



Subject card

Subject name and code	Corrosion diagnostics, PG_00060321						
Field of study	Materials Engineering						
Date of commencement of studies	October 2023	Academic year of realisation of subject				2025/2026	
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	6	ECTS credits				2.0	
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	prof. dr hab. inż. Juliusz Orlikowski					
	Teachers	prof. dr hab. inż. Juliusz Orlikowski					
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	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	30	2.0	18.0	50		
Subject objectives	Mastering knowledge of nondestructive testing						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U02] Can operate typical laboratory equipment and analyze material tests	Ability to perform ultrasonic and penetrant testing, as well as visual documentation of corrosion damage			[SU1] Assessment of task fulfilment		
	[K6_W07] Has detailed knowledge of selected problems of materials science.	Ability to recognize typical construction materials used in industry			[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.	Ability to assess the location of defects in structural materials using the ultrasonic method			[SU1] Assessment of task fulfilment		
	[K6_K01] Understands the need to improve professional and personal competencies; is conscious of own limitations and knows when to turn to experts, properly establishes priorities helping to accomplish tasks defined by oneself or others.	Ability to search for data on research performed in the literature and on the Internet			[SK2] Assessment of progress of work		
Subject contents	<p>Course content – lecture Materials science for unalloyed steels, stainless steels, and copper alloys. Discussion of applicable standards. Methodology for visual assessment of structural materials. Measurement principles and applicability of the following NDT methods: ultrasonic flaw detection, penetrant method, eddy current, radiographic method, acoustic emission method, and thermal imaging.</p> <p>Course content – laboratory 1. Visual assessment of corrosion damage 2. Photographic documentation of corrosion and degradation damage 3. Ultrasonic flaw detection 4. Ultrasonic thickness measurement 5. Penetrant testing 6. Thermal imaging</p>						

Prerequisites and co-requisites	Knowledge of electrochemistry and measurements of resistance		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Practical exercises	60.0%	100.0%
Recommended reading	Basic literature	Guseppe Lacidonga, Nondestructive Testing (NDT), MDPI AG, 2021	
	Supplementary literature	Not required	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Selecting NDT testing methods for specific applications Determine the measurement limitations of selected NDT methods Determine the steel nomenclature based on the PN-EN 10020 standard		
Practical activities within the subject	Not applicable		

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