



Subject card

Subject name and code	, PG_00059966									
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		4.0						
Learning profile	general academic profile	Assessment form		exam						
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	30.0	15.0	0.0	15.0	0.0	60			
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	60		5.0		38.0	103			
Subject objectives	The aim of the course is to introduce the subject of mechanical ventilation and air conditioning for domestic buildings. 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 conditions.									
Learning outcomes	Course outcome		Subject outcome		Method of verification					
	K7_W04		The student carries out design documentation covering the application of automation in ventilation and air-conditioning systems. The student is able to present solutions to complex engineering tasks in the field of designing, modelling, optimisation, control of processes, objects and systems in environmental engineering.		[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge					
	K7_U03		The student produces design documentation for a mechanical ventilation system, including technical description, calculations and drawings.		[SU1] Assessment of task fulfilment					
	K7_U10		Student designs a mechanical ventilation system in a building.		[SU1] Assessment of task fulfilment					
	K7_W06		Students will list and define terms concerning the flow of media in sanitary systems, thermal or energy systems. Characterises 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 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>EXERCISES: 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="454 732 779 765">Subject passing criteria</th><th data-bbox="779 732 1144 765">Passing threshold</th><th data-bbox="1144 732 1478 765">Percentage of the final grade</th></tr> </thead> <tbody> <tr> <td data-bbox="454 765 779 799">Lecture</td><td data-bbox="779 765 1144 799">60.0%</td><td data-bbox="1144 765 1478 799">30.0%</td></tr> <tr> <td data-bbox="454 799 779 833">Task-based exercises</td><td data-bbox="779 799 1144 833">60.0%</td><td data-bbox="1144 799 1478 833">30.0%</td></tr> <tr> <td data-bbox="454 833 779 866">Project</td><td data-bbox="779 833 1144 866">60.0%</td><td data-bbox="1144 833 1478 866">40.0%</td></tr> </tbody> </table>	Subject passing criteria	Passing threshold	Percentage of the final grade	Lecture	60.0%	30.0%	Task-based exercises	60.0%	30.0%	Project	60.0%	40.0%
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Lecture	60.0%	30.0%											
Task-based exercises	60.0%	30.0%											
Project	60.0%	40.0%											
Recommended reading	<p>Basic literature</p> <ol style="list-style-type: none"> <li data-bbox="795 889 1478 945">1. Jaskólski M., Micewicz Z., Wentylacja i klimatyzacja hal krytych pływalni. IPPU MASTA, Gdańsk, 2000. <li data-bbox="795 1012 1478 1069">2. Klinke T., Wentylacja. Tablice do obliczeń strat ciśnienia. OWPW, Warszawa, 2007. <li data-bbox="795 1125 1478 1158">3. Malicki M., Wentylacja i klimatyzacja. PWN, Warszawa 1980. <li data-bbox="795 1215 1478 1271">4. Pełech A., Wentylacja i klimatyzacja. Podstawy. Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław, 2009. <li data-bbox="795 1304 1478 1361">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 1394 1478 1450">1. Gaziński i in., Technika klimatyzacyjna dla praktyków. Systherm Serwis, Poznań, 2005. <li data-bbox="795 1507 1478 1563">2. Gutkowski K.M., Butrymowicz D.J., Chłodnictwo i klimatyzacja. WNT, Warszawa, 2007. <li data-bbox="795 1619 1478 1675">3. Rosiński M., Odzyskiwanie ciepła w wybranych technologiach inżynierii środowiska. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2008. <li data-bbox="795 1731 1478 1787">4. Recknagel, Sprenger i in., Poradnik. Ogrzewanie i klimatyzacja. EWFE, Gdańsk, 2008. <li data-bbox="795 1843 1478 1877">5. Wytyczne producentów, karty katalogowe armatury i urządzeń. <p>eResources addresses</p>												
Example issues/example questions/tasks being completed													
Practical activites within the subject	Not applicable												

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