


KAPITAŁ LUDZKI
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez
 Unię Europejską w ramach
 Europejskiego Funduszu
 Społecznego

UNIA EUROPEJSKA
 EUROPEJSKI
 FUNDUSZ SPOŁECZNY


Course title		ECTS code	
Monographic lecture - Selected issues in chemistry of peptides		13.3.1232	
Name of unit administrating study			
Faculty of Chemistry			
Studies			
faculty	field of study	type	drugiego stopnia
Wydział Chemii	Chemia	form	stacjonarne
		specjalty	chemia biomedyczna, analityka i diagnostyka chemiczna, chemia i technologia środowiska, chemia obliczeniowa
		specialization	wszystkie
Teaching staff			
prof. dr hab. Sylwia Rodziewicz-Motowidło; dr hab. Aneta Szymańska, profesor uczelni; dr inż. Irena Bylińska; dr Katarzyna Guzow; dr Katarzyna Guzow			
Forms of classes, the realization and number of hours		ECTS credits	
Forms of classes		3	
Lecture		classes 30 hours	
The realization of activities		consultation 10 hours	
classroom instruction		student's own work 35 hours	
Number of hours		TOTAL: 75 hours - 3 ECTS	
Lecture: 30 hours			
The academic cycle			
2023/2024 winter semester			
Type of course		Language of instruction	
obligatory		polish	
Teaching methods		Form and method of assessment and basic criteria for evaluation or examination requirements	
- multimedia-based lecture - problem-focused lecture		Final evaluation	
		Graded credit	
		Assessment methods	
		written test with test and open questions	
		The basic criteria for evaluation	
		The final grade will be issued on the basis of one final test in the whole subject. In the case of failure, the negative assessment can be improved by writing another written test. The grades from the test will be in accordance with the guidelines set out in the "University of Gdansk Studies Regulations"	
Method of verifying required learning outcomes			
Required courses and introductory requirements			
A. Formal requirements			
. Formal requirements: completed courses in the field of organic chemistry, biochemistry, physical chemistry, chemical spectroscopy, instrumental analysis, specialization lecture "Peptide synthesis"			
B. Prerequisites			
Prerequisites:			
<ul style="list-style-type: none"> • knowledge of basic issues in the field of experimental and theoretical organic chemistry, biochemistry (with particular knowledge of basic biochemical processes) • knowledge of the structure of amino acids, peptides and proteins, • knowledge of chemical spectroscopy (NMR, CD, UV, IR spectroscopy), physical chemistry (with particular emphasis on knowledge of thermodynamic processes) 			

Aims of education <ul style="list-style-type: none"> • Getting to know of students with all issues listed in the lecture program content, • Getting to know of students with the issues of the division and role of peptides and proteins in nature with particular reference to man, • Getting to know of students with examples of the use of spectroscopic techniques (including mass spectrometry, spectrofluorimetry, CD, IR, UV-VIS, NMR, DSC) for structural studies of biomolecules • Developing the ability to independently select the appropriate physicochemical method to track conformational changes occurring in peptides and proteins under the influence of changes in the external environment. 	
Course contents <ul style="list-style-type: none"> • The use of basic spectroscopic techniques, ie: circular dichroism spectropolarometry (CD), infrared spectroscopy (FTIR), mass spectrometry (MS), NMR spectroscopy, fluorescence, mass spectrometry (MS) and differential micro-calorimetry (DSC)) in research physicochemical biomolecules. • The use of spectroscopic techniques to determine the spatial structure of peptides and proteins. • Physicochemical methods for tracking conformational changes of peptides and proteins - selected examples of proteins. 	
Bibliography of literature <p>Bibliography of literature Literature required to pass the course</p> <p>A. Literature required for the final passing of classes (passing the exam):</p> <p>A.1. used during classes</p> <p>A.2. studied independently by the student</p> <p>H.-D. Jakubke, H Jeschkeit, "Amino acids, peptides, proteins", PWN, Warsaw 1989.</p> <p>A.M. Brzozowski, A. Hryniewicz, E. Rokita, "Biospetroscopy", PWN, Warsaw 1989.</p> <p>I.Z. Siemion, "Biostereochemia", PWN, Warsaw 1985.</p> <p>J.M. Berg, J.L. Tymoczko, L. Stryer, "Biochemia", PWN, Warsaw 2007.</p> <p>W. Zieliński, A. Rajca, "Spectroscopic methods and their application to the identification of organic compounds", WNT, Warsaw 2000.</p> <p>Extracurricular readings</p>	
The learning outcomes (for the field of study and specialization)	Knowledge <ul style="list-style-type: none"> • describes the biological functions of peptides and proteins, • describes the types of chemical bonds stabilizing the spatial structures of biomolecules, • describes individual classes of peptides and proteins, • describes the basics of spectroscopic and calorimetric techniques, • characterizes processes occurring in peptides and proteins under the influence of various external factors
	Skills <p>analyzes spectroscopy and spectrometry spectra (CD, NMR, IR, MS) of biomolecules,</p> <p>independently plans the method of biomolecule analysis using physicochemical techniques,</p> <p>verifies and criticizes the results of physicochemical analyzes</p> <p>discusses in a substantive manner the topic presented in the lectures,</p> <p>finds necessary information in specialist literature, databases and other sources in both Polish and English</p> <p>presents in an accessible and factually correct way a review of collected literature information on a given topic</p> <p>independently searches for information in the chemical literature</p> <p>works on exploring English-language literature on the subject of the master thesis and tasks</p>
	Social competence <ul style="list-style-type: none"> • maintains criticism when analyzing the results and drawing conclusions • maintains criticism in expressing opinions and is open to the opinions of the environment • is active in deepening knowledge and understands the need for continuous learning • undertakes to familiarize with a new topic or technique • involved in scientific discussions • understands the need to read scientific and popular science magazines, the basic topics of the MA thesis, in order to broaden and deepen knowledge
Contact	

s.rodziewicz-motowidlo@ug.edu.pl