UNIWERSYTET GDAŃSKI

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

A. Forms of classes, in accordance with the UG Rector's regulations
Lecture

B. The realization of activities
classes in classrooms

C. Number of hours
30

ECTS credits

Lecture: 30 hours
consultations: 5 hours
student's own work : 15 hours
Total: 50 hours - 2 ECTS

The academic cycle
2021/2022 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. Kisza – Chemia fizyczna dla przyrodników
- L. Sobczyk – Wiązania wodorowe
- W. Szczepaniak – Metody instrumentalne w analizie chemicznej
- A. Kisza – Elektrochemia
- M. R. Wright – An Introduction to Agueous Electrolite
- 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.