GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Technical electrochemistry, PG_00058345		
Field of study	Hydrogen Technologies and Electromobility		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2023/2024
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	2	Language of instruction	Polish
Semester of study	3	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Electrochemistry, Corrosion and Materials Engineering -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Paweł Ślepski	
	Teachers	dr hab. inż. Paweł Ślepski dr hab. inż. Stefan Krakowiak dr hab. inż. Krzysztof Żakowski	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	30.0	0.0	0.0	45

E-learning hours included: 0.0

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	45	7.0	48.0	100

Subject objectives

The aim of the course is to provide students with an introduction to selected electrochemical methods applicable in industry and to master the skills of conducting electrochemical experiments in the field of industrial electrochemistry.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W19] has knowledge of the properties of electrolyte solutions, electrode processes and some electrochemical processes relevant to industrial practice and the application of electrochemistry in practice	The student is able to select the appropriate electrochemical technology to solve a technological problem.	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge
[K6_U13] can use properly selected methods and devices enabling the measurement of basic quantities characterizing materials and technological processes	The student is able to control selected technical electrochemical processes.	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools
[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 is able to prepare and present results from an electrochemical process.	[SU1] Assessment of task fulfilment [SU5] Assessment of ability to present the results of task

Subject contents

Application of electrochemistry in corrosion monitoring and protection: electrochemical monitoring of corrosion rates, cathodic and anodic protection of industrial metal structures. Electrochemical application of metal coatings. Electrochemical wastewater treatment: electrocoagulation, electro-oxidation of organic compounds.

Prerequisites and co-requisites

The student has a basic knowledge of the mathematics of physics and the fundamentals of electrochemistry. The student has the ability to perform laboratory experiments in electrochemistry.

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>report</td><td>100.0%</td><td>40.0%</td></tr>
<tr><td>written exam</td><td>60.0%</td><td>60.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>R. Dylewski, W. Gnot, M. Gonet; Elektrochemia przemysłowa, WPŚ, Gliwice 1999

H. Bala; Korozja materiałów - teoria i praktyka, WIPMiFS, Częstochowa 2000.</td></tr>
<tr><td>Supplementary literature</td><td>journal: "Journal of Applied Electrochemistry", Springer</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2">• electrochemical protection of steel in a sulphuric acid environment
• metallization - acid baths
• electro-oxidation of paracetamol</td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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