GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Design of elektrochemical energy systems, PG_00058365		
Field of study	Hydrogen Technologies and Electromobility		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2026/2027
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	4	Language of instruction	Polish
Semester of study	7	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Corrosion and Electrochemistry -> Faculty of Chemistry -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Łukasz Gaweł	
	Teachers	dr inż. Łukasz Gaweł	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	0.0	30.0	0.0	30

E-learning hours included: 0.0

eNauczanie source addresses:

Moodle ID: 7116 PROJEKTOWANIE ELEKTROCHEMICZNYCH SYSTEMÓW ENERGETYCZNYCH
https://enauczanie.pg.edu.pl/2025/course/view.php?id=7116

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	2.0	18.0	50

Subject objectives

The aim of the course is to familiarize students with the principles of designing electrochemical energy systems.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U01] Is able to obtain information from literature, databases and other sources, integrate them, interpret them and draw conclusions and formulate opinions; has the ability to self-educate m.in. in order to improve professional competences	Knows the sources of scientific and technical information and the principles of their critical analysis.	[SU5] Assessment of ability to present the results of task
[K6_W21] has knowledge in the field of construction, principles of operation and use of electrochemical energy sources	Student pozna zasady podłączenia, działania i podstawowych parametrów pracy elektrochemicznych źródeł energii	[SW3] Assessment of knowledge contained in written work and projects
[K6_W20] has knowledge in the field of construction, principles of operation and use of electrolysers	100 / 5 000 The student will learn the principles of connection, operation and basic operating parameters of electrolyzers.	[SW3] Assessment of knowledge contained in written work and projects
[K6_U02] can work individually and in a team, can communicate using various techniques in a professional environment, as well as document and analyze the results of their work, can estimate the time needed to perform the entrusted task	The student can complete tasks independently and collaboratively, effectively communicating using a variety of techniques in a professional environment. They can document and analyze the results of their work and estimate the time required to complete assigned tasks.	[SU5] Assessment of ability to present the results of task

<table>
<tr><td>Subject contents</td><td>Course content – project

Creating a project based on existing knowledge and skills during group work in accordance with the guidelines.
Presenting the obtained results in a presentation.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Knowledge of various electrochemical energy sources, including electrolyzers. Knowledge of electrical engineering.</td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Project</td><td>60.0%</td><td>100.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Vielstich, W., Lamm, A., Gasteiger, H. A. (eds.) Handbook of Fuel Cells Fundamentals, Technology and Applications, Wiley, 2003.

Pollet B.G. (red.), Hydrogen Electrochemical Production, Elsevier, 2017.

Pollet B.G. (red.), PEM Water Electrolysis, Vol. 12, Elsevier, 2018.</td></tr>
<tr><td>Supplementary literature</td><td>scientific publications, scripts and user manuals for devices and software</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
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<tr><td>Example issues/ example questions/ tasks being completed</td><td>Create a design for an electrochemical energy system capable of producing 5 tons of hydrogen per day based on green energy sources.</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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