



Subject card

Subject name and code	Fundamentals of electrochemistry, PG_00058339						
Field of study	Hydrogen Technologies and Electromobility						
Date of commencement of studies	October 2026		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	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		3.0		
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 hab. inż. Paweł Ślepski				
	Teachers		dr hab. inż. Paweł Ślepski				
Lesson types	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						
	eNauczanie source addresses: Moodle ID: 7167 PODSTAWY ELEKTROCHEMII [TWiE][2026/27] https://enauczanie.pg.edu.pl/2025/course/view.php?id=7167						
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		6.0		24.0	75
Subject objectives	To familiarize students with the phenomena occurring at the electrode-electrolyte interface.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U13] can use properly selected methods and devices enabling the measurement of basic quantities characterizing materials and technological processes		To familiarize students with the phenomena occurring at the metallic electrode-electrolyte interface.		[SU3] Assessment of ability to use knowledge gained from the subject		
	[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		To familiarize students with the phenomena occurring at the metallic electrode-electrolyte interface.		[SU1] Assessment of task fulfilment		

Subject contents	Course content – lecture		
	• Properties of electrolytes • Inner, outer and surface potential • Electrochemical cells • The electric double layer and its structure • Basic electrochemical processes • Transport in an electrolyte • Construction and operation of a lead-acid battery • Electrochemical techniques.		
	Course content – laboratory		
	• Laboratory safety rules. • Conductivity of solutions • Electrode potential • Current-voltage characteristics of electrochemical systems • Thermodynamic stability of water. • Hydrogen evolution reactions on various metals. • Chronovoltammetry of reversible and irreversible reactions.		
Prerequisites and co-requisites	Basics of chemistry		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written exam	60.0%	70.0%
	laboratory reports	100.0%	30.0%
Recommended reading	Basic literature	• A. Kiswa, Elektrochemia cz.1,2, WNT, Warszawa 2000 • Z.Galus, Elektroanalityczne metody wyznaczania stałych fizykochemicznych, PWN, Warszawa 1979 • Z.Galus, Teoretyczne podstawy	
	Supplementary literature	W. Browne, Elektrochemia, PWN 2022	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Chemical and electrochemical processes. Determination of thermodynamic parameters. Activation and diffusion control.		
Practical activities within the subject	Not applicable		

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