



Subject card

Subject name and code	Monitoring and Analytical Environmental Pollution, PG_00019320						
Field of study	Chemistry in Construction Engineering						
Date of commencement of studies	October 2023		Academic year of realisation of subject		2024/2025		
Education level	first-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	2		Language of instruction		Polish		
Semester of study	4		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	30.0	0.0	30.0	0.0	15.0	75
	E-learning hours included: 0.0						
	Address on the e-learning platform: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=4431						
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 of environmental monitoring and analysis						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_K05		understands issues related to environmental quality and environmental analytics		[SK4] Assessment of communication skills, including language correctness		
	K6_U01		is able to use different sources of knowledge		[SU2] Assessment of ability to analyse information		
	K6_W08		has knowledge on techniques of monitoring of environmental quality		[SW1] Assessment of factual knowledge		
Subject contents	Lecture: Different topics from modern chemical analysis						
	Laboratory: Application of variety of analytical protocols to determine environmental pollutants						
	Seminar: Presentation of the main ideas of scientific papers						
Prerequisites and co-requisites	Knowledge from Analytical Chemistry						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	examination		60.0%		50.0%		
	laboratory tests		50.0%		30.0%		
	presentation assessment		60.0%		20.0%		

Recommended reading	Basic literature	Pobieranie próbek środowiskowych do analizy, J. Namieśnik, J. Łukasiak, Z. Jamrógiewicz, PWN, Warszawa 1995 Fizykochemiczne metody kontroli zanieczyszczeń środowiska, praca zbiorowa pod red. J. Namieśnika i Z. Jamrógiewicza, PWN, Warszawa 1998 Przygotowanie próbek środowiskowych do analizy, J. Namieśnik, Z. Jamrógiewicz, M. Pilarczyk, L. Torres, WNT, Warszawa 2000 Pestycydy, występowanie, oznaczanie i unieszkodliwianie, praca zbiorowa pod red. M. Biziuka, WNT, Warszawa 2001 Kontrola i zapewnienie jakości wyników pomiarów analitycznych, praca zbiorowa pod red. P. Konieczki i J. Namieśnika, WNT, Warszawa 2007 Zarys ekotoksykologii, praca zbiorowa pod red. J. Namieśnika i J. Jaśkowskiego, EKO-Pharma, Gdańsk 1995
	Supplementary literature	Przygotowanie próbek środowiskowych do analizy, J. Namieśnik, Z. Jamrógiewicz, M. Pilarczyk, L. Torres, Chem. Inż. Ekol. (zeszyt specjalny), 4, S1, 3-128 (1998) 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. Bulska, A. Świtaj-Zawadka, A. Naganowska, E. Kremer, M. Rompa, wydawca: Centrum Doskonałości Analityki i Monitoringu Środowiskowego (CEEAM), Wydział Chemiczny PG, Gdańsk 2004 Bioanalityka w ocenie zanieczyszczenia środowiska, praca zbiorowa pod red. W. Wardenckiego, wydawca: Centrum Doskonałości Analityki i Monitoringu Środowiskowego (CEEAM), Wydział Chemiczny PG, Gdańsk 2004
	eResources addresses	Adresy na platformie eNauczenie:
Example issues/ example questions/ tasks being completed	Why extraction is performed before final determination? What is the goal of environmental tracers application? Give examples of environmental tracers. What requirements should it meet? What are processes that lead to loss of liquid sample representativeness. What are the measures to avoid them? What is speciation analysis? Explain terms: group speciation, individual speciation, screening speciation and physical speciation. Give examples. What are advantages of total parameters application over more traditional approach to monitoring? What are advantages of biomonitoring over more traditional approach to monitoring?	

Work placement	Not applicable
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