

Subject card

Subject name and code	Chemical analysis of biologically active compounds, PG_00081938						
Field of study	Chemistry						
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 Optional subject group 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		1.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Piotr Mucha				
	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		8.0	25
Subject objectives	to familiarize students with the basic issues of interaction of electromagnetic radiation with matter, the basics of UV-Vis spectrometry and spectrofluorimetry and their use in the analysis of selected biologically active compounds- to familiarize students with the physicochemical properties and possibilities of separation of peptides, proteins and nucleic acids by chromatographic and electrophoretic methods- to develop the ability to critically evaluate and interpret the obtained experimental results and analyze source texts						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[CHEML3_U01] Identifies, analyses and solves problems in the field of broadly understood chemistry on the basis of the acquired knowledge.		shows cautious criticism in accepting information, especially that available in the mass media		[SU4] test/exam - oral or written		
	[CHEML3_W10] Enumerates and describes the basic aspects of the construction, operation and use of measuring apparatus and equipment used in experimental works in the field of chemistry and related sciences.		designs and performs simple biochemical experiments, selecting laboratory equipment according to its purpose		[SW4] test/exam - oral or written		
	[CHEML3_W04] Characterises the basic methods of chemical compound analysis.		- predicts the physicochemical properties and selected groups of biologically active compounds based on their structure and their effect on the environment		[SW4] test/exam - oral or written		
Subject contents	Characterization of electromagnetic radiation, laws of absorption, fundamentals and application of UV-Vis spectroscopy, fundamentals and application of fluorescence, fundamentals, characterization and application of basic chromatographic techniques, fundamentals of gel electrophoresis, characterization of basic electrophoretic techniques, electrophoresis of proteins and nucleic acids						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	credit	50.0%	100.0%
Recommended reading	Basic literature	J. M. Berg, J. L. Tymoczko, L. Stryer, Biochemia, PWN, Warszawa 2009. Szczepaniak W. Metody instrumentalne w analizie chemicznej Witkiewicz Z., Podstawy chromatografii, WNT, 2000,	
	Supplementary literature	Kołodziejczyk A., Naturalne związki organiczne Kłyszajko-Stefanowicz L., Ćwiczenia z Biochemii	
	eResources addresses		
	Example issues/ example questions/ tasks being completed	A gene encoding a growth hormone (HW) protein was implanted into a bacterial cell. The sequence of the gene was modified in such a way that an additional sequence (called Tag) of six histidine residues (His6) was added to the C-terminus of the protein. Suggest the most efficient method and conditions to isolate this protein from a mixture of other cellular proteins by cell lysis. What feature of this protein will be used for isolation? What feature of the protein can be used for this isolation? Draw the effect of the separation.	
Work placement	Not applicable		

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