



Subject card

Subject name and code	Heat Exchangers, PG_00055494						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2024/2025		
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	5	ECTS credits			3.0		
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		prof. dr hab. inż. Dariusz Mikielewicz				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	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		8.0		37.0	75
Subject objectives	To acquaint the student with the methods of determining the required heat transfer surface in exchangers and their different types						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W11] possesses knowledge on design, technology and manufacturing of machine parts, metrology, and quality control; knows and understands methods of measuring and calculating basic values describing the operation of mechanical systems, knows basic calculating methods applied to analyse the results of experiments		Student is able to construct exchanger performance characteristics and evaluate it in terms of different aspects		[SW3] Assessment of knowledge contained in written work and projects		
	[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		knows the application of different types of heat exchangers for various applications		[SW1] Assessment of factual knowledge		
	[K6_U03] is able to identify, formulate and develop the documentation of a simple design or technological task, including the description of the results of this task in Polish or in a foreign language and to present the results using computer software or other aiding tools		Performed the heat exchanger design with required calculations and drawings		[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject		

Subject contents	1. Classification of heat exchangers 2. Applications of heat exchangers in engineering practice 3. Procedures for determining the heat transfer area using the mean logarithmic temperature difference and epsilon-NTU method 4. Mini-channel heat exchangers 5. development of performance characteristics of exchangers		
Prerequisites and co-requisites	Thermodynamics, fluid mechanics, engineering graphics		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	lecture - test	60.0%	50.0%
	projekt	60.0%	50.0%
Recommended reading	Basic literature	1. Lecture notes	
	Supplementary literature	Every book from the area of heat exchangers.	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		