COURSE DESCRIPTION CARD - SYLLABUS

Course name
Podstawy technologii elektrochemicznej (Fundamentals of electrochemical technology)

Course

Field of study
Technologia chemiczna (Chemical Technology)
Year/Semester
III/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
compulsory

Number of hours

Lecture
30
Laboratory classes
30
Other (e.g. online)
Tutorials
Projects/seminars

Number of credit points

5

Lecturers

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

Prerequisites

Student has a ordered knowledge of mathematics and physical chemistry and he also has ability to use the basic techniques in a laboratory scale.

Course objective

The aim of the course is to familiarize students with an overview of technical electrochemistry methods and develop skills for their practical application.

Course-related learning outcomes

Knowledge

1. The knowledge in the field of basics of electrochemical processes –[K_W03, K_W08, K_W10],

2. The knowledge in the field of various electrochemical technologies –[K_W12, K_W13, K_W15].

Skills

1. The student has the ability to plan the technological processes, the selection of measurement techniques, he also has ability to define the appearing chemical reactions and the yielded products – [K_U16, K_U18, K_U20, K_U22],

2. The student has the ability to acquire information from the different of sources and he use a specialized vocabulary in English –[K_U01, K_U03].

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 –[K_K03].

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.

The written exam.

Programme content

1. The principles of electrochemical processes.

2. Electrodes balances.

3. The mechanisms of electrode processes.

4. The kinetics of electrode processes.

5. The selected electrochemical processes used for synthesis of chemical compounds and environmental protection.

6. The technological processes based on the electrochemical processes.

7. The selected issues in the field of generation, conversion and storage of electrical energy in chemical power sources.

8. Construction of electrochemical reactors and their influnce on the course of electrochemcial processes.

Teaching methods

Lecture, problem lecture, explanation, didactic discussion, classes, project method, laboratory exercises

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	125	5,0
Classes requiring direct contact with the teacher	70	2,8
Student's own work (literature studies, preparation for laboratory classes, preparation for tests/exam) [1]	55	2,2

[1] delete or add other activities as appropriate