

Subject card

Subject name and code	Analytical Chemistry, PG_00188277						
Field of study	Chemia analityczna (Ćw.audytoryjne)						
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		2.0		
Learning profile	academic		Assessment form		credit		
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	0.0	30.0	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		5.0		15.0	50
Subject objectives	1. Consolidation and enhancement of theoretical knowledge concerning classical qualitative and quantitative analytical methods. 2. Development of computational skills necessary for processing the results of chemical analyses.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[AKRL3_K01] The graduate is ready to critically evaluate their own knowledge, understand its importance for solving cognitive and practical problems, and to seek expert opinions when necessary.		The student is able to critically assess the correctness of procedures and experimental results presented in tutorial tasks.		[SK4] test/egzamin - ustny lub pisemny		
	[AKRL3_U07] The graduate is able to communicate using specialist terminology in chemistry and forensic science while working in interdisciplinary teams.		The student is able to collaborate with a group when discussing results and conclusions, communicating in specialist language.		[SU1] wypowiedź ustna/rozmowa/ dyskusja		
	[AKRL3_U06] The graduate is able to use specialised software and advanced ICT techniques to develop and visualise experimental data.		The student processes and interprets analytical results.		[SU4] test/egzamin - ustny lub pisemny		
	[AKRL3_W07] The graduate knows and understands the principles of quality assurance in analytical and forensic laboratories.		1. The student knows the principles of classical qualitative and quantitative analytical methods and their limitations in laboratory and forensic work. 2. The student understands the importance of quality control and validation of analytical methods used in forensic science.		[SW4] test/egzamin - ustny lub pisemny		

Subject contents	1. Equilibria in solutions acidbase equilibria, solubility, complex equilibria. 2. Calculations related to precipitation solubility product, losses in gravimetric analysis. 3. Calculations in acidbase titration titration curves, equivalence point. 4. Calculations in precipitation titration determination of chlorides, determination errors. 5. Complexometric titration analytical results, various titration approaches. 6. Calculations in redox titrations. 7. Measurement errors: types of errors, measurement uncertainty, error propagation. 8. Interpretation of analytical results and preparation of documentation.		
Prerequisites and co-requisites	1. Knowledge of the fundamentals of general chemistry. 2. Knowledge of basic concepts in stoichiometry and chemical equilibria. 3. Ability to work with simple laboratory equipment.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Passing two mid-term tests.	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.	
	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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