University of Gdańsk

Subject card

Subject name and code	Water management in the natural and anthropogenically transformed areas - lecture, PG_00091517		
Field of study	Water Management and Protection of Water Resources		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	undergraduate 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	2	Language of instruction	Polish
Semester of study	4	ECTS credits	2.0
Learning profile	practical	Assessment form	
Conducting unit	Pracownia Hydrologii -> Katedra Hydrologii -> Faculty of Oceanography and Geography		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. Roman Cieśliński	
	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	6.0	24.0	60

Subject objectives	Learning about the essence of water management and its interdisciplinary dimension from the perspective of sustainable development. Deepen your understanding of your goals water management and main water management issues. The student knows and understands selected facts, objects and phenomena related to water management in geographical space and their methods and theories explaining the complex relationships between them.

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	The student is able to determine the main sources of hydrosphere pollution resulting from ongoing anthropopressure.	[SW4] test/exam - oral or written
	[GWOZWL3-K06] an informed and reliable assessment of the impact of of humans on the aquatic environment	The student knows the forms of human impact on the hydrosphere.	[SK4] test/exam - oral or written
	[GWOZWL3-W05] assumptions of the ecosystem approach to management of the environment and human activities in the environment as well as the development directions in the field of applied solutions and scientific research for the protection and restoration of water resources in selected divisions of the national economy	The student knows and understands the basics of the functioning of ecosystems and the possibilities of managing them by humans.	[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	The student is able to determine potential changes in the aquatic environment (especially water resources) under the influence of specific investments and the possibilities of counteracting these changes.	[SU4] test/exam - oral or written
	[GWOZWL3-U04] distinguish between objectives, analyze and evaluate modern strategies for managing environment especially in the context of ecosystem approach to managing human activities in the environment with taking into account relevant law regulations and the indication of administrative bodies responsible for the management of waters and the protection of water resources	The student knows the contemporary strategy of water management and management in Poland and in the world. Knows the Water Law and other legal provisions regarding water resources management.	[SU4] test/exam - oral or written
	[GWOZWL3-U03] observe and describe the changes taking place in water management and predict further directions of its development as well as conduct a critical analysis of: case studies of problems of water management and protection of water resources in terms of impact on ecological, social and economic systems natural valorization and assessment of quality of the environment	The student understands the changes that occur in water management over time. Is able to distinguish good actions from bad ones in the context of water resources management and water management.	[SU4] test/exam - oral or written
	[GWOZWL3-W03] organization and legal basis of environment protection, nature protection and water management, as well as the principles of organization and operation of hydrological and meteorological services and the basics of Integrated Environmental Monitoring	The student knows the law on environmental protection and the model and structure of managing aquatic environment monitoring research.	[SW4] test/exam - oral or written

<table>
<tr><td>Subject contents</td><td>A.1. Origin and definition of the concept of water management.

A.2. The concept of water resources, their types and sizes, and their differentiation depending on the degree of environmental transformation.

A.3. Water management in the main sectors of the national economy.

A.4. Water management in protected areas.

A.5. Units related to water administration and management.

A.6. A monitoring network important for proper water management.

A.7. Adaptation of water management methods to climate change.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Key competences at secondary school level, knowledge and skills in geography.</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>Pass with grade, written test exam.</td><td>51.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td>Recommended reading</td><td>Basic literature</td><td>1. Gutry-Korycka M., Werner- Więckowska H., 1989, Guide to hydrographic field research, PWN, Warsaw (in Polish).

2. Kistowski M., 2004, Selected aspects of nature conservation management in landscape parks, Bogucki. Scientific Publishing House, Gdańsk-Poznań (in Polish).

3. Mikulski Z., 1998, Water management, PWN, Warsaw (in Polish).

4. Pociask-Karteczka, 2006, Catchment area, properties and processes, Jagiellonian University, Kraków (in Polish).

5. Rodriguez-Iturbe I., Porporato, 2006, Ecohydrology of Water-Controlled Ecosystems, Cambridge.</td></tr>
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	Supplementary literature	1. Chlost I., Cieśliński R., 2018, Effects of environmental and anthropogenic determinants on changes in groundwater levels in selected peat bogs of Slowinski National Park, northern Poland, Geologos 24, 1, 1328. 2. Cieśliński R., 2016, Changes in salinity and water level of Lake Jamno resulting from the construction of storm gates, Inżynieria i Ochrona Ochrony Środowiska, 19 (4), 517-539, DOI: 10.17512/ios. 2016.4.7 (in Polish). 3. Cieśliński R., Przybylski M., 2017, Hydrochemical assessment of the ecological disaster on Lake Druzno and the Wąska River in 2014, JOURNAL OF CIVIL ENGINEERING, ENVIRONMENT AND ARCHITECTURE, JCEEA, vol. XXXIV, issue 64 (2/II/17), 63-81 (in Polish). 4. Duda F., Woźniak E., Jereczek-Korzeniewska K., Cieśliński R., 2017, Dynamics of water level fluctuations in degraded Baltic peat bogs, Przegląd Geologiczne, Przegląd Geologiczne, 65 (8), 526-532 (in Polish). 5. Jankowski A. T., Rzętała M., 2005, Lakes and artificial water reservoirs, natural processes and socio-economic importance, University of Silesia, Sosnowiec (in Polish). 6. Kowalczyk K., Cieśliński R., 2017, Utilization of the Hydroelectric Potential of the Pomorskie Voivodship, Barometr Regionalny, 15 (3), 73-83. 7. Kozerski B., 2007, Gdańsk aquifer system, Gdańsk University of Technology, Gdańsk. 8. Hydrographic map at a scale of 1:50,000 with commentary (in Polish). 9. Sozoological map at a scale of 1:50,000 with commentary (in Polish). 10. Mitsch W. J., Gosselink J. G., 2007, Wetlands, Wiley. 11. Rodriguez-Iturbe I., Porporato, 2006, Ecohydrology of Water-Controlled Ecosystems, Cambridge. 12. Wójcik A. R., 2008-2009, River Basin Management Plans as a tool for implementing the Water Framework Directive, Information materials, RZGW, Gliwice (in Polish). 13. Żuławy of the Vistula Delta at the turn of the millennium, 2001, issue I, Żuławy Wiślane, a unique area in Poland and Europe, ECOBALITC Foundation, Gdańsk (in Polish).
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	1. State the differences between the Persian and Assyrian water retention systems. 2. Discuss water consumption in the main branches of the national economy in the world and in Poland. 3. Characterize water management in areas protected by national parks.
Work placement	Not applicable

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