# COURSE DESCRIPTION CARD - SYLLABUS

Course name
Elective laboratory (Fundamentals of electrochemical technology)

## Course

Field of study
Chemical and process engineering

Year/Semester
3/6

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 | Laboratory classes | Other (e.g. online) |
|---|---|---|
| | 15 | |
| Tutorials | Projects/seminars | |

## Number of credit points

1

## Lecturers

Responsible for the course/lecturer:
dr hab. Piotr Krawczyk, prof. PP

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_K04].

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Laboratory assessment on the basis of the current work during the laboratory and the written tests.

## Programme content

1. Electrode materials used in electrochemical technologies.

2. Electrochemical techniques used in practice in electrochemical processes.

3. the types of electrochemical reactors,

4. The examples of electrochemical synthesis.

## Teaching methods

Laboratory exercises, explanation, didactic discussion.

## Bibliography

Basic

1. A. Kisza – Elektrochemia cz. I i II (Jonika i Elektrodyka) WNT, W-wa, 2001,

2. R. Dylewski, W. Gniot, M. Gonet, Elektrochemia przemysłowa, Wyd. Politechniki Śląskiej, 1999,

3. A. Czerwiński, Ogniwa, akumulatory, baterie, WNT, W-wa, 1999,

4. C. G. Zoski praca zb., Handbook of Electrochemistry, Elsevier, 2007,

5. A. Ciszewski, Technologia chemiczna. Procesy elektrochemiczne, Wyd. Politechniki Poznańskiej, 2008.

Additional

1. A.V. da Rosa, Fundamentals of Renewable Energy Processes, Elsevier/Academic Press, 1990,

2. H. Scholl, T. Błaszczyk, P. Krzyczmonik, Elektrochemia, Wyd. Uniwersytetu Łódzkiego, 1998.

## Breakdown of average student's workload

| | Hours | ECTS |
|---|---|---|
| Total workload | 30 | 1,0 |
| Classes requiring direct contact with the teacher | 15 | 0,5 |
| Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1] | 15 | 0,5 |

[1] delete or add other activities as appropriate