



Subject card

Subject name and code	Corrosion measurements, PG_00060320						
Field of study	Materials Engineering, Materials Engineering						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2026/2027		
Education level	first-cycle studies		Subject group		Optional 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	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		4.0		
Learning profile	general academic profile		Assessment form		exam		
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. Stefan Krakowiak				
	Teachers		dr hab. inż. Stefan Krakowiak				
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 address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=712						
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		5.0		50.0	100
Subject objectives	The aim of the course is to familiarize students with research methods used in corrosion and corrosion protection.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U02] Can operate typical laboratory equipment and analyze material tests		The student is able to independently operate laboratory equipment and carry out material tests, as well as operate devices for measuring physical and chemical quantities characterizing materials.		[SU3] Assessment of ability to use knowledge gained from the subject		
	[K6_W03] Has knowledge of materials science and can relate the properties of materials with their structure and composition, knows the theoretical description of phenomena occurring in materials subjected to external factors.		The student has mastered knowledge in the field of materials science and is able to integrate it with knowledge from other subjects in order to use it to fully describe the behavior of construction materials in environments		[SW1] Assessment of factual knowledge		
	[K6_U01] Can properly use selected analytical, simulation and experimental methods, as well as devices for measuring the fundamental properties of materials and technological processes.		The student is able to practically use analytical, simulation and experimental methods and measurement tools in materials engineering and technology.		[SU4] Assessment of ability to use methods and tools		

Subject contents	Course content – lecture		
	Lecture: 1 - Basics of Corrosion; 2 - Corrosive Environments; 3 - Basics of Corrosion Protection; 4 - Measurements of Corrosion Potential and Current; 5 - Evaluation of Corrosion Rate; 6 - Monitoring; 7 - Quality Measurements of Paints and Varnishes; 8 - Quality Measurements of Paint Coatings.		
	Course content – laboratory		
	Laboratory exercises: 1. Introduction and laboratory safety conditions 2. Corrosion cells 3. Reference electrodes 4. Corrosion metallography 5. Testing the physicochemical properties of solutions density, pH 6. Determination of water hardness 7. Testing the physicochemical properties of paints and paint coatings 8. Determination of the water diffusion rate in selected engineering materials 9. Determination of the corrosion rate of carbon steel, copper, galvanized steel, and aluminum under atmospheric corrosion conditions depending on humidity and air temperature 10. Testing the properties of copper slag as an abrasive 11. Reserve		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Passing the entrance tests before the laboratories	60.0%	50.0%
	Written examination of the lecture material.	60.0%	50.0%
Recommended reading	Basic literature	http://www.korozja.pl	
	Supplementary literature	No requirements	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Galvanic Cell Detection Corrosion Cells Non-Destructive Coating Thickness Testing Corrosion Rate Determination		
Practical activites within the subject	Not applicable		

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