



## Subject card

Subject name and code	Thermodynamics II, PG_00040056						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2021		Academic year of realisation of subject		2022/2023		
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	Part-time studies		Mode of delivery		blended-learning		
Year of study	2		Language of instruction		Polish		
Semester of study	4		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Energy and Industrial Apparatus -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Marcin Jewartowski				
	Teachers		dr inż. Marcin Jewartowski				
			mgr inż. Piotr Jasiukiewicz				
			dr hab. inż. Michał Klugmann				
			dr inż. Waldemar Targański				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	8.0	0.0	8.0	0.0	0.0	16
	E-learning hours included: 8.0						
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	16		4.0		55.0	75
Subject objectives	Students acquire basic knowledge of thermodynamics in the dimension of theory and practice						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W09] possesses basic knowledge within the range of thermodynamics and fluid mechanics, construction and operation of heat generating devices, process equipment, including renewable energy sources, cooling and air conditioning		The student has knowledge of thermodynamics in the field of vapors, vapour and steam processes and cycles.		[SW1] Assessment of factual knowledge		
	[K6_U06] is able to use mathematical and physical models for analysing the processes and phenomena occurring in mechanical devices within the range of material strength, thermodynamics and fluid mechanics		The student is able to perform the energy balance of thermal devices and analyze the obtained results.		[SU4] Assessment of ability to use methods and tools		
Subject contents	LECTURE: Steam and steam properties. Thermodynamic steam processes. Rankine Cycle. Efficiency of steam power plant. Linde Cycle. LABORATORY: Energy balance of heat pump. Thermal analysis of refrigerator. Analysis of compressor.						
Prerequisites and co-requisites	Knowledge from course of Thermodynamics I						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Reports and oral or written test from laboratories		56.0%		50.0%		
	Written test		56.0%		50.0%		

Recommended reading	Basic literature	1. Pudlik W., Termodynamika. Wyd. PG, 1998. 2. Pudlik W. (red.), Termodynamika - zadania i przykłady obliczeniowe. Wyd. PG, 2000. 3. Pudlik W. (red.), Termodynamika - Laboratorium I miernictwa cieplnego. Wyd. PG, 1993. 4. Pudlik W. (red.), Termodynamika - Laboratorium II badania maszyn i urządzeń. Wyd. PG, 1991.
	Supplementary literature	1. Wiśniewski S., Termodynamika techniczna. WNT, 2005
	eResources addresses	Adresy na platformie eNauczanie: Termodynamika II, W, MiBM niestacjonarne, sem.04, letni 22/23 - Moodle ID: 28973 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28973">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28973</a> Termodynamika II, W, MiBM niestacjonarne, sem.04, letni 22/23 - Moodle ID: 28973 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28973">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28973</a>
Example issues/ example questions/ tasks being completed	Describe Rankine Cycle. Describe Linde Cycle.	
Work placement	Not applicable	