



Subject card

Subject name and code	Environmental monitoring and control, PG_00057355						
Field of study	Power Engineering						
Date of commencement of studies	February 2024		Academic year of realisation of subject		2024/2025		
Education level	second-cycle studies		Subject group		Optional 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 Metrology and Optoelectronics -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Aneta Łucziewicz				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	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		8.0		37.0	75
Subject objectives	The aim of the course is to present the basic theoretical issues and practical problems related to the monitoring and analysis of environmental pollution.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_K04] is able to react in emergency situations, health and life threatening when using power equipment		The student is able to recognize health and life hazards when using electrical devices, has the ability to react properly in emergency situations that may be the result of failures, improper use of power devices and their design and implementation errors		[SK1] Assessment of group work skills		
	[K7_W10] knows the basic installations of advanced energy systems, transmission networks and internal installations and their impact on the environment		The student uses concepts and specialised language in the field of environmental pollution monitoring and analysis. The student is able to collect and measure data in the field of environmental pollution monitoring and analysis, including typical indoor pollutants (e.g. particulate matter, gaseous compounds). Students will be able to find solutions to minimise the health impacts of indoor air pollution.		[SW3] Assessment of knowledge contained in written work and projects		
	[K7_K05] is aware of the impact of engineering activities on the environment		The student is able to describe analytically and synthetically the problems associated with the issues of monitoring and analysis of environmental pollution. He is aware of the work that is done by a multi-discipline design team.		[SK1] Assessment of group work skills		

Subject contents	1. Introduction to indoor air quality. Ventilation concept, methodologies and measurement techniques. Evaluation of ventilation efficiency. 2. Gaseous pollutants: Volatile organic compounds (VOCs), ozone and combustion related air pollutants (i.e. carbon monoxide and nitrogen dioxide). 3. Particulate matter (PM). 4. Bioaerosols, asbestos and radon 5. Airborne particle control: Filtration 6. Comparison of different types of pollution monitoring sensors and techniques 7. From data to knowledge: air pollutant data elaboration		
Prerequisites and co-requisites	Basic knowledge of chemistry, physics, fluid mechanics. Basic knowledge of programming languages. Knowledge of the subject: ventilation, monitoring and air treatment.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	60.0%	50.0%
	Exam on lectures	60.0%	50.0%
Recommended reading	Basic literature	Spengler, J., McCarthy, J., and Samet, J. Indoor air quality handbook, McGraw-Hill Professional (2001). Awbi, H.B, Ventilation of buildings, E&FN SPON (2003) Morawska, L. and Salthammer, T., Indoor environment: airborne particles and settled dust Wiley-VCH (2003)	
	Supplementary literature	Zhang, Y., Indoor Air Quality Engineering, CRC Press (2004) Godish, Thad. <i>Indoor air pollution control</i> . CRC press, 1989.	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		