GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	EQUIPMENT FOR WATER TREATMENT , PG_00042698		
Field of study	Environmental Engineering		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2023/2024
Education level	first-cycle studies	Subject group	Optional subject group 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	6	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Environmental Engineering Technology -> Faculty of Civil and Environmental Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Rafał Bray	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	10.0	0.0	5.0	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	65.0	100

Subject objectives

The student acquires the necessary knowledge regarding issues related to the purpose, construction and principles of operation of devices at water treatment plants.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W03] has a structured and theoretically founded knowledge in the field of chemistry and biology, including knowledge necessary to understand the technological processes related to water treatment, wastewater treatment, waste management and sludge management	The student has structured and theoretically based knowledge necessary to understand technological processes related to water treatment,	[SW1] Assessment of factual knowledge
[K6_U10] can design basic equipment for water treatment, wastewater treatment and sludge and waste management	Students design a water treatment plant, perform calculations of selected treatment devices, prepare a site and height plan and a height diagram.	[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [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	The student is able to prepare documentation regarding the implementation of an engineering project for a water treatment plant.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment

<table>
<tr><td>Subject contents</td><td colspan="3">LECTURE Surface water treatment - basic principles, technological lines. Groundwater treatment - basic principles, technological lines. General basics of SUW design. Selected water treatment devices (purpose, types, structure, operating principle, design guidelines): mixers, reaction (flocculation) chambers, settling tanks, filters, aerators, water disinfection devices, clean water tanks.

EXERCISES/PROJECT Construction of a height plan, Construction of a height diagram. Calculations and selection of devices and facilities: mixers, reaction chambers, settling tanks, rapid filters, clean water storage tanks, technological pipelines.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">Mastered knowledge of the subject Water technology</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Project</td><td>60.0%</td><td>40.0%</td></tr><tr><td>Test</td><td>60.0%</td><td>60.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">1. Heidrich Z.: Urządzenia w uzdatnianiu wody. Warszawa: Arkady 1987.

2. Kowal A., Świderska-Bróż M.: Oczyszczanie wody. Warszawa-Wrocław: Wyd. Nauk. PWN 1996.

3. Nawrocki J., Biłozor S.: Uzdatnianie wody. Procesy chemiczne i biologiczne. Warszawa: PWN 2000.</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">1. Obarska-Pempkowiak H.: Technologia Wody. Gdańsk: Wyd. Politechniki Gdańskiej 1997.

2. M. Sozański, P.M. Huck.: Badania doświadczalne w rozwoju technologii uzdatniania wody. Monografie PAN, vol.42, Lublin 2007.

3. A. Bauer, G. Dietze, W. Muller, K. J. Soine, D. Weideling.: Poradnik eksploatatora systemów zaopatrzenia w wodę. Wyd. Seidel-Przywecki, Warszawa 2005.

4. Z. Heidrich.: Wodociągi i Kanalizacja cz. 1. Wodociągi. Wyd. Szkolne i Pedagogiczne, Warszawa 1992.</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:
Urządzenia do uzdatniania wody lato- 2023/2024 - Moodle ID: 38429
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=38429</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">Select and arrange in the appropriate order the devices used at the underground water treatment plant

Select and arrange in the appropriate order the devices used at the surface water treatment plant

Sketch a hydraulic partition mixer (or other device from among those discussed during the lectures)</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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