GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Industrial ventilation and air conditioning systems, PG_00064753		
Field of study	Power Engineering		
Date of commencement of studies	February 2026	Academic year of realisation of subject	2026/2027
Education level	second-cycle studies	Subject group	Specialty 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	1	Language of instruction	Polish
Semester of study	2	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Sanitary Engineering -> Faculty of Civil and Environmental Engineering -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Sylwia Fudala-Książek	
	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	7.0	38.0	75

Subject objectives

The aim of the course is to get acquainted with the well-established knowledge in the field of ventilation and air conditioning and shaping the internal environment of special-purpose rooms, current legal regulations and standards related to the topic, installation materials and criteria for their selection, design methodology, methods and technologies for the implementation of these installations, as well as related with them nontechnical conditions.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U04] creatively designs or modifies, either entirely or at least in part, energy systems, machines and devices, transmission grids and internal installations, considering both technical and non-technical aspects, estimating costs and utilizing design techniques appropriate for tasks within the scope of Power Engineering	The student is able to design or modify, as a whole or at least in part, energy systems, machines and equipment, transmission networks or internal installations according to a given specification, taking into account technical and non-technical aspects. The student is able to determine costs using design techniques appropriate to the task in question in the field of power engineering.	[SU5] Assessment of ability to present the results of task [SU1] Assessment of task fulfilment
[K7_U03] identifies and formulates task specifications in the scope of energy systems, machines and devices, transmission grids, buildings and internal installations	Students will be able to prepare task specifications and an implementation plan, in terms of the design of energy systems, machinery and equipment, transmission networks, buildings and internal installations.	[SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools
[K7_W03] demonstrates structured and theory supported knowledge encompassing key issues in the field of Power Engineering, enabling design of energy systems, machines and devices, transmission grids and internal installations	Students will be able to design in the field of power engineering energy systems, machinery and equipment, transmission networks and internal installations.	[SW3] Assessment of knowledge contained in written work and projects

<table>
<tr><td>Subject contents</td><td colspan="3">LECTURE: Ventilation systems of hospitals, operating theaters, drug production plants, industrial halls. Protection of work zones against hazards related to the emission of pollutants. Local exhaust ventilation. Methodology of calculating air supply and exhaust streams. Designing a network of cables. 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. Examples of air conditioning systems solutions. Energy demand in air conditioning systems. PROJECT: Design of laboratory ventilation and air conditioning.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">Basic knowledge of thermodynamics, fluid mechanics as well as ventilation and air conditioning.</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>Lecture</td><td>60.0%</td><td>50.0%</td></tr><tr><td>Project</td><td>60.0%</td><td>50.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">1. Klimtyzacja i wentylacja w szpitalach. Teoria i praktyka eksploatacji Andrzej Wolski, Krzysztof Kaiser 2. M. Jaskólski, Z. Micewicz - Wentylacja i klimatyzacja hal krytych pływalni. IPPU MASTA, Gdańsk 3. T. Szymański, W. Wasiluk, Systemy wentylacji przemysłowej. Skrypt Politechnika Gdańsk 4. H. Recknagel Poradnik Ogrzewanie, klimatyzacja. EWFE, Gdańsk</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">1. K. Kaiser, A. Wolski . Hałas i zanieczyszczenia w wentylacji pomieszczeń. 2. M. Galiński. Miejscowa wentylacja wywiewna.</td></tr>
<tr><td>eResources addresses</td><td colspan="2"></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">Systems used in operating theaters.</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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