



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Fundamentals of electrochemical technology

### Course

Field of study

Chemical Technology

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

III/6

Profile of study

general academic

Course offered in

English

Requirements

elective

### Number of hours

Lecture

Laboratory classes

Other (e.g. online)

15

Tutorials

Projects/seminars

### Number of credit points

1

### Lecturers

Responsible for the course/lecturer:

dr eng. Paweł Jeżowski

Responsible for the course/lecturer:

### Prerequisites

The student has an ordered knowledge of mathematics and physical chemistry. He has an ability to use the basic techniques in a laboratory scale. He can work individually and in teams and he also has a need for further education and enhance of professional and personal competences.

### Course objective

The aim of the course is to broaden the knowledge as well as reinforcing the skills to plan and conduct electrochemical processes used in practice.

### Course-related learning outcomes

Knowledge

1. The knowledge in the field of basics of electrochemical processes – [K\_W03, K\_W04],
2. The knowledge in the field of various electrochemical technologies – [K\_W13, K\_W15],
3. The knowledge in the field of related fields – [K\_W12].

Skills

1. The student can use in practice theoretical knowledge gained earlier – [K\_U08, K\_U15, K\_U16],



2. The student has the ability to selection of measurement techniques – [K\_U01, K\_U02],

#### Social competences

1. The student understands the need for self-study and improvement of their professional competence – [K\_K01],
2. Student can act and cooperate in the group accepting different roles – [K\_K03].

#### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Passing laboratories on the basis of commitment during the laboratory classes and checking knowledge.

#### Programme content

1. Porous electrode materials used in electrochemical technologies.
2. Redox electrode materials used in electrochemical technologies.
3. Electrochemical techniques used in electrochemical processes.
4. Corrosion and its electrochemical aspect.

#### Teaching methods

Laboratory exercises, explanation, didactic discussion.

#### Bibliography

##### Basic

1. Handbook of Electrochemistry (ISBN: 9780444519580)
2. Carbons for Electrochemical Energy Storage and Conversion Systems (ISBN: 9780429141256)
3. Lithium-Ion Batteries: Basics and Applications (ISBN: 9783662530719)
4. Corrosion and Corrosion Protection Handbook (ISBN: 9780824779986)

##### Additional

1. Fundamentals of Renewable Energy Processes (ISBN: 9780123972194)

#### Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,0
Classes requiring direct contact with the teacher	20	0,8
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	5	0,2

<sup>1</sup> delete or add other activities as appropriate