GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Materials Technology in Sanitary Systems , PG_00059184						
Field of study	Environmental Engineering						
Date of commencement of studies	October 2024		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	Part-time studies		Mode of delivery	at the university			
Year of study	2		Language of instruction	Polish			
Semester of study	4		ECTS credits	5.0			
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						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	0.0	15.0	0.0	0.0	35
	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	35		6.0	84.0		125
Subject objectives	The aim of the course is to make the methods of distinguishing the features and properties of installation materials and, on this basis, to select the right materials and techniques of connecting conduits for the construction of sanitary networks and installations.						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U13] knows the rules of application and can choose the materials of the sanitary industry	Selects materials for the construction of sanitary networks and installations.	[SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
[K6_U14] can organize, estimate executive construction works (installation) in accordance with the principles of construction technology and organization, apply the principles of safety and health at work during the implementation of engineering tasks	A student demonstrates wire connection techniques.	[SU2] Assessment of ability to analyse information [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
[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	The student understands the effects of a sanitary engineer's activities, the impact on the environment and the associated responsibility for the decisions made.	[SK1] Assessment of group work skills [SK2] Assessment of progress of work [SK3] Assessment of ability to organize work [SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice
[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	The student distinguishes between the features and properties of installation materials.	[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects

Subject contents

Course content – lecture
LECTURE: Physical, mechanical, thermal and chemical properties of materials. Metals and their alloys are the iron-cementite phase equilibrium system. Classification, types and applications of steel, cast iron and cast steel. Heat, thermo-chemical and plastic treatment of steel and cast iron. Non-ferrous metals and their alloys manufacturing process, properties and application. Polymers preparation, properties and application. Ceramic, concrete, reinforced concrete and composite products production, properties and application. Material selection criteria for the construction of networks and installations. Features and properties of thermal insulation materials.

LABORATORY: Types, assortment and application of installation materials. Separable (threaded, flanged, socket and clamp separable connections) and non-separable (welded, glued, welded, clamped) connections in sanitary networks/installations. Basic types of materials and criteria for the selection of methods of renovation of water and sewage pipes. Ducts and utilities for pre-insulated heating networks. Materials used in the construction of fittings (flow control: gate valves and valves; protection: reducers, breathers; water meters) in sanitary installations/networks.

Prerequisites and co-requisites

Knowledge of Chemistry (SSPK14), Physics (SSPK13) as well as Mechanics and Strength of Materials (SSPK09)

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Final exam and passing the laboratory	50.0%	100.0%

Recommended reading

Basic literature	1. Hyla J.: Tworzywa sztuczne. Własności przetwórstwo zastosowanie. Gliwice: Wydawnictwo Politechniki Śląskiej 2000. 2. Krzemień E.: Materiałoznawstwo. Gliwice: Wydawnictwo Politechniki Śląskiej 2001. 3. Rudnik S.: Metaloznawstwo. Warszawa: PWN 1996.
Supplementary literature	The supplementary reading list includes scientific and technical journals (Instal, Gaz Woda Technika, Instal Reporter or Przegląd Komunalny) and Catalogue Cards of industry companies..

	eResources addresses	Supplementary https://enauczanie.pg.edu.pl/moodle/course/view.php?id=15279 - Materiałoznawstwo Instalacyjne - Nowy - Nowy Moodle ID: 15279
Example issues/ example questions/ tasks being completed	Knowledge of the basic characteristics and properties of installation materials. Making the right choice of materials and conduit connection techniques for the construction of sanitary networks and installations. Basic types of materials and criteria for the selection of methods of renovation of "WOD-KAN-GAS" pipes..	
Practical activites within the subject	Not applicable	

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