



## Subject card

Subject name and code	Water Supply Systems I, PG_00042687						
Field of study	Environmental Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2022/2023		
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	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			5.0		
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 inż. Ryszard Orłowski					
	Teachers	dr inż. Dominika Sobotka dr inż. Ryszard Orłowski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	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		90.0	125
Subject objectives	General knowledge of the water supply system existence. Possibility of the water supply system general designing. Cooperation between elements of the water supply system.						

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 and the effects of engineering activities in the field of water systems.	[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	Student has an orderly and theoretically founded knowledge of materials used in water systems.	[SW1] Assessment of factual knowledge
	[K6_U13] knows the rules of application and can choose the materials of the sanitary industry	Student knows the rules of application and is able to select materials for the water supplying systems	[SU3] Assessment of ability to use knowledge gained from the subject
	[K6_U12] can design installations, networks and facilities: water supply, sewage, heating and gas	Student knows how to design a water system.	[SU1] Assessment of task fulfilment
	[K6_U11] can use selected computer programs to support design, including CAD graphics programs	Student is able to use selected computer programs in the field of water systems.	[SU1] Assessment of task fulfilment
	[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 technical specification on the task / project in the field of water systems.	[SU1] Assessment of task fulfilment
[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 has an orderly, theoretically founded knowledge of water supply systems, knows standardization and legal issues.	[SW1] Assessment of factual knowledge	
Subject contents	Water supply systems - general definitions, concepts. Cooperation between the elements of water-supply systems. Forecast water consumption for the period perspective as a basis for quantitative design of the water supply system. Footage Water supply - surface water and groundwater.		
Prerequisites and co-requisites	basic knowledge of hydraulic, geology, pipe materials and mechanic of ground		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lectures - participation in class, test.	60.0%	20.0%
	Exercise - participation in class, performance computing tasks	80.0%	80.0%

Recommended reading	Basic literature	<p>Gabryszewski T., Wierzbicki A.: Ujęcia wód podziemnych, Arkady Warszawa 1985</p> <p>Janson E., Molin J.: Projektowanie i wykonawstwo sieci zewnętrznych z tworzyw sztucznych. Wavin, Arhus 1991.</p> <p>Janson L.-E.: Rury z tworzyw sztucznych do zaopatrzenia w wodę i odprowadzania ścieków. BOREALIS i Polskie Stowarzyszenie Producentów Rur i Kształtek z Tworzyw Sztucznych, Toruń 2010</p> <p>Suligowski Z., Fudala-Książek S.: Zaopatrzenie w wodę. Seidel-Przywecki Warszawa 2014.</p> <p>Suligowski Z.: Zaopatrzenie w wodę, WART Olsztyn 1999</p> <p>National document according to the European Standard PN-EN805 "Water supply Requirements for systems and components outside buildings": PN-EN805 Zaopatrzenie w wodę. Wymagania dotyczące systemów zewnętrznych i ich części składowych</p> <p>Ustawa z dnia 7 czerwca 2001 r. o zbiorowym zaopatrzeniu w wodę i zbiorowym odprowadzaniu ścieków z późniejszymi zmianami (Law of the public water supply and sewerages activity), DU 72/2001 5</p>
	Supplementary literature	<p>1. E-L Jansen: Plastic pipes for water supply and sewage disposal. BOREALIS, Stockholm 1995 2. Rozporządzenie Ministra Infrastruktury z dnia 2 września 2004 w sprawie szczegółowego zakresu i formy dokumentacji projektowej, specyfikacji technicznych wykonania i odbioru robót budowlanych oraz programu funkcjonalno użytkowego (Disposal about of the building designing frames and contents, technical specification, controlling of the building process and functional program). Dziennik Ustaw 202/2004. 3. National document according to the European (pre)Standard ENV1046 "Plastics piping and ducting systems Systems outside building structures for the conveyance of water or sewage Practices for installation above and below ground": PN-ENV1046: Systemy z tworzyw sztucznych. Systemy do przesyłania wody i ścieków na zewnątrz konstrukcji budowli. Praktyczne zalecenia układania przewodów pod ziemią i nad ziemią 4. Rozporządzenie Ministra Infrastruktury z dnia 3 lipca 2003 w sprawie szczegółowego zakresu i formy projektu budowlanego (Disposal about of the building designing frames and contenst). Dziennik Ustaw 120/2003 5. <a href="http://wavin: design manuals, standards">http://wavin: design manuals, standards</a></p>
	eResources addresses	<p>Adresy na platformie eNauczanie:</p> <p>Wodociągi I niestacjonarne IS Vsem_2022/2023 - Nowy - Moodle ID: 25006</p> <p><a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=25006">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=25006</a></p>
Example issues/ example questions/ tasks being completed	The calculation of the water supply system components. The cooperation of system components.	
Work placement	Not applicable	