KAPITAŁ LUDZKI
NARODOWA STRATEGIA SPÓJNOŚCI

Projekt współfinansowany przez Unię Europejską w ramach Europejskiego Funduszu Społecznego

UNIA EUROPEJSKA
EUROPEJSKI FUNDUSZ SPOŁECZNY

| Course title | ECTS code |
|---|---|
| What can electrochemical methods offer in the study of biologically active compounds? | 13.3.1211 |

**Name of unit administrating study**

null

**Studies**

| faculty | field of study | | |
|---|---|---|---|
| Faculty of Chemistry | Chemical Business | type | first tier studies (BA) |
| | | form | full-time |
| | | specialty | all |
| | | specialization | all |
| Faculty of Chemistry | Chemistry | type | first tier studies (BA) |
| | | form | full-time |
| | | specialty | all |
| | | specialization | all |
| Faculty of Chemistry | Environmental Protection | type | first tier studies (BA) |
| | | form | full-time |
| | | specialty | all |
| | | specialization | all |

**Teaching staff**

dr Sandra Ramotowska

**Forms of classes, the realization and number of hours**

**Forms of classes**

Lecture

**The realization of activities**

lectures in the classroom

**Number of hours**

Lecture: 15 hours

**ECTS credits**

2
Classes – 15 h
Consultations– 15 h
Student's own work – 20 h

Total 50 h – 2 ECTS

**The academic cycle**

2023/2024 summer semester

**Type of course**

an elective course

**Language of instruction**

english

**Teaching methods**

multimedia-based lecture

**Form and method of assessment and basic criteria for eveluation or examination requirements**

**Final evaluation**

Graded credit

**Assessment methods**

exam with test questions

**The basic criteria for evaluation**

Positive note from an exam with 10-20 test questions
91-100%: 5.0
81-90%: 4.5
71-80%: 4.0
61-70%: 3.5
51-60%: 3.0
< 51%: 2.0
Assessment criteria in accordance with the University of Gdańsk Study Regulations.

**Method of verifying required learning outcomes**

Written exam for all specialties

**Required courses and introductory requirements**

**A. Formal requirements**

lack

**B. Prerequisites**

lack

## Aims of education

Presenting how small molecules interact with the DNA chain is essential in pharmaceuticals research.
Familiarize students with an electrochemical approach to the study of drug-biomolecule interactions, with particular emphasis on voltammetric techniques.
Familiarize students with theoretical and practical aspects of electrochemical methods in the analysis of biomolecule interactions.

## Course contents

Topics of the lecture: electrochemical methods consisting in electrolysis of the diffusion layer and current measurements, voltammetric methods, cyclic voltammetry, differential pulse voltammetry, electrochemical characteristics of biologically active compounds, redox potential in healthy cells and neoplastic cells, types of drug-DNA interactions, techniques used to describe the interactions principles of measurements with electrochemical techniques, types of electrodes and research approaches, the use of voltammetric methods to study drug-DNA interactions

## Bibliography of literature

Literature required to pass the course
SCB de Oliveira, VC Diculescu, AM Chiorcea Paquim, AM Oliveira-Brett - Electrochemical Biosensors for DNA–Drug Interactions
Extracurricular readings
A Mukherjee WD Sasikala - Advances in Protein Chemistry and Structural Biology

## The learning outcomes (for the field of study and specialization)

Chemical Business:
K_BCh_W07
describes the construction and operating principles of scientific, technological and control-measuring apparatus
Chemistry:
K_W10
enumerates and describes the aspects of the construction, operation and use of measuring apparatus and equipment used in experimental works in the field of chemistry and related sciences
K_K06
raises her/his professional and personal competences by using information provided in various sources
Environmental Protection:
K_OŚI_W01
describes at an advanced level the physical, chemical and biological phenomena occurring in nature as well as geological, geomorphological and climatic conditions of the functioning of nature

## Knowledge

Students know: types of drug-DNA interactions, theoretical and practical aspects of electrochemical methods in the analysis of biomolecule interactions, principles of voltammetric methods,

## Skills

lack

## Social competence

Students understand the need of learning and update knowledge, the practical application of the acquired knowledge and skills in solving problems

## Contact

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