



Subject card

Subject name and code	Ventilation and Air Conditioning II, PG_00059950									
Field of study	Environmental Engineering									
Date of commencement of studies	February 2026	Academic year of realisation of subject		2026/2027						
Education level	second-cycle studies	Subject group		Obligatory subject group 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 -> Faculties of Gdańsk University of Technology									
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Sylwia Fudala-Książek							
	Teachers									
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM			
	Number of study hours	15.0	0.0	15.0	15.0	0.0	45			
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	45		5.0		30.0	80			
Subject objectives	The aim of the course is to introduce the subject of mechanical ventilation and air conditioning. In particular, with the knowledge of ventilation and air conditioning and the shaping of the indoor environment, the basics of acoustics, current legal regulations and standards related to the subject, installation materials and criteria for their selection, design methods and tools supporting design, methods and technologies for the execution of the installations in question, as well as related non-technical considerations.									
Learning outcomes	Course outcome		Subject outcome		Method of verification					
	[K7_W11] has knowledge to analyze, evaluate and optimize processes, objects and systems of environmental engineering and knows the principles of rational energy management and resources		The student is able to use concepts and specialist language in the field of ventilation and air-conditioning. The student is able to carry out technical and economic analysis of selected mechanical ventilation solutions. They will be able to determine a rational source of heat and cold.		[SW1] Assessment of factual knowledge					
	K7_U10		The student designs a mechanical ventilation system in a building.		[SU1] Assessment of task fulfilment					
	K7_U03		The student shall produce documentation design of a ventilation installation mechanical ventilation, including technical description, calculations and drawings technical description, calculations and drawings.		[SU1] Assessment of task fulfilment					
	K7_W06		The student lists and defines the concepts of media flow in sanitary, thermal or energy systems. Characterise methods and equipment for media flow in sanitary, thermal or energy systems, including mechanical ventilation.		[SW1] Assessment of factual knowledge					

Subject contents	<p>Course content – lecture</p> <p>LECTURES: Ventilation airflow and its properties. Organisation of room air exchange, air distribution in ventilated rooms. Characteristics of ventilation and air conditioning systems. Air treatment. Air recirculation and heat recovery. Equipment components of mechanical ventilation and air conditioning systems - ducts, fittings and devices. Ventilation and air conditioning units. Dimensioning of mechanical ventilation duct networks. Basics of acoustics. Legal regulations, standards, technical, construction and fire requirements.</p> <p>LABORATORIES: Calculation of ventilation air treatment processes, determination of external and internal heat and moisture gains. Determination of volume flows and ventilation air parameters. Dimensioning and selection of ventilation system components. Operation of ventilation and air conditioning design programs in the Ventpack environment.</p> <p>PROJECT: Design of a mechanical supply and exhaust ventilation system for a set of rooms in a building. Ventilation air balance. Application of the principles of ventilation air distribution and selection of diffusers and extractors. Duct dimensioning. Selection of fittings and equipment. Calculation of pressure drops and control of air volume flows. Design documentation guidelines.</p>												
Prerequisites and co-requisites	Knowledge of the basics of ventilation and air conditioning. Ability to draw in AutoCAD. Knowledge of the subject Ventilation and Air Conditioning in a first degree engineering course. Basic knowledge of hydraulics and fluid mechanics and thermodynamics.												
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="446 826 790 860">Subject passing criteria</th><th data-bbox="790 826 1135 860">Passing threshold</th><th data-bbox="1135 826 1487 860">Percentage of the final grade</th></tr> </thead> <tbody> <tr> <td data-bbox="446 860 790 893">Lecture</td><td data-bbox="790 860 1135 893">60.0%</td><td data-bbox="1135 860 1487 893">30.0%</td></tr> <tr> <td data-bbox="446 893 790 927">Project</td><td data-bbox="790 893 1135 927">60.0%</td><td data-bbox="1135 893 1487 927">40.0%</td></tr> <tr> <td data-bbox="446 927 790 961">Laboratory</td><td data-bbox="790 927 1135 961">60.0%</td><td data-bbox="1135 927 1487 961">30.0%</td></tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	Lecture	60.0%	30.0%	Project	60.0%	40.0%	Laboratory	60.0%	30.0%
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Recommended reading	<p>Basic literature</p> <ol style="list-style-type: none"> <li data-bbox="795 961 1487 1017">1. Jaskólski M., Micewicz Z., Wentylacja i klimatyzacja hal krytych pływalni. IPPU MASTA, Gdańsk, 2000. <li data-bbox="795 1096 1487 1152">2. Klinke T., Wentylacja. Tablice do obliczeń strat ciśnienia. OWPW, Warszawa, 2007. <li data-bbox="795 1230 1487 1286">3. Malicki M., Wentylacja i klimatyzacja. PWN, Warszawa 1980. <li data-bbox="795 1320 1487 1376">4. Pełech A., Wentylacja i klimatyzacja. Podstawy. Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław, 2009. <li data-bbox="795 1455 1487 1511">5. Przepisy prawne, Polskie i Europejskie Normy związane z tematem, warunki techniczne COBRTI Instal. 												
	<p>Supplementary literature</p> <ol style="list-style-type: none"> <li data-bbox="795 1455 1487 1511">1. Gaziński i in., Technika klimatyzacyjna dla praktyków. Systherm Serwis, Poznań, 2005. <li data-bbox="795 1590 1487 1646">2. Gutkowski K.M., Butrymowicz D.J., Chłodnictwo i klimatyzacja. WNT, Warszawa, 2007. <li data-bbox="795 1724 1487 1781">3. Rosiński M., Odzyskiwanie ciepła w wybranych technologiach inżynierii środowiska. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2008. <li data-bbox="795 1859 1487 1915">4. Recknagel, Sprenger i in., Poradnik. Ogrzewanie i klimatyzacja. EWFE, Gdańsk, 2008. <li data-bbox="795 1994 1487 2050">5. Wytyczne producentów, karty katalogowe armatury i urządzeń. 												
eResources addresses													
Example issues/ example questions/ tasks being completed													

Practical activites within
the subject

Not applicable

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