

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Hydrology, PG_00058801							
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	Full-time studies		Mode of delivery			at the university		
Year of study	2		Language of instruction			Polish		
Semester of study	4		ECTS credits			5.0		
Learning profile	general academic profile		Assessment form		exam			
Conducting unit	Department of Geotechnical and Hydraulic Engineering -> Faculty of Civil and Environmental Engineering							
Name and surname of lecturer (lecturers)	Subject supervisor Teachers		dr hab. inż. Dariusz Gąsiorowski					
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM
of instruction	Number of study hours	30.0	0.0	15.0	15.0	0.0		60
	E-learning hours inclu	uded: 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	60		7.0		58.0		125
Subject objectives	Understanding the ba mechanisms of forma ground.	asic hydrologica ation of the outf	al processes or low from the ca	ccurring in the atchment area,	land pha water fl	ase of th ow in o	ne cycle. Und penchannels	erstanding the and in the

Learning outcomes	Course outcome	Subject outcome	Method of verification				
	K6_W12	The student knows the basics equations describing surface and subsurface flow. Student is able to apply these equations to solve hydrological problems.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects				
	[K6_W01] has knowledge in the field of mathematics, including: linear algebra, mathematical analysis and elements of mathematical statistics, probability theory, applications of mathematics, including mathematical methods and numerical methods, necessary for: 1) description and analysis of hydrological phenomena; 2) description and analysis of meteorological phenomena; 3) solving project tasks of the sanitary industry;	The student is able to use the knowledge of the basics of statistical and mathematical methodsto describe and analyze hydrological phenomena.	[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge				
	[K6_U08] can use properly selected methods and devices of hydraulics and hydrology, enabling determination of basic quantities characterizing the flow of water in open channels and rivers, pipelines and flow objects of environmental engineering	The student is able to choose the appropriate method and tools to determine the necessary parameters characterizing the surface and subsurface flows.	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools				
	[K6_W14] knows and understands the methods of measuring basic quantities characteristic for fluid mechanics and hydraulics, hydrology; knows the calculation methods and IT tools necessary to analyze the results of laboratory and field work	The student knows the computational methods and has knowledge about the influence of the model selection and their parameters on the calculation results of objects and environmental engineering systems. The student understands the role of hydrology in issues related to water management and flood protection. The student knows the rules for preparing hydrological studies and knows the available computational tools supporting the work of an engineer within the above mentioned fields.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects				
Subject contents	LECTURE Hydrological cycle, the principal processes determining the transport of water. Water in atmosphere, rainfall. Evaporation. Groundwater, infiltration. Runoff from catchment area, surface flow, Instantaneous Unit Hydrograph.River flow, water stage and discharge and rating curve. Frequency analysis of the exteme flood waves. Solid transport in the rivers. Snow melting, transport of the termal energy in the river and lacks, ice phenomena.						
	channel capacity. LABORATORY EXERCISES Mesurement of selected hydrological parameters and analysis of the obtained results: distribution of flow velocity over an open channel cross section, discharge rate in an open channel.						
Prerequisites and co-requisites	Knowledge of the following subjects: fluid mechanics, hydraulics, mathematics and informatics.						
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade				
	Exam	51.0%	50.0%				
	Task reports	60.0%	40.0%				
	Test - exercises	51.0%	10.0%				
Recommended reading	Basic literature	 Ozga Zielińska M., Brzeziński J.: Hydrologia stosowana, Wyd. Naukowe PWN,1994. Byczkowski A.: Hydrologia. SGGW, Warszawa, 1996. Gąsiorowski D., Szymkiewicz R.: Podstawy hydrologii dynamicznej. WNT, Warszawa 2010. 					

	Supplementary literature	1. Chow V. T., Maidment D. R., Mays L.W.: <i>Applied hydrology</i> . McGraw- Hill 1988.
		2. Maidment D.R.: Hydrology. W: Handbook of Hydrology, Maidment D. R. (ed.). McGraw-Hill INC, New York 1993.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Field exercises	

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