

**Subject card**

<b>Subject name and code</b>	Essentials of Hydrogeology - lecture, PG_00201418						
<b>Field of study</b>	Water Management and Protection of Water Resources						
<b>Date of commencement of studies</b>	October 2026	<b>Academic year of realisation of subject</b>			2026/2027		
<b>Education level</b>	Bachelor's studies	<b>Subject group</b>			Obligatory subject group in the field of study Subject group related to practical vocational preparation		
<b>Mode of study</b>	full-time studies	<b>Mode of delivery</b>			at the university		
<b>Year of study</b>	1	<b>Language of instruction</b>			Polish		
<b>Semester of study</b>	2	<b>ECTS credits</b>			2.0		
<b>Learning profile</b>	practical	<b>Assessment form</b>			credit		
<b>Conducting unit</b>	Department of Hydrology -> Faculty of Oceanography and Geography -> Rector						
<b>Name and surname of lecturer (lecturers)</b>	<b>Subject supervisor</b>		dr Izabela Chlost				
	<b>Teachers</b>						
<b>Lesson types</b>	<b>Lesson type</b>	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	<b>Number of study hours</b>	30.0	0.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
<b>Learning activity and number of study hours</b>	<b>Learning activity</b>	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	<b>Number of study hours</b>	30		1.0		19.0	50
<b>Subject objectives</b>	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-W09] The student knows and understands potential threats and sources of pollution of surface and groundwater resulting from the development of civilization, in particular strong anthropoppression.	Knows and understands the potential risks and sources of groundwater pollution resulting from heavy anthropoppression.	[SW4] test/exam - oral or written
	[GWOZWL3-K03] The student has the ability systematic further education and professional development, updating and expand their 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-U06] The student has the ability 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
Subject contents	<ul style="list-style-type: none"> <li>• Origin and classification of groundwater.</li> <li>• Basic hydrogeological properties of rocks.</li> <li>• Water of aeration and saturation zones.</li> <li>• Basic laws of groundwater movement.</li> <li>• Chemistry of groundwater.</li> <li>• Mineral and medicinal waters.</li> <li>• Groundwater resources.</li> <li>• Threats and protection of groundwater.</li> <li>• Hydrogeological studies and development of their results.</li> <li>• Hydrogeological cartography.</li> <li>• Legal issues.</li> </ul>		
Prerequisites and co-requisites	Basic knowledge about the water cycle in nature		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	exam	51.0%	100.0%
Recommended reading	Basic literature	<ul style="list-style-type: none"> <li>• Chelmicki W., 2002, Water. Resources, degradation, protection. PWN Science Publishing House, Warsaw.</li> <li>• Kleczkowski, A. S., (ed.), 1984, Groundwater protection, Geol. Publishing House, Warsaw.</li> <li>• Macioszczyk A., Dobrzyński, 2003. Hydrogeochemistry of groundwater in the active exchange zone. PWN, Warsaw.</li> <li>• Paczyński B, Sadurski A. (ed.), 2007, Regional hydrogeology of Poland, PIG, Warsaw.</li> <li>• Pazdro Z., Kozerski B., 1989. General hydrogeology. Geol. Publishing House, Warsaw.</li> <li>• Płochniewski Z., 1971, Hydrogeology. Geol. Publishing House, Warsaw.</li> <li>• Hydrogeologist's handbook, ed. Turek S, 1971, Geological Publishing House, Warsaw</li> </ul>	
	Supplementary literature	<ul style="list-style-type: none"> <li>• Kozerski B. (ed.), 2007, Gdańsk water-bearing system, Gdańsk University of Technology Publishing House, Gdańsk.</li> <li>• Pleczyński J., 1981. Renewability of groundwater resources. Geol. Publishing House, Warsaw.</li> <li>• Hydrogeological dictionary ed. Kleczkowski A., Różkowski A., 1997, TRIO Publishing House.</li> <li>• Tomiałojć L., Drabiński A. (ed.), 2005, Environmental aspects of water management, KOP PAN, Wrocław.</li> <li>• Geological and Mining Law Act of 9 June 2011 (Journal of Laws 2011, item 1290)</li> <li>• Water Law Act of 20 July 2017 (Journal of Laws 2017, item 1566).</li> </ul>	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> <li>• List and characterize the basic hydrogeological properties of rocks.</li> <li>• Discuss Darcy's law.</li> <li>• Discuss threats and forms of protection of groundwater.</li> <li>• Introduce the relationships between surface water and groundwater.</li> <li>• List the basic physical and chemical properties of groundwater.</li> </ul>		
Work placement	Not applicable		

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