

Course title Wykład dyplomowy – Chemia roztworów / Diploma lecture - Solution chemistry		ECTS code 13.3.0594	
Name of unit administrating study Faculty of Chemistry			
Studies			
Field of study	Type	Form	
Chemistry	Bachelor	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: 5 hours student's own work : 15 hours Total: 50 hours - 2 ECTS	
B. The realization of activities classes in classrooms			
C. Number of hours 30			
The academic cycle Third year, summer semester			
Type of course optional subject		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	
		The basic criteria for evaluation • 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 • To acquaint students with all the issues listed in the course contents • To acquaint students with the basic groups of biomolecules; learning their structure and function • To acquaint students with the basic methods of bioanalytical chemistry used to identify and quantify and qualitatively analyze organic compounds found in living organisms			
Course contents Water as a specific solvent. Classification and characterization of liquid environments for chemical reactions. Principles of non-aqueous environment chemistry. Interactions acid – base and equilibria of thereof. Hydrogen bond. Principles of supramolecular chemistry. Equilibria in solutions of complex			

compounds. Conductometric, spectroscopic and potentiometric methods for assessing chemical equilibria. Interphase phenomena. Kinetic and thermodynamic aspects of chemical equilibria.

Bibliography of literature

A. Literature required to pass the course

A.2. Literature for individual studies

- L. Sobczyk, A. Kiswa – Chemia fizyczna dla przyrodników
- L. Sobczyk – Wiązania wodorowe
- W. Szczepaniak – Metody instrumentalne w analizie chemicznej
- A. Kiswa – Elektrochemia
- M. R. Wright – An Introduction to Aqueous Electrolyte
- W. Ufnalski – Równowagi jonowe
- J. Minczewski, Z. Łada – Miareczkowanie potencjometryczne

B. Extracurricular readings

- Selected scientific publications in the field of discussed issues.

Knowledge

1. Knows the basic systems of classification of liquid chemical reaction environments.
2. Knows processes and understands acid-base interactions occurring in liquid environments, in particular in aqueous solutions.
3. Knows chemical terminology and nomenclature regarding processes in solutions and coordination compounds.
4. Understands hydrogen bonding and proton transfer equilibria in non-aqueous environments.
5. Knows the basic methods of testing equilibrium in liquid environments, in particular in aqueous solutions.
6. Knows methods of solution description.

Skills

1. Describes liquid reaction systems.
2. Can predict the scheme of basic equilibria settling in solutions.
3. Has the ability to describe aqueous solutions, taking into account the specific properties of water.
4. Has the ability to independently solve problems in solution chemistry.

5. Is able to use basic analytical techniques (potentiometry, conductometry and spectrophotometry) to study equilibrium in solutions.

6. Can analyze the kinetic and thermodynamic aspects of acid-base equilibria and coordination equilibria in solution.

Social competence

1. Understands the need for continuous education.

2. Organizes the learning process of others.

3. Interacts and works in a group, taking on various roles in it.

4. Demonstrates creativity in setting priorities for the implementation of the task specified by himself or others.

5. Demonstrates creativity in independent and team work.

6. Understands the social aspects of the practical application of acquired knowledge and skills and the associated responsibility.