

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00065844								
Field of study	Materials Engineering								
Date of commencement of studies	October 2024		Academic year of realisation of subject			2025/2026			
Education level	second-cycle studies		Subject group			Specialty subject group 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			2.0			
Learning profile	general academic profile		Assessment form			assessment			
Conducting unit	Division Of Electrochemistry And Surface Physical Chemistry -> Institute Of Nanotechnology And Mater Engineering -> Faculty Of Applied Physics And Mathematics -> Wydziały Politechniki Gdańskiej						nd Materials 9		
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Jacek Ryl						
	Teachers		dr hab. inż. Jacek Ryl						
Lesson types and methods	Lesson type	son type Lecture Tu		utorial Laboratory Project		t	Seminar	SUM	
of instruction	Number of study hours	0.0	0.0	15.0	0.0		0.0	15	
	E-learning hours included: 0.0								
Learning activity and number of study hours	Learning activity	Participation in classes includ plan	n didactic ed in study	Participation in consultation hours		Self-study		SUM	
	Number of study hours	15		4.0		31.0		50	
Subject objectives	The aim of the course is to familiarize the student with practical applications for the electrolysis process. The laboratories will address selected, most important issues in which electrolyzers are currently used.						process. The ed.		
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	[K7_U03] Can formulate a research hypothesis, design an experiment needed to prove it and use properly selected measuring and laboratory methods.		The student is able to select electrolysis conditions and electrodes based on specific experimental expectations and verify the effectiveness of the selection			[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information			
	[K7_U04] Can undertake a detailed analysis of the obtained results and develop a technical report or presentation, also in English.		The student is able to analyze the effectiveness of using electrolyzers in various fields of materials engineering.			[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information			
	[K7_W06] Knows the theoretical basics the functioning of scientific equipment in the fields of science and scientific disciplines relevant to materials engineering.		The student knows the types of electrolyzers, their applications in various fields of science and industry			[SW1] Assessment of factual knowledge			
Subject contents	t contents Lecture: The three-hour lecture is an introduction to the phenomenon of electrolysis, introducing the nomenclature, discussing the areas of use of electrolysis, describing the parameters characteristic of electrolyzers (design, electrolyte flow, electrodes, etc.).							g the stic of	
	Lab: Four three-hour labs will cover the following areas: 1. Electrolytic hydrogen production 2. Water pollution purification 3. Environmental diagnostics and electrochemical sensors 4. Conversion coatings								
Prerequisites and co-requisites	Basic course in electrochemistry and inorganic chemistry Basic course in electrochemistry and inorganic chemistry								

Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade				
and criteria	laboratory	60.0%	100.0%				
Recommended reading	Basic literature P. Atkins - Physical Chemistry						
Ç.	Supplementary literature	Articles in JCR Journals					
	eResources addresses	Adresy na platformie eNauczanie:					
Example issues/ example questions/ tasks being completed	define the roles of electrodes and the selection of electrolyzer operating conditions						
	what is the effect of electrocatalytic hydrogen evolution						
	how are conversion coatings formed						
Work placement	Not applicable						

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