



Subject card

Subject name and code	Monitoring and Analytics of Environmental Pollutants, PG_00048978						
Field of study	Green Technologies						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
Education level	second-cycle studies	Subject group			Obligatory subject group in the field of study 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	1	ECTS credits			6.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Analytical Chemistry -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Marek Tobiszewski				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	45.0	0.0	15.0	75
	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	75		5.0		70.0	150
Subject objectives	Gaining knowledge from monitoring and analytics of environment						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_W04] is aware of the importance of environmental protection and has a detailed knowledge of chemical and biological threats to the environment, with particular emphasis on anthropogenic factors	understands the consequences of his action in the context of environmental impact	[SW2] Assessment of knowledge contained in presentation
	[K7_K03] can consciously and supported by the experience to present your work, provide information in a manner commonly understood, to communicate, to make self-assessment and constructive criticism of the work of others, the reasons for different points of view	is able to perform synthesis of information and present selected topic from environmental analytics	[SK3] Assessment of ability to organize work
	[K7_U04] can be used to formulate and solve engineering tasks analytical methods, simulation and experimental, can make a critical analysis of the methods of operation and evaluate the existing technical solutions, in particular equipment, facilities, systems, processes, services in the field of environmental technology and make a preliminary economic analysis of engineering activities undertaken	is able to apply analytical tools	[SU4] Assessment of ability to use methods and tools
	[K7_W03] will have a detailed knowledge of the theoretical basis of methods and types of apparatus used in chemical analysis of environmental pollutants and the technology of cleaning and neutralization of industrial waste and wastewater management and the design and supervision of environmentally friendly technologies	Has knowledge on monitoring analytical devices	[SW1] Assessment of factual knowledge
Subject contents	Lecture: Aspects of environmental monitoring and analytics Labs: Working with analytical procedures Seminar: Presentations of contents of scientific review papers		
Prerequisites and co-requisites	finished course on analytical chemistry		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	zaliczenia	50.0%	30.0%
	egzamin	60.0%	50.0%
	ocena prezentacji	50.0%	20.0%
Recommended reading	Basic literature	New horizons and challenges in environmental analysis and monitoring, praca zbiorowa pod red. J. Namieśnika, W. Chrzanowskiego, P. Szpinek, wydawca: Centrum Doskonałości Analityki i Monitoringu Środowiskowego (CEEAM), Wydział Chemiczny PG, Gdańsk 2003 Nowe horyzonty i wyzwania w analityce i monitoringu środowiskowym, praca zbiorowa pod red. J. Namieśnika, W. Chrzanowskiego, P. Szpinek, wydawca: Centrum Doskonałości Analityki i Monitoringu Środowiskowego (CEEAM), Wydział Chemiczny PG, Gdańsk 2003 Ocena i kontrola jakości wyników analitycznych, P. Konieczka, J. Namieśnik, B. Zygmunt, E. Bułska, A. Świtaj-Zawadka, A. Naganowska, E. Kremer, M. Rompa, wydawca: Centrum Doskonałości	

	Supplementary literature	<p>New horizons and challenges in environmental analysis and monitoring, praca zbiorowa pod red. J. Namieśnika, W. Chrzanowskiego, P. Szpinek, wydawca: Centrum Doskonałości Analityki i Monitoringu Środowiskowego (CEEAM), Wydział Chemiczny PG, Gdańsk 2003</p> <p>Nowe horyzonty i wyzwania w analityce i monitoringu środowiskowym, praca zbiorowa pod red. J. Namieśnika, W. Chrzanowskiego, P. Szpinek, wydawca: Centrum Doskonałości Analityki i Monitoringu Środowiskowego (CEEAM), Wydział Chemiczny PG, Gdańsk 2003</p> <p>Ocena i kontrola jakości wyników analitycznych, P. Konieczka, J. Namieśnik, B. Zygmunt, E. Bulska, A. Świtaj-Zawadka, A. Naganowska, E. Kremer, M. Rompa, wydawca: Centrum Doskonałości Analityki i</p>
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	<p>What is precipitation?</p> <p>Why extraction is performed?</p> <p>What is biomonitoring?</p>	
Work placement	Not applicable	