



Subject card

Subject name and code	, PG_00059171						
Field of study	Environmental Engineering						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2024/2025		
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	Full-time studies	Mode of delivery			at the university		
Year of study	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			4.0		
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. Maria Orłowska-Szostak dr inż. Ryszard Orłowski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	15.0	0.0	60
	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	60	5.0		45.0	110	
Subject objectives	The aim of the course is to familiarize students with individual types of construction installations in the sanitary industry in , their application, construction, design principles, advantages and disadvantages of individual solutions and technologies in terms of using this knowledge in the professional practice of a sanitary engineer.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U12] can design installations, networks and facilities: water supply, sewage, heating and gas	He can design complex sanitary installations	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject
	[K6_U07] can read architectural, construction and geodesy drawings, and can use the known computer programs to prepare a drawing part of technical documentation for the sanitary industry	He can use professional architectural and construction foundations as a basis for design. Is able to prepare drawings of technical documentation for the sanitary industry using appropriate professional computer programs	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
	[K6_U06] knows and applies the basic provisions of construction law, water law and environmental law	When designing internal installations, he knows and is able to apply all current construction law regulations	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU5] Assessment of ability to present the results of task
	[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	Knows the current PN and PN-EN standards as well as current regulations and guidelines regarding the design of all sanitary installations	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
[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	When carrying out projects in the field of internal installations, he can fully use the acquired knowledge in the field of installation materials	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects	
Subject contents	LECTURES Discussion of extensive literature on the subject. Division of sanitary networks and installations. Smooth Pump regulation: general theoretical principle. Installations incl.: Introduction (materials used and technologies, required inlet pressure). Buildings powered directly from the city network (without RC, via RC). Tall buildings, powered by a pump with an inverter; rating i comparison of various solutions for smooth regulation. Pressure zoning in installations. Hot water installations: Division of domestic hot water devices. Individual preparation of domestic hot water. Central preparation of domestic hot water; materials, technologies, typical installation and circulation control schemes in central hot water. Central heating installations: Applied materials, division of heating devices, typical installation and regulation diagrams of central heating. Sewerage installations sanitary: solutions depending on the height of the building. Rainwater drainage installations: materials, typical solutions, installation of vacuum sewage. Gas installations: Current trends; methods computational. Pressure and vacuum sewage networks: Application, basic principles design. TUTORIAL EXERCISES Principles of dimensioning and calculation examples of installations water supply, sanitary sewage, rainwater and gas installations; use of professional computer programs. DESIGN Design of internal installations for a medium-sized residential building.		
Prerequisites and co-requisites	Passed basic program in the field of sanitary installations and general construction.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	design	85.0%	30.0%
	exercises	60.0%	10.0%
Written examination	60.0%	60.0%	
Recommended reading	Basic literature	1.Sosnowski S., Tabernacki J., Chudzicki J.: Instalacje wodociągowe i kanalizacyjne. Wyd. Instalator Polski, Warszawa, 2000. 2. Poradnik: Instalacje wodociągowe, kanalizacyjne i gazowe. Praca zbiorowa pod red. M. Chudzickiego, Arkady, Warszawa,1976. 3. Krygier K., Klinke T., Seweryniuk J.: Ogrzewnictwo, wentylacja, klimatyzacja. Wyd. Szkolne i Pedagogiczne SA, Warszawa, 2000. 4. K. Bąkowski, J. Bartuś, R. Zajda: Projektowanie instalacji gazowych, Arkady, Warszawa,1976	

	Supplementary literature	Katalogi wyrobów i firmowe poradniki dla projektantów: Geberit Danfoss, COMAP, PURMO, KanTherm, PoWoGaz S.A., Metron AQUATHERM (fusiotherm), Cuprum, COPRAX, ROCKWOOL (Thermorock), Thermaflex PipeLife, Wavin i in. (w większości dostępne w Internecie). 2. Obowiązujące liczne normy, przepisy i wytyczne podane na wykładzie.
	eResources addresses	Podstawowe https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32476 - Address on the eNauczanie platform Sanitary installations I, engineering sem.5 - stationary_2023/2024 - Moodle ID: 32476 Uzupełniające Adresy na platformie eNauczanie: Instalacje sanitarne I, inżynierskie sem.V - stacjonarne_2024/2025 - Moodle ID: 40347 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=40347
Example issues/ example questions/ tasks being completed		Discussion of basic professional computer support programs design of sanitary construction installations. Connecting the water supply system to the municipal water supply network. Materials used in water supply installations. Fire protection installations in buildings. Gas installations, materials, gas meters. Hot water installations, division and regulation. Heating installations, division and regulation.
Work placement		Not applicable

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