

Course title Wykład monograficzny – Chemia środowisk niewodnych / Monographic lecture - Chemistry of non-aqueous solutions		ECTS code 13.3.1112	
Name of unit administrating study Faculty of Chemistry			
Studies			
Field of study	Type	Form	
Chemical business	Master	Full-time studies	
Teaching staff Prof. dr hab. inż. Lech Chmurzyński			
Forms of classes, the realization and number of hours		ECTS credits	
A. Forms of classes, in accordance with the UG Rector's regulations Lecture		Lecture: 30 hours consultations: 10 hours student's own work : 35 hours Total: 75 hours - 3 ECTS	
B. The realization of activities classes in classrooms			
Number of hours 30			
The academic cycle 2021/2022 summer semester			
Type of course obligatory		Language of instruction Polish	
Teaching methods Lecture with multimedia presentation		Form and method of assessment and basic criteria for evaluation or examination requirements	
		A. Final evaluation, in accordance with the UG study regulations Graded assignment	
		B. Assessment methods Written test with closed questions	
		C. The basic criteria for evaluation or exam requirements • positive assessment of a written test according to criteria consistent with the Study Regulations UG	
Required courses and introductory requirements			
A. Formal requirements none			
B. Prerequisites none			
Aims of education			
<ul style="list-style-type: none"> • 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 equilibria in solvents by means of potentiometric methods; conductance equations, determination methods of association constants and boundary conductivities on the basis of conductivity equation			

Bibliography of literature

A. Literature required to pass the course

- 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

Knowledge

The student

- 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.

Social competence

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.