



## Subject card

Subject name and code	, PG_00058636						
Field of study	Mechatronics						
Date of commencement of studies	February 2022		Academic year of realisation of subject		2022/2023		
Education level	second-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Zbigniew Kneba				
	Teachers		dr hab. inż. Zbigniew Kneba mgr inż. Stanisław Gluch				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	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		0.0		0.0	30
Subject objectives	Familiarizing students with the systems of combustion engine power plants in the power industry. Presentation of the issues of fuel transmission and storage, pipelines, fittings and power installation equipment.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_W06] has detailed, supported by the theory knowledge in terms of mechatronic systems and machines, devices and process where they are used	Potrafi rysować instalacje obsługujące siłownie w programie komputerowym. Dobiera armaturę i osprzęt z katalogów. Prowadzi analizy sprawność energetycznej siłowni.	[SW1] Assessment of factual knowledge
	[K7_W10] knows development trends and most important new achievements in technical sciences and science disciplines: Mechanical Engineering, Automation, Electronics and Electrical Engineering and related: Informatics and Materials Engineering	He knows the structure of the power plant with internal combustion engines. He knows the properties of fuels and working media, industrial apparatus of thermal systems.	[SW1] Assessment of factual knowledge
	[K7_U04] is able to utilise known methods and mathematical models, as well as computer simulations for analysis and evaluation of non-stationary continuous and discrete mechatronic systems and processes	He simulates the operating states of a gym in computer programs	[SU1] Assessment of task fulfilment
	[K7_W01] has extended knowledge in terms of selected areas of mathematics, including discrete and applied mathematics, optimisation methods, mathematical and numerical methods essential for: 1) modelling and analysis of nonstationary mechatronics, continuous and discrete time systems as well as physical phenomena; 2) description and analysis of mechatronic systems that include programmable devices 3) description and analysis of signal processing algorithms 4) synthesis of non-stationary mechatronic systems	Describes the structures of complex heating networks.	[SW1] Assessment of factual knowledge
Subject contents	Construction of high-power engines and their accessories. Production of energy in cogeneration. Diesel power plant installations. Pipelines, fittings and accessories for fuel and other media installations. Control in heating installations.		
Prerequisites and co-requisites	Lectures on fluid mechanics and thermodynamics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written exam	50.0%	100.0%
Recommended reading	Basic literature	.Krishnaswamy K.: Power plant instrumentation	
	Supplementary literature	Bahadori A.: Oil and Gas Pipelines and Piping Systems: Design, Construction, Management, and Inspection	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		