GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00059966		
Field of study	Environmental Engineering		
Date of commencement of studies	February 2025	Academic year of realisation of subject	2025/2026
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		
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	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_U10	Student designs a mechanical ventilation system in a building.	[SU1] Assessment of task fulfilment
K7_U03	The student produces design documentation for a mechanical ventilation system, including technical description, calculations and drawings.	[SU1] Assessment of task fulfilment
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.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects
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	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. 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. 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.
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

Subject passing criteria	Passing threshold	Percentage of the final grade
Project	60.0%	40.0%
Task-based exercises	60.0%	30.0%
Lecture	60.0%	30.0%

Recommended reading

Basic literature	1. Jaskólski M., Micewicz Z., Wentylacja i klimatyzacja hal krytych pływalni. IPPU MASTA, Gdańsk, 2000. 2. Klinke T., Wentylacja. Tablice do obliczeń strat ciśnienia. OWPW, Warszawa, 2007. 3. Malicki M., Wentylacja i klimatyzacja. PWN, Warszawa 1980. 4. Pełech A., Wentylacja i klimatyzacja. Podstawy. Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław, 2009. 5. Przepisy prawne, Polskie i Europejskie Normy związane z tematem, warunki techniczne COBRTI Instal.
Supplementary literature	1. Gaziński i in., Technika klimatyzacyjna dla praktyków. Systherm Serwis, Poznań, 2005. 2. Gutkowski K.M., Butrymowicz D.J., Chłodnictwo i klimatyzacja. WNT, Warszawa, 2007. 3. Rosiński M., Odzyskiwanie ciepła w wybranych technologiach inżynierii środowiska. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2008. 4. Recknagel, Sprenger i in., Poradnik. Ogrzewanie i klimatyzacja. EWFE, Gdańsk, 2008. 5. Wytyczne producentów, karty katalogowe armatury i urządzeń.
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable

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