

Subject card

Subject name and code	Environment monitoring, PG_00033329						
Field of study	Environmental Protection						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2025/2026		
Education level	undergraduate 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	2	Language of instruction			Polish		
Semester of study	4	ECTS credits			3.0		
Learning profile	academic	Assessment form					
Conducting unit	Katedra Analizy Środowiska -> Faculty of Chemistry						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Magda Caban				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	45.0	0.0	0.0	45
	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	45		8.0		22.0	75
Subject objectives	Familiarizing students with basic information about environmental monitoring systems, types of water, soil and atmosphere pollution, methods of measuring pollutants in environmental samples;Familiarizing students with the basics of biological monitoring, taking into account marine specificity;Introducing students to the basics of calculations necessary for the correct interpretation of results;Developing the ability to independently design the analytical process and solve problems while conducting measurements						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[OŚL3_U10] Participates in the analyses and evaluation of alternative solutions to environmental problems and selects methods and instruments to rationally resolve them.	Understands the need for further education. Demonstrates creativity in working independently and in a team. Evaluates the obtained results using basic statistical tools. He talks about environmental monitoring issues in understandable language.	[SU5] implementation of a problem task
	[OŚL3_W07] Explains the causal relationship between the content of specific pollutants and the state of the environment (including human health) and the occurrence of adverse phenomena on a local, regional and global scale.	Is able to prepare a well-documented study of measurement results in the field of environmental monitoring in Polish. Evaluates the obtained results using basic statistical tools. Formulates opinions on basic environmental monitoring issues.	[SW4] test/exam - oral or written
	[OŚL3_W11] Discusses measurement systems and analysis techniques used in monitoring the state of the natural environment.	Illustrates and describes the basic principles of nature monitoring. Understands and defines basic methods of monitoring surface and groundwater, soil and atmosphere. Understands literature and legal acts regarding environmental monitoring in the native language.	[SW4] test/exam - oral or written
	[OŚL3_K04] Demonstrates responsibility for the safety of her/his own and others' work and for the workplace, and correctly follows the rules of conduct in emergencies.	Is responsible for the safety of his own work and that of others: he knows how to act in emergency situations, is careful when dealing with chemical substances, and is prudent when dealing with measuring equipment.	[SK5] implementation of a problem task
	[OŚL3_U02] Plans, selects appropriate research and measuring equipment and devices, performs physicochemical measurements and experiments; analyses the results and draws conclusions based on them.	Applies basic techniques and research tools for environmental monitoring. Demonstrates the ability to carry out basic measurements of selected water, air and soil pollutants using analytical and instrumental methods. Follows established analytical procedures for measurements.	[SU6] demonstration of practical skills
	[OŚL3_K06] Knows and appreciates the practical application of the acquired knowledge and skills in solving problems.	Is able to prepare a well-documented study of measurement results in the field of environmental monitoring in Polish.	[SK2] presentation/project/paper/report
[OŚL3_U06] Uses available sources of information and understands literature in the field of environmental protection, chemistry and natural sciences.	Knows the basic legal acts regarding environmental monitoring.	[SU2] presentation/project/paper/report	
Subject contents	Preparation of environmental samples for proper analysis (extraction, liquid chromatography). Analysis of environmental pollution using selected techniques: including: titration analysis, UV/Vis spectroscopy, thin layer chromatography. Air quality assessment based on measurement results obtained at an air monitoring station.		
Prerequisites and co-requisites	General biology, general chemistry, analytical chemistry, knowledge of the physicochemical properties of chemical compounds important in their determination, theoretical foundations of analytical methods.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Reports from each class	51.0%	20.0%
	Exit test	51.0%	40.0%
	Short entry tests on each of the classes	51.0%	40.0%
Recommended reading	Basic literature	Stepnowski P., Synak E., Szafranek B., Kaczyński Z. Monitoring i analityka zanieczyszczeń w środowisku, Wydawnictwo UG, Gdańsk, 2010.	

	Supplementary literature	Namieśnik J., Chrzanowski W., Szpinek P. (Red.) <i>Nowe Horyzonty i Wyzwania w Analityce i Monitoringu Środowiska</i> , CDAMŚ Gdańsk, 2003. Staszewski R. <i>Kontrola chemicznych zanieczyszczeń środowiska, Podstawy teoretyczne z ćwiczeniami laboratoryjnymi</i> , Politechnika Gdańska, Gdańsk, 1990. Namieśnik J. <i>Metody instrumentalne w kontroli zanieczyszczeń środowiska</i> , Politechnika Gdańska, Gdańsk, 1992. Kocjan R. <i>Chemia analityczna. Podręcznik dla studentów</i> . Tom 2. PZWL, Warszawa, 2000. Szczepaniak W., <i>Metody instrumentalne w analizie chemicznej</i> , PWN, Warszawa, 1996.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Determination of various forms of nitrogen in samples of surface water and drinking water using spectrophotometric methods, Application of spectrophotometry in ultraviolet and visible light (UV-Vis) for the determination of phenols in water Determination of chlorides and phosphates in surface water and drinking water, Isolation of polycyclic aromatic hydrocarbons (PAHs) from soil, Determination of exchangeable acidity and exchangeable aluminum in soil, ARMAAG measurement network	
Work placement	Not applicable	

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