GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Water Supply and Wastewater Disposal, PG_00059994		
Field of study	Environmental Engineering		
Date of commencement of studies	February 2024	Academic year of realisation of subject	2023/2024
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	English
Semester of study	1	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Sanitary Engineering -> Faculty of Civil and Environmental Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Ewa Wojciechowska	
	Teachers	dr inż. Hussein Al-Hazmi prof. dr hab. inż. Ewa Wojciechowska	

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	38.0	103

Subject objectives

Gaining advanced knowledge on modeling and analysis of waterworks and sewarage networks. Gaining knowledge and abilities on designing of the drainage systems. Gaining knowledge on the role and applications of Nature Based Solutions and Green Infrastructure.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_W09	Student knows and understands problems arising from increasing pressure on water resources due to climate change and demographic growth. Student understands how these phenomena affect hydrological cycle and knows possible mitigation methods.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
K7_U06	Student knows and can choose tools for designing of water supply and wastewater disposal system adequate for the size of residential area.	[SU4] Assessment of ability to use methods and tools
K7_U10	Student performs routing and computation of water demand, wastewater and stormwater computational flow rates. Student can perform hydraulic calculations.	[SU1] Assessment of task fulfilment [SU5] Assessment of ability to present the results of task
K7_U12	Student can choose adequate solution of water treatment, collecting of domestic wastewater and management of stormwater, according to the local circumstances.	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject

Subject contents	Objectives and aims of water supply systems and wastewater disposal systems in XXI century. Pression on water resources and necessity of adopting circular economy principles in the water sector. Soultions for de-centralised wastewater treatment in the rural areas. Vacuum sewers and pressure sewer systems. On-site wastewater treatment: drainage, sand filters, constructed wetlands. Storm water drainage in the urban areas. Methods of calculation flow rates in storm water drainage systems. Pollution of storm water runoff and treatment possibilities. Sustainable urban drainage systems. Infiltration and retention of storm water. Possibilities of using Green Infrastructure and Nature Based Solutions in water supply and wastewater disposal. The basic aspects of water management in municipal and industrial sectors. Technological schemes of groundwater and surface water treatment. Unit processes used for removal of typical pollutants present in in groundwater and surface water: coagulation, filtration, aeration, sorption, ion exchange, membrane processes. Selection of materials and dimensioning of devices for unit processes of water treament. Cost analysis of selected elements of water treatment installation.
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Report + oral presentation	100.0%	25.0%
exam	50.0%	50.0%
Designing exercise	100.0%	25.0%

Recommended reading

Basic literature	Viessman W Jr., Hammer M.J. Water Supply and Pollution Control. Wang L.K., Okun D., A., Shammas N.K. Water Supply and Wastewater Removal. Krenkel P.A., Arnhoff K., Imhoff K. Karl Imhoff's Handbook of Urban Drainage and Wastewater Disposal.
Supplementary literature	Sharma A.K., Swamee P.K. Design of Water Supply Pipe Networks.
eResources addresses	Adresy na platformie eNauczanie: Water Supply and Wastewater Disposal - Nowy - Nowy - Moodle ID: 17588 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=17588

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable

Document generated electronically. Does not require a seal or signature.