

Subject card

Subject name and code	Monographic lecture - Peptides and proteins in science and industry, PG_00080860						
Field of study	Chemistry						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2026/2027		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study Optional subject group		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		3.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Elżbieta Kamysz				
	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		5.0		40.0	75
Subject objectives	Familiarize students with the issues mentioned in the lecture's program content.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[CHEMMU2_W01] Uses knowledge of spectroscopic methods of chemical compound analysis.	Student is able to use spectroscopic methods to analyze peptides.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report
	[CHEMMU2_W05] Has extended knowledge in the field of the specialisation studied.	Student presents the structure of peptides and proteins, knows the rules for naming peptides, is able to characterize the main techniques for obtaining and purifying peptides and proteins, compares different methods of peptide synthesis, knows the basic databases on the subject of peptides and proteins, knows and understands the possibilities of using peptides and proteins for scientific and industrial purposes, lists applications of peptides and proteins in medicine, pharmacy, cosmetology and food industry.	[SW4] test/exam - oral or written
	[CHEMMU2_W11] Demonstrates general knowledge about the current trends in the development of chemistry as a science and the latest discoveries in this field.	Student in a clear way, both in speech and in writing, presents correct reasoning regarding protein and peptide chemistry; recognizes the basic equipment used for the synthesis and purification of peptides and can select the appropriate equipment for carrying out chemical experiments and properly plan the necessary personal protective equipment. Student draws attention to the harmfulness of chemical reagents to humans and the environment when designing the synthesis and purification of peptides and proteins	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report
	[CHEMMU2_K01] Knows the limitations of her/his own knowledge; understands the need for further education and can inspire other people to do so.	Student feels the fundamental role of peptides and proteins in human and mammalian life, understands the need to learn about peptides and proteins, is careful in dealing with chemical substances (strong acids, alkalis, condensing agents and others); can predict and properly plan the necessary personal protective equipment.	[SK2] presentation/project/paper/report [SK4] test/exam - oral or written
Subject contents	Structure of the peptide bond and the structures of peptides and proteins; division of peptides and proteins; nomenclature and stereochemistry of peptides; methods of obtaining peptides on a laboratory and industrial scale; techniques for isolating and purifying peptides and proteins; a database of proteins and bioactive peptides; structure and importance of peptides and proteins in medicine, pharmacy, cosmetology and food industry (e.g. peptide drugs, peptide cosmetics ingredients, biologically and functionally active peptides, bioactive sequences derived from food proteins, etc.)		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	presentation	51.0%	30.0%
	written assessment in the test form (closed and a few open questions)	51.0%	70.0%
Recommended reading	Basic literature	- Aminokwasy, peptydy, białka, H. D. Jakubke, H. J. Jeschkeit. (PWN). - Peptides: Chemistry and Biology, N. Sewald H. D. Jakubke, (WILEY-VCH) - Biologicznie aktywne peptydy i białka żywności, J. Dziuba, Ł. Fornal (WNT) - Fmoc Solid Phase Peptide Synthesis, W. Chan and Peter White, Oxford University Press, U.S.A. - Białka i peptydy, S. Doonan. (PWN); - Artykuły naukowe prezentujące zagadnienia zawarte w treściach programowych przedmiotu.	
	Supplementary literature	- Principles of Peptide Synthesis, M. Bodanszky, Springer-Verlag, Berlin Heidelberg; - The World of Peptides, T. Wieland, M. Bodanszky, Springer-Verlag, Berlin Heidelberg; - Chemia organiczna, R. T. Morrison, R.N. Boyd.	

	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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