


**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 - Analytical aspects of intermolecular interactions		13.3.0918	
<b>Name of unit administrating study</b>			
Faculty of Chemistry			
<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>	wszystkie
		<b>specialization</b>	wszystkie
<b>Teaching staff</b>			
prof. dr hab. inż. Tadeusz Ossowski; dr Anna Wcisło; dr hab. Beata Grobelna, profesor uczelni; dr hab. Grzegorz Romanowski; dr Paweł Niedziałkowski; dr Dorota Zarzeczkańska; dr Iwona Dąbkowska; dr Jaromir Kira			
<b>Forms of classes, the realization and number of hours</b>		<b>ECTS credits</b>	
<b>Forms of classes</b>		2	
Lecture		classes - 30 h	
<b>The realization of activities</b>		tutorial classes – 15 h	
classroom instruction		student's own work – 5 h	
<b>Number of hours</b>		Total: 50 h - 2 ECTS	
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 (tasks)	
		written exam with multiple choice questions (tasks)	
		<b>The basic criteria for evaluation</b>	
		Positive evaluation of the written exam consisting of 5 open questions (tasks) and 10 multiple choice questions covering the issues listed in the program content of the subject; answers to the questions will require solving tasks related to the presented learning outcomes; the grading scale will be adjusted to the rating range of the assessed works	
<b>Method of verifying required learning outcomes</b>			
<b>Required courses and introductory requirements</b>			
<b>A. Formal requirements</b>			
Analytical chemistry, physical chemistry			
<b>B. Prerequisites</b>			
Basic issues in the field of analytical and physical chemistry, the ability to describe the equilibrium in solution with chemical reactions			
<b>Aims of education</b>			
<ul style="list-style-type: none"> <li>- Acquainting with instrumental and computational techniques for analysis of equilibrium reactions in solution</li> <li>- Ability to select a technique to analyze intermolecular interactions</li> <li>- Ability to write, graphically present and apply chemical programs to describe and analyze intermolecular interactions</li> </ul>			

<b>Course contents</b>	
<p>Practical design of the synthesis of organic compounds. Preparation of samples for spectroscopic measurements (UV-Vis and CD). Spectroscopic and graphical analysis, IR and NMR spectra processing using appropriate software. Basics of electrochemistry in the study of intermolecular interactions. Calculation of acid dissociation constants based on spectroscopic and potentiometric measurements. Equilibrium modeling based on results obtained from potentiometry or spectroscopy. Kinds of intermolecular interactions and their description by means of quantum chemistry. Searching for available databases, using selected databases to find physicochemical properties of selected organic compounds.</p>	
<b>Bibliography of literature</b>	
<p>Literature required to pass the course</p> <p>J. Polster, H. Lachmann, Spectrometric Titrations: Analysis of Chemical Equilibria, Weinheim; Basel (Switzerland); Cambridge, New York NY</p> <p>A. Cygański, Metody spektroskopowe w chemii analitycznej, WNT, Warszawa 2009</p> <p>L. Piela „Idee chemii kwantowej” PWN Warszawa 2003</p> <p>Extracurricular readings</p> <p>J. Inczedy Równowagi kompleksowania w chemii analitycznej, Warszawa PWN 1979</p> <p>J.B. Lambert, H.F. Shurvell, D.A. Lightner, R.G. Cooks, Organic Structural Spectroscopy, Prentice Hall, New Jersey, 1998</p>	
<b>The learning outcomes (for the field of study and specialization)</b>	<b>Knowledge</b>
	<b>Skills</b>
	<b>Social competence</b>
<b>Contact</b>	
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