



Subject card

Subject name and code	Modern thermal power plants and polygeneration, PG_00055945						
Field of study	Power Engineering						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2028/2029	
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				2.0	
Learning profile	general academic profile	Assessment form				assessment	
Conducting unit	Division of Fluid-Flow Machinery -> Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Krzysztof Kosowski					
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	15.0	30
	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	30		2.0		18.0	50
Subject objectives	Knowledge of modern, advanced power plants for electric power stations and distributed systems of energy						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_W13] has basic knowledge of the operation of energy equipment in the field of thermal power plants, thermal and energy and heating systems, internal combustion engines, compressors and rotating machines, has basic knowledge of the regulation of energy equipment and methods of their selection depending on the needs	Students know the main principles of operation of power plants			[SW1] Assessment of factual knowledge		
	[K6_W06] knows classic and developmental energy technologies, rules for the selection and operation of heat and energy devices and installations, basic principles of energy systems operation, basic issues regarding the reliability of energy devices and diagnostics, environmental effects of energy technologies used, methods of using renewable energy sources	Students can: - perform preliminary design calculations of large output power plants and distributed energy systems, - describe modern power plants			[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	[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	Students know the main characteristic parameters of the operation of power plants.			[SU3] Assessment of ability to use knowledge gained from the subject		

Subject contents	<p>Course content – lecture Modern steam turbine power plants with advanced supercritical parameters.</p> <p>Modern gas turbines units of high efficiency.</p> <p>Combined gas-steam power plants.</p> <p>Nuclear power plants with reactors of III+ and IV generations.</p> <p>Hydrogen power plants.</p> <p>Power plants for distributed energy systems.</p>								
Prerequisites and co-requisites									
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="456 651 786 678">Subject passing criteria</th> <th data-bbox="799 651 1139 678">Passing threshold</th> <th data-bbox="1152 651 1469 678">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 685 786 712">test</td> <td data-bbox="799 685 1139 712">60.0%</td> <td data-bbox="1152 685 1469 712">100.0%</td> </tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	test	60.0%	100.0%		
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Recommended reading	Basic literature	<p>1. S. Perycz, "Turbiny parowe i gazowe" (Polish) ("Steam and gas turbines), Ossolineum,</p> <p>2. K. Kosowski, "Steam and gas turbines. With examples of Alstom technology", 2007</p>							
	Supplementary literature	1. Contemporary books, journal articles and conference papers							
	eResources addresses								
Example issues/ example questions/ tasks being completed									
Practical activities within the subject	Not applicable								

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