



## Subject card

Subject name and code	Sanitary Engineering , PG_00049428						
Field of study	Environmental Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2022/2023		
Education level	second-cycle studies	Subject group			Optional subject group		
Mode of study	Part-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			5.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Krzysztof Szarf					
	Teachers	dr inż. Krzysztof Szarf					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	25.0	15.0	0.0	0.0	0.0	40
	E-learning hours included: 0.0						
	Budownictwo Sanitarne (III mgr nst IŚ) - zima 2022/2023 - Moodle ID: 24059 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=24059">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=24059</a>						
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	40	5.0	90.0	135		
Subject objectives	The aim of the class is to teach the students of Environmental Engineering problems of civil engineering, especially regarding sanitary engineering, earth works, geotechnical engineering.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W05] has basic knowledge in general construction or in water or sanitary or hydrotechnical or road construction; the impact of construction investments on the environment	Knows the rules of subsurface construction design Knows the rules of reinforced concrete construction design Is aware of problems related to excavations in an urban environment			[SW1] Assessment of factual knowledge		
	[K7_U14] can technically and economically analyze and evaluate the solutions and functioning of facilities and systems in the sanitary engineering or flood protection, water intakes and water infrastructure or water and wastewater treatment plants; can assess the suitability and potential of using new achievements in materials, fixtures, devices and methodologies for designing and modeling the analyzed technical infrastructure and industrial objects, including innovative solutions	Student learnt methods of sanitary constructions civil engineering design Is able to classify sanitary engineering constructions from a perspective of civil engineering Is able to assess the usability of trenchless and excavatory techniques of pipeline construction and repair Can assess dangers related to design and construction of sanitary engineering constructions			[SU3] Assessment of ability to use knowledge gained from the subject		
	[K7_W02] has broadened and well-ordered knowledge of the current law on construction, water, environmental protection and planning and spatial planning.	Knows building laws regarding sanitary engineering The student is knowledgeable about current building codes			[SW1] Assessment of factual knowledge		

Subject contents	<p>Lectures:</p> <ul style="list-style-type: none"> <li>- Construction design in Eurocodes</li> <li>- Types of sanitary engineering constructions: potable water gathering and purification, stormwater drainage, retention and reclamation, sewage transport, treatment and reclamation</li> <li>- Basics of reinforced concrete design</li> <li>- Basics of foundation engineering</li> <li>- Slope stability. Excavation casings</li> <li>- Trenchless methods of construction and rehabilitation of pipelines</li> <li>- Stiff and flexible pipeline design using the following methods: ATV DVWK-A 127, the Scandinavian Method</li> </ul> <p>Auditorial classes:</p> <p>Design of a reinforced concrete subsurface tank, design of a rigid pipeline, design of a flexible pipeline, design of an excavation casing, design of a rigid or flexible manhole</p>														
Prerequisites and co-requisites	Soil mechanics. Geotechnics. Construction statics. Strength of materials. Material science. Hydraulics														
Assessment methods and criteria	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Subject passing criteria</th> <th style="width: 33%;">Passing threshold</th> <th style="width: 34%;">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>exam</td> <td>50.0%</td> <td>40.0%</td> </tr> <tr> <td>problem to calculate</td> <td>100.0%</td> <td>30.0%</td> </tr> <tr> <td>essay</td> <td>100.0%</td> <td>30.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	exam	50.0%	40.0%	problem to calculate	100.0%	30.0%	essay	100.0%	30.0%
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Recommended reading	Basic literature	Adam Bolt, Ewa Burszta-Adamiak, Katarzyna GudelisTaraszkiewicz, Ziemowit Suligowski, Agnieszka Tuszyńska, „Kanalizacja. Projektowanie, wykonanie, eksploatacja” SeidelPrzewocki Sp. z o.o. 2012 ATV-DVWK-A 127 Statische Berechnung von Abwasserkanälen und -leitungen PN-EN 1997:2008 Eurokod 7													
	Supplementary literature	RANGWALA, Water Supply And Sanitary Engineering, Charotar Publishing House Pvt. Ltd (2016)													
	eResources addresses														
Example issues/ example questions/ tasks being completed	<p>Auditorial classes:</p> <ol style="list-style-type: none"> <li>1. Design calculations of a flexible pipeline using the Scandinavian Method</li> <li>2. Design calculations of an excavation casing using a soldier pile wall</li> </ol> <p>Essay:</p> <ol style="list-style-type: none"> <li>1. Give a talk on a particular case of an engineering failures related to sanitary engineering</li> <li>2. Present a chosen technology of sewage pipe restoration</li> </ol> <p>Lecture:</p> <ol style="list-style-type: none"> <li>1. Describe a chosen trenchless technology used for pipeline repair</li> <li>2. Characterise the construction of a settlement basin in a sewage treatment plant</li> </ol>														
Work placement	Not applicable														