GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00059052		
Field of study	Environmental Engineering		
Date of commencement of studies	October 2023	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	Part-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	4	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Geotechnical and Hydraulic Engineering -> Faculty of Civil and Environmental Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Małgorzata Pruszkowska-Caceres	
	Teachers	dr inż. Marzena Wójcik dr hab. Małgorzata Pruszkowska-Caceres	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	10.0	0.0	0.0	0.0	25

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	25	6.0	70.0	101

Subject objectives

To familiarize student with the mechanisms of formation and movement of groundwater, with the possibilities of groundwater exploitation and with potential risks of contamination.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W06] has a structured and theoretically founded knowledge in the field of computer science, numerical methods and the possibilities of their applications for solving tasks, description of phenomena related to the flow of water in the environment, in open pipes and channels, filtration, migration of pollutants	Student is familiar with basic computational method and tools for solution of groundwater flow problems. Student is familiar with basic mechanisms of groundwater contamination and with basic pronciples of assessing groundwater resources.	[SW1] Assessment of factual knowledge
[K6_W04] possesses elementary knowledge in the field of land mechanics, ground science, land reclamation and geotechnics; has basic knowledge about the composition of air, water and soil, environmental pollution and processes responsible for their formation and ways to reduce them, knows the principles and organization of sustainable water management	Student is able to obtain information from hydrogeological gross-sections and maps and to interpret well pumping tests.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
[K6_U04] can recognize basic rocks and minerals, can create and read maps and geological and hydrogeological sections; can read and interpret geological documentation	Student is able to create and analyze hydrogeological maps and cross-sections	[SU1] Assessment of task fulfilment
K6_W12	Student is familiar with mechanisms of groundwater formation and movement	[SW1] Assessment of factual knowledge

<table>
<tr><td>Subject contents</td><td>Lecture
Groundwater in hydrogeological cycle. Groundwater occurence, origin and age. Hydrogeological properties of soils and rocks. Groundwater flow. Groundwater chemistry. Groundwater contamination. Measurements and monitoring in groundwater. Management of groundwater resources.
TUTORIALS
Investigation of hydrogeological conditions on the basis of drilling results. Estimation of hydrogeological parameters based on soil granulometric curve. Interpretation of the results of steady state test pumpings. Interpretation of chemical groundwater analyses. Analysis of hydrogeological maps. Dewatering of an excavation. Evaluation test.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>knowledge of mathematics, basic hydrology and geology</td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Evaluation test for lectures</td><td>60.0%</td><td>50.0%</td></tr>
<tr><td>Average note for projects</td><td>60.0%</td><td>25.0%</td></tr>
<tr><td>Evaluation test for tutorials</td><td>60.0%</td><td>25.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>- Pazdro Z., Kozerski B. Hydrogeologia ogólna Wyd. Geol. Warszawa 1990
- Wieczysty A., Hydrogeologia Inżynierska, PWN, Warszawa 1982
- Macioszczyk A., Dobrzyński D., Hydrogeochemia, PWN, Warszawa 2002</td></tr>
<tr><td>Supplementary literature</td><td>- Domenico P.A., Schwartz F.W., Physical and chemical hydrogeology, Wiley, 1998
- Chełmicki W., Woda Zasoby, degradacja, ochrona, PWN Warszawa 2002.</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:
Hydrogeologia - studia niestacjonarne - Moodle ID: 36276
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36276</td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>- List the factors influencing the intensity of groundwater recharge by infiltration
- Give examples of sources of groundwater contamination
- Draw a hydrogeological cross-section based on drilling data
- Describe hydrogeological conditions for a given site, based on hydrogeological map</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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