



## Subject card

Subject name and code	Industrial ventilation and A/C, PG_00050172						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2023/2024		
Education level	first-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			at the university		
Year of study	3	Language of instruction			Polish		
Semester of study	6	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Zakład Ogrzewnictwa, Wentylacji, Klimatyzacji i Chłodnictwa -> Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Rafał Andrzejczyk					
	Teachers						
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	8.0		62.0		100
Subject objectives	Enhancing knowledge on topics not covered by the thermodynamics course. Getting the skills to solving theoretical and analytical as well as design and operation problems from the selected industrial ventilation and air-conditioning issues and advanced energy conversion technologies.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[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	Presents operational issues related to technical solutions for ventilation and air-conditioning of usable rooms, with particular emphasis on rooms intended for industrial purposes.. Explains the economical use of energy sources and ways to protect the environment.			[SU5] Assessment of ability to present the results of task [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment		
	[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	Presents theoretical and operational issues related to technical solutions for ventilation and air-conditioning of industrial rooms.			[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects		
Subject contents	Ventilation. Ventilation systems of industrial spaces. Protection of the work area against hazards related to the emission of pollutants. Methods of calculating supply and exhaust streams. Designing a ducts. Equipment selection. The importance and application of air conditioning. Comfort air conditioning. Industrial air conditioning. Moist air. Calculation of the thermal load of objects - heat gains and losses. The necessary amount of supply air (including fresh air). Examples of air conditioning systems solutions. Energy demand in air conditioning systems. The problem of systems operation.						
Prerequisites and co-requisites	Knowledge of Thermodynamics, Fluid Mechanics						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Written test		56.0%		75.0%		
	Laboratory reports		56.0%		25.0%		

Recommended reading	Basic literature	<p>1. M. Malicki Wentylacja i klimatyzacja. Warszawa</p> <p>2. M. Jaskólski, Z. Micewicz - Wentylacja i klimatyzacja hal krytych pływalni. IPPU MASTA, Gdańsk</p> <p>3. T. Szymański, W. Wasiluk, Systemy wentylacji przemysłowej. Skrypt Politechnika Gdańska</p>
	Supplementary literature	1. H. Recknagel Poradnik Ogrzewanie, klimatyzacja. EWFE, Gdańsk
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Classify air conditioning systems. Classify ventilation systems. Describe the design process ventilation and air conditioning systems. Present a method of determining energy consumption in systems ventilation and air conditioning.	
Work placement	Not applicable	