



Subject card

Subject name and code	Corrosion Protection for Electrical Power Facilities, PG_00070176						
Field of study	Hydrogen Technologies and Electromobility						
Date of commencement of studies	February 2026	Academic year of realisation of subject			2025/2026		
Education level	second-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 dr hab. inż. Stefan Krakowiak dr hab. inż. Michał Szociński dr hab. inż. Krzysztof Żakowski dr hab. inż. Andrzej Miszczyk					
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						
	eNauczenie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=3909						
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	3.0		27.0	75	
Subject objectives	The aim of the course is to familiarize students of Hydrogen Technologies and Electromobility with corrosion problems occurring in installations related to the broadly understood production and transmission of energy.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_W02] knows and understands, to an increased extent, selected laws of physics and physical phenomena, as well as methods and theories explaining the complex relationships between them, constituting advanced general knowledge in the field of technical sciences related to the hydrogen devices, systems, installations, and automation systems	The student knows and understands the physical mechanisms determining the operation of hydrogen devices and installations as well as automation systems, and is able to interpret their interrelationships in the context of technical systems.	[SW1] Assessment of factual knowledge
	[K7_W03] knows and understands, to an increased extent, the construction and operating principles of components and systems related to the field of hydrogen technologies and electromobility, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum	The student knows the construction and operating principles of basic components and systems used in hydrogen and electromobility technologies and understands the relationships between their design, operating parameters and functioning in complex technical systems.	[SW1] Assessment of factual knowledge
	[K7_U09] can carry out a critical analysis of the functioning of existing technical solutions and assess these solutions, as well as apply experience related to the maintenance of advanced technical systems, devices and facilities typical for the field of hydrogen technologies and electromobility, gained in the professional engineering environment	The student is able to critically evaluate the functioning of existing technical solutions used in hydrogen and electromobility technologies and use operational experience to identify problems, causes of malfunction and directions for improvement.	[SU2] Assessment of ability to analyse information
	[K7_U03] can design, according to required specifications, and make a complex device, facility, system or carry out a process, specific to the field of hydrogen technologies and electromobility, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment	The student is able to develop a design and construct a simple system, device or process typical for hydrogen technologies and electromobility, using appropriately selected techniques, tools and materials, and interpreting technical requirements and engineering standards.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
Subject contents	Course content – lecture		
	<ol style="list-style-type: none"> 1. Atmospheric, marine and underground structure corrosion. 2. Corrosion protection technologies. 3. Corrosion of offshore installations. 4. Corrosion in flue gas treatment installations operating in commercial power plants. 5. Corrosion, protection and structural solutions for power poles. 6. Corrosion protection of wind farms. 7. Corrosion hazards associated with hydrogen production and storage. 		
	Course content – laboratory		
	<ul style="list-style-type: none"> • Inspection of paint coatings • Field inspection of cathodic protection installations • Testing of metal and paint coating abrasion processes • Testing of cavitation resistance of metals and coating materials • Testing the permeability of hydrogen through construction materials 		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Passing the labs	100.0%	50.0%
	Passing the lectures	60.0%	50.0%

Recommended reading	Basic literature	<p>Y.I. Kuznetsov, A.D. Mercer, J.G.N. Thomas, Organic Inhibitors of Corrosion of Metals, Springer US, 1996</p> <p>A. Philip, P.E. Schweitzer, Atmospheric Degradation and Corrosion Control, CRC Press, 1999</p> <p>R. Juchniewicz, Anti-corrosion technology, part I and I</p> <p>P. A. Schweitzer, Corrosion-of-Linings-Coatings-Cathodic-and-Inhibitor-Protection-and-Corrosion-Monitoring, CRC Press, Taylor & Francis Group,</p> <p>Amy Forsgren, Corrosion_Control_Through_Organic_Coatings, CRC Press, Taylor & Francis Group,</p> <p>W. von Baeckmann, W. Schwenk, W. Prinz: Handbook of cathodic corrosion protection, Elsevier Science USA, 1997.</p>
	Supplementary literature	<p>K. Żakowski, K. Darowicki - Cathodic Protection, PG Publishing House</p> <p>A. Miszczyk, M. Szociński, K. Darowicki, Paint Coatings in Anticorrosion Protection. Principles of Application and Quality Control, PG Publishing House</p>
	eResources addresses	
Example issues/ example questions/ tasks being completed	<p>Discuss corrosion hazards in the absorber in FGD plants;</p> <p>Corrosion hazards in offshore installations;</p> <p>Cathodic protection using galvanic anodes;</p> <p>Coating system;</p>	
Practical activities within the subject	Not applicable	

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