



Subject card

Subject name and code	HYDRO-ENGINEERIG, PG_00044230						
Field of study	Civil Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2023/2024		
Education level	first-cycle studies	Subject group			Optional subject group		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	4	Language of instruction			Polish		
Semester of study	7	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Hydraulic Engineering -> Faculty of Civil and Environmental Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Witold Sterpejkowicz-Wersocki					
	Teachers	dr inż. Witold Sterpejkowicz-Wersocki					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	0.0	30
	E-learning hours included: 0.0						
	Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=14494						
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	5.0	40.0	75		
Subject objectives	At the conclusion of the course, students should be able to; know the basic construction of water gates structures - select a proper type of gate with respect to given type of damming structure, define and compute forces on the gate. Knows the structure of the damming weir and is able to select and calculate its individual elements.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U07] Can design and properly dimension basic elements of construction or basic foundations of general, hydrotechnical and bridge constructions	Student selects the type of structure applied to the existing hydraulic and geotechnical conditions.			[SU3] Assessment of ability to use knowledge gained from the subject		
	[K6_W16] Has deeper and adequate knowlege of civil engineering, within offered specialization	Student lists the types of hydraulic structures with their gates and explains the role and rules of operation.			[SW1] Assessment of factual knowledge		
	[K6_U17] has specialized skills in civil engineering within offered specialization	Student calculates the primary structural components for weir and weir's gates.			[SU3] Assessment of ability to use knowledge gained from the subject		
	[K6_W07] has basic knowlede on natural processes (hydrological, hydraulic or geological) and its influence on building subsoil; understands specific aspects of surface and underground water, which constraints the design and exploitation of buildings and engineering objects	The student analyzes the possibility of erosion behind the weir and is able to determine a safe seepage path.			[SW3] Assessment of knowledge contained in written work and projects		
	[K6_W09] knows the principles of determining of loads acting on basic constructions (e.g. general, industrial, bridge, water, marine, transport objects) and rules of its constructing	Student calculates the basic constructional elements of gates for the selected damming structures.			[SW3] Assessment of knowledge contained in written work and projects		

Subject contents	LECTURE Characteristics of crest and high-head gates and valves used in dams. Main tasks of gates. Classification and rules for applying the system of loads. Rules for calculating the flat gates. Rules for calculating the skin plate and grid of horizontal and vertical beams and stiffeners. Principles of radial gates design. Types of flap gates. Hydrostatic gates - rules for calculating and designing. Types of roller gates. Service gates. Fabric gates principles of design. Types and kinds of seals used in gates. Types of embankment dams. Impervious water-retaining elements of dams. Drainage devices PROJECT Design of low head hydraulic structure. Implementation of basic hydraulic and seepage calculations. Statement of loads acting on the structure. Checking the stability of structure. Setting values and distributions of stresses.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Tests at the end of the semester	60.0%	50.0%
	Weir design	60.0%	50.0%
Recommended reading	Basic literature	1. Budownictwo Betonowe t. XVII Budownictwo wodne śródlądowe ARKADY 1969 2. Wolski W. Zapory ziemne ARKADY 1973 3. Fantti K. Budowle piętrzące wyd. ARKADY 1972r. 4. Depczyński W., . Szamowski A. Budowle i zbiorniki wodne 1999r 5. Bednarczyk S., Bolt A., Mackiewicz St., Stateczność oraz bezpieczeństwo jazów i zapór Wydawnictwo Politechniki Gdańskiej, Gdańsk 2009r. 5. Z. Boretti "Konstrukcje stalowe w budownictwie wodnym "ARKADY 1982. Z.. Boretti W. Hryniewiecka "przykłady obliczeń konstrukcji stalowych ARKADY 1973	
	Supplementary literature	No requirements.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	No requirements		
Work placement	Not applicable		