



## Subject card

Subject name and code	Power plants with internal combustion engines design, PG_00059385						
Field of study	Mechanical Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group			Optional subject group Subject group related to scientific research in the field of study		
Mode of study	Part-time studies	Mode of delivery			blended-learning		
Year of study	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Zakład Ekoinżynierii i Silników Spalinowych -> Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Jacek Kropiwnicki					
	Teachers	dr hab. inż. Zbigniew Kneba dr hab. inż. Jacek Kropiwnicki					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	18.0	0.0	0.0	9.0	0.0	27
	E-learning hours included: 18.0						
Additional information: lecture conducted online: e-learning PG							
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	27		6.0		42.0	75
Subject objectives	The aim of the course is to introduce scientists to the program of designing and commissioning stationary devices with piston engines.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_W10] possesses knowledge on the methods of technical and economic analysis of industrial systems and optimization of manufacturing systems; is familiar with the general principles of initiating and developing forms of individual entrepreneurship, particularly for innovative projects using the knowledge	can optimize the electricity and heat generation system and add energy accumulation systems.			[SW3] Assessment of knowledge contained in written work and projects		
	[K7_W05] possesses profound knowledge on the operation of complex systems and mechanical devices, including process equipment	has knowledge of the operation of combined heat and power production systems			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
[K7_U07] is able to perform a preliminary economic analysis of the undertaken engineering actions within the range of design, production and operation of machines and technical devices	can select machines and equipment for stationary combustion power plants with intensive use of waste heat from manufacturers' catalogs			[SU1] Assessment of task fulfilment			
Subject contents	Construction of high-power combustion engines, Stationary power plants with piston engines, Monitoring of power plant operating parameters, Cogeneration systems - heat recovery - energy accumulation. Combustion power plant installations. Fuel supply systems. Boosting the engines.						
Prerequisites and co-requisites	Thermodynamics.. Fluid mechanics						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	dedicated design work	50.0%	50.0%
	written test at the university	50.0%	50.0%
Recommended reading	Basic literature	.	
	Supplementary literature	.	
	eResources addresses	Adresy na platformie eNauczenie: Projektowanie siłowni z silnikami spalinowymi - Moodle ID: 31621 <a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=31621">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=31621</a>	
Example issues/ example questions/ tasks being completed	.		
Work placement	Not applicable		