



## Subject card

Subject name and code	Engineering Thermodynamics 2, PG_00042044						
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		2021/2022		
Education level	first-cycle studies		Subject group		Obligatory subject group in the field of study 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	2		Language of instruction		Polish		
Semester of study	4		ECTS credits		3.0		
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. Jan Wajs				
	Teachers		dr hab. inż. Jan Wajs  dr inż. Marcin Jewartowski  mgr inż. Stanisław Głuch  mgr inż. Piotr Jasiukiewicz  dr inż. Waldemar Targański				
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						
	Adresy na platformie eNauczanie:						
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		5.0		40.0	75
Subject objectives	Introduce the thermal engineering field to the students						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_U04		Student performs the measurements on an experimental setup, makes necessary calculations and presents the results in the form of tables and graphs. Student explains the principles of thermal-hydraulic processes and issues related to energy conversion in technical applications.		[SU1] Assessment of task fulfilment		
	K6_W02		Student describes heat transfer mechanisms, uses the theory of moist gases and explains fundamentals of thermodynamic combustion.		[SW1] Assessment of factual knowledge		
Subject contents	LECTURE: Fundamentals of heat transfer. Gas mixtures and moist gases. Mollier diagram and the basic moist air processes. Fundamentals of refrigeration. Basics of compressor and sorption heat pumps. LABORATORIES: Determination of calorific value of gas fuels. Determination of moist air enthalpy. Testing of the refrigerating unit. Energy balance of piston engine. Testing of the compressor.						
Prerequisites and co-requisites	Knowledge from course of Applied thermodynamics I, physics and mathematics.						

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory reports	100.0%	20.0%
	Written exam	56.0%	80.0%
Recommended reading	Basic literature	1. M.J. Moran, H.N. Shapiro, D.D. Boettner, M.B. Bailey, Fundamentals of Engineering Thermodynamics 8th Ed., Wiley, 2014 2. Y. Cengel, M. Boles, Thermodynamics An Engineering Approach, 8th Edition, Wiley, 2014	
	Supplementary literature	No requirements	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. Mechanisms of heat transfer 2. Operational principle of compressor heat pumps 3. Heating and humidification of air		
Work placement	Not applicable		