



## Subject card

Subject name and code	Hydroelectric Power Plants, PG_00042184						
Field of study	Power Engineering, Power Engineering, Power Engineering, Power Engineering, Power Engineering						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2022/2023		
Education level	first-cycle studies	Subject group			Optional subject group 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	3	Language of instruction			Polish		
Semester of study	6	ECTS credits			1.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Marcin Jaskólski					
	Teachers	dr inż. Alicja Lenarczyk dr inż. Marcin Jaskólski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
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	15	2.0		8.0	25	
Subject objectives	To teach students the structure s of hydro power plants.  To teach students hot to calculate power output and electricity production from hydro power plant. \  To teach students how to select hydro turbine to hydrological conditions						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_W09	Student can size hydro turbine for given hydrological conditions.			[SW1] Assessment of factual knowledge		
	K6_W05	Student knows and understands the principles of operation of hydro power plants.			[SW1] Assessment of factual knowledge		
	K6_U03	Student can calculate power and energy of the hydro power plants and to size its elements based on given hydrological conditions.			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools		

Subject contents	Hydro power in Poland. Hydro power resources. Power output of hydro power plant. Devices in technological chain of hydro power plant. Hydro power turbines. Power generators. Operation of hydropower plants in power grid. Pumped storage power plants. Small hydro power plants.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Evaluation test	60.0%	100.0%
Recommended reading	Basic literature	Marecki J.: Podstawy przemian energetycznych. WNT Warszawa 2008 Łaski A.: Elektrownie wodne: Rozwiązania i dobór parametrów. WNT Warszawa 1971 Jackowski K.: Elektrownie wodne: Turbozespoły i wyposażenie. WNT Warszawa 1971	
	Supplementary literature	Michałowski S.: Energetyka wodna. WNT Warszawa 1975	
	eResources addresses	Adresy na platformie eNauczanie: Elektrownie wodne [2022/23] - Moodle ID: 28624 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28624">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28624</a>	
Example issues/ example questions/ tasks being completed	Calculate the power output and electricity production in hydro power plant given the water volume and difference of height (run-on-the-river hydropower plant, hydropower plant with dam - daily and weekly storage). Design of hydro turbine on the basis of specific speed given hydrological conditions (volume of water and difference in height).		
Work placement	Not applicable		