

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 2021	Academic year of realisation of subject		2022/2023					
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	dr hab. inż. Marek Tobiszewski dr hab. inż. Błażej Kudłak dr inż. Tomasz Dymerski prof. dr hab. inż. Andrzej Wasik dr inż. Małgorzata Rutkowska dr inż. Tomasz Majchrzak prof. dr hab. inż. Bożena Zabiegała dr hab. inż. Mariusz Marć prof. dr hab. inż. Piotr Konieczka dr inż. Paweł Kubica							
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								
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	<p>Lecture: Different topics from modern chemical analysis</p> <p>Laboratory: Application of variety of analytical protocols to determine environmental pollutants</p> <p>Seminar: Presentation of the main ideas of scientific papers</p>												
Prerequisites and co-requisites	Knowledge from Analytical Chemistry												
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="446 384 790 417">Subject passing criteria</th><th data-bbox="790 384 1133 417">Passing threshold</th><th data-bbox="1133 384 1486 417">Percentage of the final grade</th></tr> </thead> <tbody> <tr> <td data-bbox="446 417 790 451">examination</td><td data-bbox="790 417 1133 451">60.0%</td><td data-bbox="1133 417 1486 451">50.0%</td></tr> <tr> <td data-bbox="446 451 790 485">laboratory tests</td><td data-bbox="790 451 1133 485">50.0%</td><td data-bbox="1133 451 1486 485">30.0%</td></tr> <tr> <td data-bbox="446 485 790 518">presentation assessment</td><td data-bbox="790 485 1133 518">60.0%</td><td data-bbox="1133 485 1486 518">20.0%</td></tr> </tbody> </table>	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%
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Recommended reading	<p>Basic literature</p> <p>Pobieranie próbek środowiskowych do analizy, J. Namieśnik, J. Łukasiak, Z. Jamrógiewicz, PWN, Warszawa 1995</p> <p>Fizykochemiczne metody kontroli zanieczyszczeń środowiska, praca zbiorowa pod red. J. Namieśnika i Z. Jamrógiewicza, PWN, Warszawa 1998</p> <p>Przygotowanie próbek środowiskowych do analizy, J. Namieśnik, Z. Jamrógiewicz, M. Pilarczyk, L. Torres, WNT, Warszawa 2000</p> <p>Pestycydy, występowanie, oznaczanie i unieszkodliwianie, praca zbiorowa pod red. M. Biziuka, WNT, Warszawa 2001</p> <p>Kontrola i zapewnienie jakości wyników pomiarów analitycznych, praca zbiorowa pod red. P. Konieczki i J. Namieśnika, WNT, Warszawa 2007</p> <p>Zarys ekotoksykologii, praca zbiorowa pod red. J. Namieśnika i J. Jaśkowskiego, EKO-Pharma, Gdańsk 1995</p>												
Supplementary literature	<p>Przygotowanie próbek środowiskowych do analizy, J. Namieśnik, Z. Jamrógiewicz, M. Pilarczyk, L. Torres, Chem. Inż. Ekol. (zeszyt specjalny), 4, S1, 3-128 (1998)</p> <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. Bińska, A. Świtaj-Zawadka, A. Naganowska, E. Kremer, M. Rompa, wydawca: Centrum Doskonałości Analityki i Monitoringu Środowiskowego (CEEAM), Wydział Chemiczny PG, Gdańsk 2004</p> <p>Bioanalityka w ocenie zanieczyszczenia środowiska, praca zbiorowa pod red. W. Wardenciego, wydawca: Centrum Doskonałości Analityki i Monitoringu Środowiskowego (CEEAM), Wydział Chemiczny PG, Gdańsk 2004</p>												
	eResources addresses												

Example issues/ example questions/ tasks being completed	<p>Why extraction is performed before final determination?</p> <p>What is the goal of environmental tracers application? Give examples of environmental tracers. What requirements should it meet?</p> <p>What are processes that lead to loss of liquid sample representativeness. What are the measures to avoid them?</p> <p>What is speciation analysis? Explain terms: group speciation, individual speciation, screening speciation and physical speciation. Give examples.</p> <p>What are advantages of total parameters application over more traditional approach to monitoring?</p> <p>What are advantages of biomonitoring over more traditional approach to monitoring?</p>
Work placement	Not applicable