

Subject card

Subject name and code	Analytical Chemistry, PG_00188276						
Field of study	Chemia analityczna (Wykład)						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2026/2027		
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	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		3.0		
Learning profile	academic		Assessment form		exam		
Conducting unit	Department of Analytical Chemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Dorota Zarzeczkańska				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	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	30		10.0		35.0	75
Subject objectives	1. Attainment of the fundamentals of classical analytical methods used in forensic science. 2. Ability to select an appropriate basic analytical method for the type of evidence material. 3. Development of the ability to interpret the results of classical analyses.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[AKRL3_W02] The graduate knows and understands, at an advanced level, the analytical methods used in forensic laboratories, in particular spectroscopic, chromatographic and electroanalytical methods.		Understands the responsibility associated with interpreting the results of qualitative and quantitative analyses in a forensic context. Is familiar with qualitative and quantitative analytical techniques.		[SW4] test/egzamin - ustny lub pisemny		
	[AKRL3_U10] The graduate is able to interpret data from different analytical techniques to reconstruct events or identify evidence material.		Recognizes the analytical effects of characteristic reactions performed during qualitative analysis. Based on the reactions carried out, identifies and classifies ions into the appropriate analytical groups in accordance with the Fresenius–Bunsen systematics. Selects the appropriate calculation method for determining the quantity of a substance in a solution. Illustrates and describes, using chemical equations, the reactions occurring during qualitative and quantitative determinations.		[SU4] test/egzamin - ustny lub pisemny		

Subject contents	The role of analytical chemistry in forensic science; examples of evidence materials analyzed using classical methods. Fundamental concepts: analyte, matrix, sample, analytical errors, accuracy, precision. Chemical equilibria as the foundation of classical analysis. Classical qualitative analysis: identification of ions. Classical quantitative analysis: titration methods. Classical quantitative analysis: gravimetric analysis. Fundamentals of instrumental analytical methods. Analytical errors and evaluation of results. Documentation and interpretation of results.		
Prerequisites and co-requisites	Fundamental concepts of general chemistry. Knowledge of basic principles of stoichiometry and chemical equilibria.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written exam: 50% calculation tasks, 20% open questions, 30% multiple-choice questions, and/or an oral exam.	51.0%	100.0%
Recommended reading	Basic literature	1. J. Minczewski and Z. Marczenko, <i>Analytical Chemistry</i> , Vol. 1 and 2, PWN, Warsaw. 2. T. Lipiec and Z. S. Szmal, <i>Analytical Chemistry with Elements of Instrumental Analysis</i> , PZWL, Warsaw. 3. H. Bentkowska, <i>Qualitative Analytical Chemistry</i> , PG course script. 4. A. Cygański, <i>Chemical Methods of Quantitative Analysis</i> , WNT. 5. A. Persony, <i>Analytical Chemistry: Fundamentals of Classical Quantitative Analysis</i> , Medyk.	
	Supplementary literature	D. Harvey, <i>Modern Analytical Chemistry</i> , McGraw Hill Companies, Inc.	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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