

Subject card

Subject name and code	Technology of the atmosphere protection, PG_00117762						
Field of study	Chemistry						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2024/2025		
Education level	postgraduate 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			1.0		
Learning profile	academic	Assessment form					
Conducting unit	Pracownia Fotokatalizy -> Katedra Technologii Środowiska -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Ewelina Grabowska-Musiał				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	15.0	0.0	0.0	15
	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	15		2.0		8.0	25
Subject objectives	Familiarizing students with all issues mentioned in the lecture program content. To familiarize students with the main stages of the technological process used to remove pollutants from the gas phase Familiarizing students with instrumental analysis techniques. Developing the ability to independently perform calculations necessary for the correct interpretation of analysis results Developing the ability to independently select the appropriate technology for removing pollutants from air streams.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[CHEMMU2_W11] Demonstrates general knowledge about the current trends in the development of chemistry as a science and the latest discoveries in this field.	Demonstrates the ability to carry out measurements physicochemical and technological, important for removing air pollutants	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW5] implementation of a problem task
	[CHEMMU2_W04] Applies the acquired knowledge to an in-depth description of the properties of chemical connections, methods of their synthesis and analysis.	based on the acquired knowledge, plans and develops atmospheric protection technologies	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
	[CHEMMU2_K01] Knows the limitations of her/his own knowledge; understands the need for further education and can inspire other people to do so.	can search independently additional literature and on her basis to deepen knowledge	[SK5] implementation of a problem task
	[CHEMMU2_K03] Understands the need for systematic work on various projects of a long-term nature and knows how to set priorities for the implementation of undertaken tasks.	Plans and develops technologies atmosphere protection	[SK1] oral statement/conversation/ discussion [SK5] implementation of a problem task
	[CHEMMU2_U04] Applies acquired knowledge of chemistry and related scientific disciplines.	plans experiments on based on acquired knowledge	[SU6] demonstration of practical skills
[CHEMMU2_W10] Uses knowledge of the principles of operation of the basic scientific and research apparatus used in chemistry.	selects equipment appropriate for specific pollutants atmosphere protection	[SW1] oral statement/ conversation/discussion [SW5] implementation of a problem task	
Subject contents	Particle size distribution and dust characteristics. Characteristics of aerosol particles. Physical basis of the gas dedusting process. Air purification and dedusting devices. Dust collectors: cyclone, electrostatic precipitators, vacuum dust collectors, scrubbers. Aerosol removal devices. Removal of gaseous pollutants. Emission control in fermentation plants, chemical plants, refineries and the pulp and paper industry. Removing SO ₂ from chimney gases. H ₂ S removal and odor control. Removal of CO ₂ and H ₂ S from gas streams. Removal of organic compounds. emission control of SO ₂ and NO _x . Flue gas desulfurization methods. Adsorption and absorption processes. Thermal and catalytic combustion. Air purification/ deodorization and disinfection processes in closed rooms.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	laboratory exercises	51.0%	100.0%
Recommended reading	Basic literature	Lewandowski W., Techniczno-technologiczne i aparaturowe aspekty ochrony powietrza, WPG Gdańsk 2011. Koniecznyński J., Ochrona powietrza przed szkodliwymi gazami. Metody, aparatura i instalacje. Wydawnictwo Politechniki Gliwickiej, Gliwice 2004. Ciok Z., Ochrona środowiska w elektroenergetyce, PWN Warszawa 2001	
	Supplementary literature	Kucowski J., Laudyn D., Przekwas M., Energetyka a ochrona środowiska, WNT Warszawa 1997. Warych J., Oczyszczanie gazów. Procesy i aparatura, WNT Warszawa 1998. Warych J., Oczyszczanie przemysłowych gazów odlotowych, WNT Warszawa 1988	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	not applicable		
Work placement	Not applicable		

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