COURSE DESCRIPTION CARD - SYLLABUS

Course name
Fundamentals of Electroanalytical Methods

Course

Field of study
Environmental Protection Technologies

Year/Semester
II/4

Area of study (specialization)
-

Profile of study
general academic

Level of study
First-cycle studies

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
30

Laboratory classes
0

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

3

Lecturers

Responsible for the course/lecturer:
dr inż. Włodzimierz Zembrzuski

Responsible for the course/lecturer:

Prerequisites

The student has knowledge of chemistry, physics and mathematics necessary to formulate and solve simple tasks in the field of electroanalytical methods

The student has the ability to understand and analyze phenomena and situations

The student is aware of the limitations of their own knowledge and understands the need for further education

Course objective

Systematization and extension of knowledge about electrochemical analysis methods as well as construction, operation and application of electrochemical measuring systems, presentation of the possibilities of using electrochemical analysis for analytical determinations carried out in industry, agriculture, environmental protection, medicine and scientific institutions.

Course-related learning outcomes

Knowledge

1. The graduate has structured, theoretically founded knowledge of key issues in the field of physical and analytical chemistry [K_W06]

2. The graduatehas ordered, basic knowledge covering issues in the field of electroanalytical methods [K_W15, K_W16]

Skills

1. The graduate acquires information from literature, databases and other sources related to chemical sciences, integrates, interprets and draws conclusions and formulates opinions [K_U01]

2. The graduate can prepare and present an oral presentation on on electrochemical methods of analysis in samples typical of environmental protection technologies. [K_U05]

3. The graduate uses correct terminology and nomenclature in the field of electrochemical analysis methods, also in English [K_U08]

Social competences

1. The graduateis able to think and act in a creative and entrepreneurial way [K_K06]

2. The graduate is aware of the importance and understanding of non-technical aspects and effects of electroanalytical methods, including their importance in environmental monitoring [K_K02]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Completing the course consists of:

- attendance at all classes;

- final test

Programme content

During the series of lectures the theoretical foundations of electroanalytical methods will be presented: development and methods of conducting electrochemical analysis; used electrodes; ways of working; examples of the use of electrochemical analysis methods in determinations carried out in industry, agriculture, environmental protection, medicine.

Teaching methods

multimedia presentation illustrated with examples discussed and given on a board. Problem lecture, explanation, didactic discussion,

Bibliography

Basic

1. Andrzej Cygański, Podstawy metod elektroanalitycznych, WNT, wyd. 3zm. 1999

2. Walenty Szczepaniak, Metody instrumentalne w analizie chemicznej, PWN, 2020

Additional

1. Scientific publications in Polish and foreign journals containing the keywords: electrochemical analysis, polarography, voltamperometry, DPASV, ASV

Breakdown of average student's workload

	Hours	ECTS
Total workload	45	3,0
Classes requiring direct contact with the teacher	30	2,0
Student's own work (literature studies, preparation for classes)[1]	15	1

[1] delete or add other activities as appropriate