



**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>	
What can electrochemical methods offer in the study of biologically active compounds?		13.3.1211	
<b>Name of unit administrating study</b>			
null			
<b>Studies</b>			
<b>faculty</b>	<b>field of study</b>	<b>type</b>	first tier studies (BA)
Faculty of Chemistry	Chemical Business	<b>form</b>	full-time
		<b>specialty</b>	all
		<b>specialization</b>	all
Faculty of Chemistry	Chemistry	<b>type</b>	first tier studies (BA)
		<b>form</b>	full-time
		<b>specialty</b>	all
Faculty of Chemistry	Environmental Protection	<b>specialization</b>	all
		<b>type</b>	first tier studies (BA)
		<b>form</b>	full-time
		<b>specialty</b>	all
		<b>specialization</b>	all
<b>Teaching staff</b>			
dr Sandra Brzeska			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b>	
<b>Forms of classes</b>		2	
Lecture		Classes – 15 h	
<b>The realization of activities</b>		Consultations– 15 h	
classroom instruction		Student's own work – 20 h	
<b>Number of hours</b>		Total 50 h – 2 ECTS	
Lecture: 15 hours			
<b>The academic cycle</b>			
2025/2026 summer semester			
<b>Type of course</b>		<b>Language of instruction</b>	
an elective course		English	
<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>	
		exam with test questions	
		<b>The basic criteria for evaluation</b>	
		Positive note from an exam with 10-20 test questions	
		91-100%: 5.0	
		81-90%: 4.5	
		71-80%: 4.0	
		61-70%: 3.5	
		51-60%: 3.0	
		< 51%: 2.0	
		Assessment criteria in accordance with the University of Gdańsk Study Regulations.	
<b>Method of verifying required learning outcomes</b>			
<b>Required courses and introductory requirements</b>			
<b>A. Formal requirements</b>			
lack			

<p><b>B. Prerequisites</b> lack</p>	
<p><b>Aims of education</b></p> <p>Presenting how small molecules interact with the DNA chain is essential in pharmaceuticals research. Familiarize students with an electrochemical approach to the study of drug-biomolecule interactions, with particular emphasis on voltammetric techniques. Familiarize students with theoretical and practical aspects of electrochemical methods in the analysis of biomolecule interactions.</p>	
<p><b>Course contents</b></p> <p>Topics of the lecture: electrochemical methods consisting in electrolysis of the diffusion layer and current measurements, voltammetric methods, cyclic voltammetry, differential pulse voltammetry, electrochemical characteristics of biologically active compounds, redox potential in healthy cells and neoplastic cells, types of drug-DNA interactions, techniques used to describe the interactions principles of measurements with electrochemical techniques, types of electrodes and research approaches, the use of voltammetric methods to study drug-DNA interactions</p>	
<p><b>Bibliography of literature</b></p> <p>Literature required to pass the course SCB de Oliveira, VC Diculescu, AM Chiorcea Paquim, AM Oliveira-Brett - Electrochemical Biosensors for DNA-Drug Interactions Extracurricular readings A Mukherjee WD Sasikala - Advances in Protein Chemistry and Structural Biology</p>	
<p><b>The learning outcomes (for the field of study and specialization)</b></p> <p>Chemical Business: K_BCh_W07 describes the construction and operating principles of scientific, technological and control-measuring apparatus Chemistry: K_W10 enumerates and describes the aspects of the construction, operation and use of measuring apparatus and equipment used in experimental works in the field of chemistry and related sciences K_K06 raises her/his professional and personal competences by using information provided in various sources Environmental Protection: K_OŚI_W01 describes at an advanced level the physical, chemical and biological phenomena occurring in nature as well as geological, geomorphological and climatic conditions of the functioning of nature</p>	<p><b>Knowledge</b></p> <p>Students know: types of drug-DNA interactions, theoretical and practical aspects of electrochemical methods in the analysis of biomolecule interactions, principles of voltammetric methods,</p>
	<p><b>Skills</b></p> <p>lack</p>
	<p><b>Social competence</b></p> <p>Students understand the need of learning and update knowledge, the practical application of the acquired knowledge and skills in solving problems</p>
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