



Subject card

Subject name and code	Hydrogeology, PG_00058798						
Field of study	Environmental Engineering						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2023/2024		
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	prof. dr hab. inż. Adam Szymkiewicz					
	Teachers	dr inż. Anna Gumuła-Kawęcka dr inż. Marzena Wójcik prof. dr hab. inż. Adam Szymkiewicz					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	15.0	0.0	60
	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	60	7.0		58.0		125
Subject objectives	Familiarizing students with basics of groundwater (occurrence, flow dynamics, chemical composition, possibilities of usage).						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W06] has a structured and theoretically founded knowledge in the field of computer science, numerical methods and the possibilities of their applications for solving tasks, description of phenomena related to the flow of water in the environment, in open pipes and channels, filtration, migration of pollutants	Student knows the basic calculation methods and tools for groundwater flow	[SW1] Assessment of factual knowledge
	K6_W12	Student knows the mechanisms of formation and flow of groundwater	[SW1] Assessment of factual knowledge
	[K6_W04] possesses elementary knowledge in the field of land mechanics, ground science, land reclamation and geotechnics; has basic knowledge about the composition of air, water and soil, environmental pollution and processes responsible for their formation and ways to reduce them, knows the principles and organization of sustainable water management	Student knows the basic processes leading to groundwater contamination	[SW1] Assessment of factual knowledge
	[K6_U04] can recognize basic rocks and minerals, can create and read maps and geological and hydrogeological sections; can read and interpret geological documentation	Student can draw and analyze hydrogeological maps and crosssections	[SU1] Assessment of task fulfilment
Subject contents	Origin and occurrence of groundwater. Hydrogeological properties of soils and rocks. Flow in saturated and unsaturated zones, groundwater flow systems. Groundwater abstraction, well hydraulics, dewatering. Chemistry and contamination of groundwater.		
Prerequisites and co-requisites	basic maths (differential and integral calculus), basic chemistry		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Evaluation of exercises and projects	55.0%	50.0%
	Exam	55.0%	50.0%
Recommended reading	Basic literature	Pazdro Z., Kozerski B. Hydrogeologia ogólna Wyd. Geol. Warszawa 1990	
	Supplementary literature	Wieczysty A., Hydrogeologia Inżynierska, PWN, Warszawa 1982 Domenico P.A., Schwartz F.W., Physical and chemical hydrogeology, Wiley, 1998	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Estimation of hydraulic permeability based on soil granulometry Design of excavation dewatering Interpretation of chemical analyses of groundwater samples		
Work placement	Not applicable		