

Subject card

Subject name and code	Essentials of hydrogeology - lecture, PG_00091502						
Field of study	Water Management and Protection of Water Resources						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research 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				
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						
	Additional information: Possibility of conducting classes online (in justified cases)						
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		7.0		20.0	57
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-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
	[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 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
Subject contents	• 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.		
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	• Chelmicki 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. • Płochniński Z., 1971, Hydrogeology. Geol. Publishing House, Warsaw. • Hydrogeologist's handbook, ed. Turek S, 1971, Geological Publishing House, Warsaw	
	Supplementary literature	• 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., Rózkowski 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).	
	eResources addresses	Basic https://www.pgi.gov.pl/dane-geologiczne/geologiczne-bazy-danych/11257-hydrogeologia.html - Hydrogeological database, including thematic maps https://mjwp.gios.gov.pl/ - Groundwater monitoring - measurement network, research results, reports	

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

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