

Subject card

Subject name and code	Analytical chemistry, PG_00050791						
Field of study	Environmental Protection						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2027/2028		
Education level	Bachelor's 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	3		ECTS credits		2.0		
Learning profile	academic		Assessment form		exam		
Conducting unit	Laboratory of Environmental Analytics and Radiochemistry -> Department of Environmental Chemistry and Radiochemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Alicja Boryło				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15		2.0		33.0	50
Subject objectives	The aim of the classes is to improve skills and familiarize students with all the issues mentioned in the lecture program, especially the analysis of compounds and mixtures. Chemical analysis can have three purposes: chemical qualitative analysis, chemical qualitative analysis, and chemical structural analysis						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[OŚL3_U11] Uses statistical methods as well as algorithms and IT techniques, including application software packages to describe environmental experiments and analysis of typical data in socio-economic activities based on science and natural sciences.		Is able to use statistical methods for environmental experiments and analysis of environmental activities		[SU3] text preparation/written work [SU4] test/exam - oral or written		
	[OŚL3_W03] Operates mathematical, statistical and IT methods and tools in the description and interpretation of phenomena and processes occurring in the environment.		Knows mathematical and IT methods useful for describing phenomena occurring in the environment		[SW4] test/exam - oral or written [SW3] text preparation/written work		
	[OŚL3_W11] Discusses measurement systems and analysis techniques used in monitoring the state of the natural environment.		Has knowledge of techniques used to monitor the natural environment		[SW4] test/exam - oral or written [SW3] text preparation/written work		

Subject contents	Validation of analytical methods		
	Chemical analysis		
	I group of cations		
	II group of cations		
	III group of cations		
	Qualitative analysis of selected anions		
	Manganometry		
	Redoximetry		
	Precipitation and complexometric analysis		
	Weight analysis		
Prerequisites and co-requisites	General and inorganic chemistry		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written exam	51.0%	100.0%
Recommended reading	Basic literature	Jerzy Minczewski, Zygmunt Marczenko, Analytical chemistry, PWN, Warsaw, 2019, volumes 1 and 2	
		Jan Dobrowolski, Analytical chemistry, PZWL, Warsaw	
		Tadeusz Lipiec, Zdzisław Szmaj, Analytical chemistry with elements of instrumental analysis, PZWL, Warsaw	
		Ryszard Kocjan, Analytical chemistry, PZWL, volume 1	
Recommended reading	Supplementary literature	Andrzej Cygański, Chemical methods of quantitative analysis, WNT, Warsaw, 2017 (only for the second part, i.e. quantitative analysis)	
		Douglas A. Skoog, Donald M. West, James F. Holler, Stanley R. Crouch, Fundamentals of analytical chemistry, PWN, Warsaw	
		Lecture notes	
Recommended reading	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

Document generated electronically. Does not require a seal or signature.