	The student is able to use the acquired knowledge of basic sciences in order to understand the principles of operation and the practical application of knowledge for the design of internal installations.	[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects

Subject contents	Course content – lecture LECTURES: Conventional and modern solutions in water supply systems.Conventional and modern solutions in sanitary sewage systemsConventional energy sources for domestic hot water preparation and central heating C.O.Sanitary techniques using renewable energy sources (RES): Photovoltaic cells; Heat pumps; Solar panelsDesign and functional issues of fire protection installations. LAB. Project of a water and sewage internal installations project based on the use of renewable energy and gray water management in accordance with applicable legal regulations, engineering practice and the scope of topics presented in the lectures.
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Presentation/Project of the internal installation	60.0%	35.0%
Lecture - exam	60.0%	65.0%

Recommended reading

Basic literature

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.

	Supplementary literature	1. PN-92/B-01706 Instalacje wodociągowe. Wymagania w projektowaniu. 2. PN-88/M-54907 Wodomierze śrubowe z pionową osią miernika 3. Rozporządzenie Ministra Infrastruktury z 6 listopada 2008r. w sprawie warunków technicznych jakim powinny odpowiadać budynki i ich usytuowanie 4. PN-EN 33-2011 Miski ustępowe i zestawy WC 5. PNEN31-2011 Umywalki wymiary połączeniowe 6. PN-EN 695:2005 Zlewozmywaki kuchenne wymiarowanie połączeniowe 7. PN-EN 232:2005 Wanny kąpielowe wymiary połączeniowe 8. Wymagania techniczne Cobrti Instal. Warunki techniczne wykonania i odbioru instalacji wodociągowych. 9. PN-B-10725:1997 Wodociągi przewody zewnętrzne wymagania i badania 10. PN-EN 12056-2 Systemy kanalizacji grawitacyjnej wewnątrz budynków, kanalizacja sanitarna, projektowanie układu i obliczeń 11. Wymagania techniczne Cobrti Instal. Warunki techniczne wykonania i odbioru instalacji kanalizacyjnej. 12. PN EN 1610 Budowa i badanie przewodów kanalizacyjnych 13. PNB-01707 Instalacje kanalizacyjne wymagania w projektowaniu 14. PNEN 1917:2004 Studzienki włazowe i niewłazowe z betonu niezbrojonego, z betonu zbrojonego włóknem stalowym i żelbetowym 15. PN-B-10729:1999 Kanalizacja studzienki kanalizacyjne 16. Rozporządzeniem Ministra Spraw Wewnętrznych i Administracji z dnia 16 sierpnia 1999 r. w sprawie warunków technicznych użytkowania budynków mieszkalnych
	eResources addresses	
Example issues/ example questions/ tasks being completed	Development of drawing documentation and carrying out engineering calculations in the field of internal installations - conventional, as well based on the use of renewable energy sources and the principles of sustainable development through the management of gray wastewater and rainwater.	
Practical activites within the subject	Not applicable	

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