University of Gdańsk

Subject card

Subject name and code	Essentials of Hydrogeology - lecture, PG_00201418		
Field of study	Water Management and Protection of Water Resources		
Date of commencement of studies	October 2027	Academic year of realisation of subject	2027/2028
Education level	Bachelor's studies	Subject group	Obligatory subject group in the field of study Subject group related to practical vocational preparation
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	2.0
Learning profile	practical	Assessment form	credit
Conducting unit	Department of Hydrology -> Faculty of Oceanography and Geography -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr Izabela Chlost	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	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	1.0	19.0	50

Subject objectives

Understanding the role of groundwater in the hydrological cycle, learning about the hydraulic relationship between groundwater and the surface water network and the genesis of the formation of groundwater communities, their renewal, potential sources of pollution and forms of protection. Determining the physicochemical properties of groundwater, analyzing the quality of water resources and the characteristics of the occurrence of mineral and thermal waters.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GWOZWL3-U06] assess the impact of planned investments on value and quality of water resources and propose options for solutions to protect and restore water resources, recognize their weaknesses and strengths as well as opportunities and threats.	Knows and understands the processes and phenomena of the hydrosphere as a system of interrelated and interacting components, with particular emphasis on groundwater.	[SU4] test/exam - oral or written
[GWOZWL3-K03] systematic further education and professional development, updating and expand his knowledge and skills, understands the limitations of his own knowledge in the context of civilization progress and recognizes authorities in the professional and scientific environment.	He/she knows the limitations of his/her knowledge and skills. He/she understands the need for continuous professional qualification in the value and protection of groundwater resources and the continuous need for personal development.	[SK4] test/exam - oral or written
[GWOZWL3-W09] potential threats and sources of pollution of surface and groundwater resulting from the development of civilization, in particular strong anthropopression.	Knows and understands the potential risks and sources of groundwater pollution resulting from heavy anthropopression.	[SW4] test/exam - oral or written

<table>
<tr><td>Subject contents</td><td>• Origin and classification of groundwater.
• Basic hydrogeological properties of rocks.
• Water of aeration and saturation zones.
• Basic laws of groundwater movement.
• Chemistry of groundwater.
• Mineral and medicinal waters.
• Groundwater resources.
• Threats and protection of groundwater.
• Hydrogeological studies and development of their results.
• Hydrogeological cartography.
• Legal issues.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Basic knowledge about the water cycle in nature</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>exam</td><td>51.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td><table><tr><td>Basic literature</td><td>• Chełmicki W., 2002, Water. Resources, degradation, protection. PWN Science Publishing House, Warsaw.
• Kleczkowski, A. S., (ed.), 1984, Groundwater protection, Geol. Publishing House, Warsaw.
• Macioszczyk A., Dobrzyński, 2003. Hydrogeochemistry of groundwater in the active exchange zone. PWN, Warsaw.
• Paczyński B, Sadurski A. (ed.), 2007, Regional hydrogeology of Poland, PIG, Warsaw.
• Pazdro Z., Kozerski B., 1989. General hydrogeology. Geol. Publishing House, Warsaw.
• Płochniewski Z., 1971, Hydrogeology. Geol. Publishing House, Warsaw.
• Hydrogeologist's handbook, ed. Turek S, 1971, Geological Publishing House, Warsaw</td></tr><tr><td>Supplementary literature</td><td>• Kozerski B. (ed.), 2007, Gdańsk water-bearing system, Gdańsk University of Technology Publishing House, Gdańsk.
• Pleczyński J., 1981. Renewability of groundwater resources. Geol. Publishing House, Warsaw.
• Hydrogeological dictionary ed. Kleczkowski A., Różkowski A., 1997, TRIO Publishing House.
• Tomiałojć L., Drabiński A. (ed.), 2005, Environmental aspects of water management, KOP PAN, Wrocław.
• Geological and Mining Law Act of 9 June 2011 (Journal of Laws 2011, item 1290)
• Water Law Act of 20 July 2017 (Journal of Laws 2017, item 1566).</td></tr><tr><td>eResources addresses</td><td></td></tr></table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>• List and characterize the basic hydrogeological properties of rocks.
• Discuss Darcy's law.
• Discuss threats and forms of protection of groundwater.
• Introduce the relationships between surface water and groundwater.
• List the basic physical and chemical properties of groundwater.</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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