


**KAPITAŁ LUDZKI**  
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez  
 Unię Europejską w ramach  
 Europejskiego Funduszu  
 Społecznego

**UNIA EUROPEJSKA**  
 EUROPEJSKI  
 FUNDUSZ SPOŁECZNY


<b>Course title</b>		<b>ECTS code</b>	
Diploma lecture - Chemistry and biochemistry of selected biomolecules		13.3.0499	
<b>Name of unit administrating study</b>			
null			
<b>Studies</b>			
<b>faculty</b>	<b>field of study</b>	<b>type</b>	pierwszego stopnia
Wydział Chemii	Chemia	<b>form</b>	stacjonarne
		<b>specjalty</b>	chemia biomedyczna, chemia kosmetyków, analityka i diagnostyka chemiczna, chemia żywności
		<b>specialization</b>	wszystkie
<b>Teaching staff</b>			
prof. dr hab. Krzysztof Rolka; prof. dr hab. Piotr Rekowski			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b>	
<b>Forms of classes</b>		2	
Lecture		lecture 30 hours	
<b>The realization of activities</b>		consultation 5 hours	
classroom instruction		student's own work 15 hours	
<b>Number of hours</b>		TOTAL: 50 hours - 2 ECTS credits	
Lecture: 30 hours			
<b>The academic cycle</b>			
2024/2025 summer semester			
<b>Type of course</b>		<b>Language of instruction</b>	
obligatory		polish	
<b>Teaching methods</b>		<b>Form and method of assessment and basic criteria for evaluation or examination requirements</b>	
multimedia-based lecture		<b>Final evaluation</b>	
		Graded credit	
		<b>Assessment methods</b>	
		- written exam with open questions	
		- graded course credit based on individual grades obtained during the semester	
		<b>The basic criteria for evaluation</b>	
		Positive grade received in written exam composed of 6 open questions covering issues listed in the course contents; answers to these questions will require solving tasks specified in educational outcomes; the grade scale will be adjusted to the total number of points that could be obtained in the exam. Negative grade should be improved at repeat exam. The applied grading criteria will be in accordance with UG study regulations	
<b>Method of verifying required learning outcomes</b>			
<b>Required courses and introductory requirements</b>			
<b>A. Formal requirements</b>			
The student should have completed a graduate study lectures ((bachelor level): "Organic chemistry", "Biochemistry" and "Polymer chemistry".			
<b>B. Prerequisites</b>			
Basic knowledge in organic chemistry and biochemistry			
<b>Aims of education</b>			
• introduction students with all issues listed in the lecture program content,			

<ul style="list-style-type: none"> <li>• making students familiar with the basic groups of biomolecules - their structures and functions,</li> <li>• making students familiar with the basic methods of bioanalytical chemistry used for identification and quantitative and qualitative analysis of organic compounds occurring in living organisms.</li> </ul>	
<b>Course contents</b> Analysis of biomolecules by liquid chromatography methods: thin layer chromatography, size exclusion, adsorption chromatography, separation in reverse-phase system, ion exchange chromatography, affinity chromatography. Gel and capillary electrophoresis. Mass spectrometry. Sequential analysis of nucleic acids and proteins. Hormones and neurotransmitters: structures and functions. Bacterial cell wall: structure and function. Antibiotics: classification and chemical structures. Icosanoids: metabolism, chemical structures, biological functions. Xenobiotics. Fundamentals of chemical synthesis of peptides and nucleic acids. Chemical structures and biological functions of peptides, proteins, nucleic acids and polysaccharides. Examples of protein (peptide) – nucleic acid interactions.	
<b>Bibliography of literature</b> Literature required to pass the course J. M. Berg, J. L. Tymoczko, L. Stryer, „Biochemia”, PWN, Warszawa 2009.  Extracurricular readings Monographic materials provided by the lecturers or chosen by students	
<b>The learning outcomes (for the field of study and specialization)</b>	<b>Knowledge</b> <ol style="list-style-type: none"> <li>1. Defines and describes chemical structures of selected macro- and biomolecules;</li> <li>2. Describes the biological functions of naturally occurring compounds;</li> <li>3. Describes the interactions between biomolecules;</li> <li>4. Characterizes analytical techniques applied for analysis of endogenous organic compounds.</li> </ol>
	<b>Skills</b> Uses chemical terminology necessary to present the content of the course; Understands the role of naturally occurring compounds in processes taking place in living organisms; Can search for information in specialist literature
	<b>Social competence</b> Understands the need for continuous education; Shows cautious criticism when acquiring knowledge, especially information coming from mass media; Is aware of the necessity of fair and reliable work; Can look at individual work with criticism.
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