


KAPITAŁ LUDZKI
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez
 Unię Europejską w ramach
 Europejskiego Funduszu
 Społecznego

UNIA EUROPEJSKA
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 FUNDUSZ SPOŁECZNY


Course title		ECTS code	
Monographic lecture - Chemistry of non-aqueous solutions		13.3.0473	
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. inż. Lech Chmurzyński			
Forms of classes, the realization and number of hours		ECTS credits	
Forms of classes		3	
Lecture		Lecture: 30 hours	
The realization of activities		consultations: 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 summer 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		Final evaluation	
		Graded credit	
		Assessment methods	
		Written test with closed questions	
		The basic criteria for evaluation	
		• positive assessment of a written test according to criteria consistent with the Study Regulations UG	
Method of verifying required learning outcomes			
Required courses and introductory requirements			
A. Formal requirements			
none			
B. Prerequisites			
none			
Aims of education			
making students familiar with the topics of the programme,			
• introduction to the basics of experimental methods for determining the equilibrium constants in solutions			
• skills to choose the appropriate experimental method to determine the thermodynamic description of the solution			
Course contents			
non-aqueous solvents; acid-base equilibria in non-aqueous solvents; acid-base theories; the role of solvent; non-aqueous solvents classification systems, binary mixed solvents; synthesis reactions and electrode processes in non-aqueous solvents, review of non-aqueous solvents; acid-base titrations in non-aqueous solvents; hydrogen bond; proton-transfer equilibria; potentiometry in non-aqueous solvents; determination of acid-base			

<p>equilibria in solvents by means of potentiometric methods; conductance equations, determination methods of association constants and boundary conductivities on the basis of conductivity equation</p>	
<p>Bibliography of literature</p> <p>Literature required to pass the course</p> <p>D. A. Skoog, D.M. West, F.J. Holler – Fundamentals of Analytical Chemistry J. Kenkel – Analytical Chemistry for Technicians T. Jasiński – Analiza miareczkowa w środowiskach niewodnych J. Minczewski, Z. Łada – Miareczkowanie potencjometryczne J. Minczewski, Z. Marczenko – Chemia analityczna S.F.A. Kettle – Fizyczna chemia nieorganiczna S.J. Lippard, J.M. Berg – Podstawy chemii bioinorganicznej</p>	
<p>The learning outcomes (for the field of study and specialization)</p>	<p>Knowledge</p> <p>The student</p> <ul style="list-style-type: none"> - knows the basic classification systems for liquid chemical reaction solutions; - knows and understands the processes of acid-base interactions occurring in non-aqueous solutions; - understands the theory of hydrogen bonding and proton transfer equilibria in non-aqueous solutions; - understands the analytical aspects of acid-base interactions in non-aqueous environments and their consequences in analytical techniques; - knows the methods of determining constant equilibrium values in non-aqueous environments based on the potentiometric, conductometric and spectrophotometric methods.
	<p>Skills</p>
	<p>Social competence</p> <p>The student understands the need for learning, inspires and organizes the learning process of others; interacts and works in a group, assuming various roles (in particular the role of group leader); demonstrates creativity in setting priorities for the implementation of the task specified by himself or others; demonstrates creativity in independent and team work; understands the social aspects of the practical application of acquired knowledge and skills and the associated responsibilities; understands the need for creative discussion, including scientific discussion; can initiate this type of discussion</p>
	<p>Contact</p> <p>lech.chmurzynski@ug.edu.pl</p>