

Subject card

Subject name and code	Smal molecules – big activity, PG_00170423						
Field of study	Chemical Business, Chemistry						
Date of commencement of studies	October 2025		Academic year of realisation of subject			2027/2028	
Education level	Bachelor's studies		Subject group			Optional subject group	
Mode of study	full-time studies		Mode of delivery			at the university	
Year of study	3		Language of instruction			Polish	
Semester of study	5		ECTS credits			1.0	
Learning profile	academic		Assessment form			credit	
Conducting unit	Laboratory of Structural Research of Biopolymers -> Department of Organic Chemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Emilia Iłowska				
	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	The aim of the course is to introduce students with the relationship between structure and activity in biologically active molecules, such as peptides, proteins, chemotherapeutics, and antibiotics. Students will gain knowledge about the mechanisms through which small molecules can exhibit significant biological activity						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[CHEML3_W03] Explains the relationship between the structure of matter and its observed properties.	The student knows and understands the specific research topic, can indicate the relationship between the structure and biological activity of a chemical compound. Student can differentiate peptides, proteins, small molecules.	[SW1] oral statement/ conversation/discussion
	[CHEML3_U08] Presents in an understandable way the basic facts about chemistry using a scientific language typical of chemical sciences.	The student applies his knowledge in practice. The student understands how certain biologically active compounds work, identifies and names them appropriately. Can identify techniques with which to determine relevant biological activities and how to study the structure of chemical compounds.	[SU1] oral statement/conversation/ discussion [SU8] observation of student's independent or team work
	[CHEML3_W05] Has basic knowledge of the chemical specialisation studied.	The student has knowledge of biologically active compounds. He can distinguish between peptides, proteins, small molecules. Understands and knows the potential of these compounds as drugs, cosmetics, etc.. Can identify potential sites of modification to improve properties.	[SW1] oral statement/ conversation/discussion
	[CHEML3_K08] Formulates opinions in the field of science with caution and criticism in their expression.	The student is able to indicate the techniques with which the relevant biological activities can be determined and how to study the structure of chemical compounds. Is able to indicate the specific potential of compounds in what field they can be used. Attempts to identify methods of applicability of compounds.	[SK1] oral statement/conversation/ discussion
	[CHEML3_W04] Characterises the basic methods of chemical compound analysis.	The student is able to select a research method depending on the objective set. He can name the methods for studying the activity of biologically active, natural compounds. Knows and correctly identifies techniques and methods to study the structure of chemical compounds.	[SW1] oral statement/ conversation/discussion
Subject contents	The course covers fundamental aspects of peptides, proteins, and small molecules widely used in medicine, pharmacy, and industry. Throughout the course, the basic structural features of chemical compounds will be discussed, with particular emphasis on natural compounds and their impact on properties, biological activity, and potential applications in various fields. Additionally, the course explores topics related to the design of drugs, cosmetics, chemotherapeutics, and antibiotics based on the structure, properties, and natural biological activity of these compounds.		
Prerequisites and co-requisites	Completed course in organic chemistry and biochemistry.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	credit for attendance	70.0%	100.0%
Recommended reading	Basic literature	Materials as apresentations used during classes.	
	Supplementary literature	Publications	
	eResources addresses		
Example issues/ example questions/ tasks being completed	not applicable		
Work placement	Not applicable		

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