University of Gdańsk

Subject card

Subject name and code	Chemical analysis of biologically active compounds, PG_00081939		
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	3.0
Learning profile	academic	Assessment form	credit
Conducting unit	Faculty of Chemistry -> Rector		
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	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	to acquaint students with all the issues listed in the curriculum content of the lecture, to familiarize students with the basics of UV/Vis spectrometry and spectrofluorimetry and their use in the ana-lysis of biologically active compounds to familiarize students with the analysis by chromatographic and electrophoretic methods of peptides, proteins and nucleic acids to teach students how to conduct chemical experiments independently (using descriptions included in the instructions)

Learning outcomes

Course outcome	Subject outcome	Method of verification
[CHEML3_U02] Performs analyses using experimental methods and draws conclusions based on them.	analyzes the results of conducted experiments, draws conclusions about the correctness of their course	[SU8] observation of student's independent or team work
[CHEML3_U03] Selects the appropriate equipment and laboratory apparatus for conducting uncomplicated chemical experiments.	designs and performs simple biochemical experiments, selecting labora-tory equipment according to its purpose	[SU8] observation of student's independent or team work
[CHEML3_K02] Works individually demonstrating initiative and independence of activity and cooperates in a team fulfilling various roles in it.	understands the need for continuous and systematic education -appreciates the need to be able to work in a team by discussing and proposing their own solutions to the problem questions posed	[SK3] text preparation/written work [SK8] observation of student's independent or team work
[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	[SU3] text preparation/written work [SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[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	[SW3] text preparation/written work [SW5] implementation of a problem task
[CHEML3_K05] Observes established procedures in laboratory work and is responsible for the safety of her/his and others' work.	takes due care in handling laboratory equipment and in working with chemical reagents	[SK8] observation of student's independent or team work
[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.	- is able to propose the use of a specific separation technique for the analysis of selected biologically active compounds	[SW3] text preparation/written work
[CHEML3_U07] Prepares documented elaboration on a specific problem in the field of selected chemical and physical issues.	- analyzes the results of conducted experiments, draws conclusions about the correctness of their course	[SU3] text preparation/written work

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 organiczneKłyszejko-Stefanowicz L., Ćwiczenia z Biochemii
eResources addresses	

Example issues/ example questions/ tasks being completed

A mixture of globular proteins labeled A, B, C, D, E and F with molar masses of 20,000, 30,000, 31,000, 10,000, 24,000 and 60,000 g/mol, respectively, was isolated from blood plasma. Propose a method and draw how the separation of this mixture will look like.

Work placement

Not applicable

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