



Subject card

Subject name and code	Construction and design of heat turbines, PG_00055905						
Field of study	Power Engineering, Power Engineering, Power Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject				2025/2026	
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 none	
Semester of study	6	ECTS credits				9.0	
Learning profile	general academic profile	Assessment form				exam	
Conducting unit	Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Jerzy Gluch					
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	45.0	30.0	0.0	30.0	0.0	105
	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	105		9.0		111.0	225
Subject objectives	Gaining basic knowledge on Structure design of Turbomachinery						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[K6_U06] is able to use the basic knowledge on the operation of energy equipment in the field of thermal power plants, thermal and energy and heating systems, combustion engines, compressors and rotating machines to assess the technical condition of the system		The student can recognize the basic design nodes of thermal turbines. It can indicate the methods of strength calculations of these nodes. He can show how to properly operate turbines and their components.			[SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment	
	[K6_W12] has basic knowledge of the life cycle and repairs of energy equipment in the field of thermal power stations, thermal and energy systems and heating systems, internal combustion engines and compressors as well as rotating machines		The student can choose methods and necessary values of strength calculation parameters from literature data. He can draw the right conclusions about strength and operation.			[SW1] Assessment of factual knowledge	
	[K6_U08] can design the basic parameters of the selected technology related to energy conversion and select auxiliary devices and evaluate the project in terms of technical and economic		The student can indicate the methods of operation of thermal turbine components with the aim of not breaking the strength limits under high mechanical and thermal loads.			[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information	

Subject contents	Rotor design, strength analysis calculations of drum and disk type rotors. Release rotational speed of disktype rotors. Rotor balancing. Design of nozzle disks, strength analysis calculation of nozzle disks. Rotorblades design and their fixing system on the disks. Strength analysis calculation of rotor blades and theirfixing system. Blades vibrations. Basics of turbine rotors dynamics. Turbine casings. Internal and externalglands. Design of trust and radial bearings		
Prerequisites and co-requisites	Knowledge on thermal turbines and their thermal cycles.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	project	100.0%	25.0%
	exercise test	60.0%	25.0%
	egzam	60.0%	50.0%
Recommended reading	Basic literature	Perycz S., Turbiny parowe i gazowe, Politechnika Gdańska, Skrypt,Gdańsk 1988Perycz S., Turbiny parowe i gazowe, Maszyny Przepływowe T. 10,Wydawnictwo Instytutu Maszyn Przepływowych PAN, Gdańsk 1992.	
	Supplementary literature	Kosowski K, Introduction to the theory of marine turbines, Wyd. PGDelft University, Gdańsk 2004	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Describe the Gruber's method		
Work placement	Not applicable		

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