GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Corrosion Measurements, PG_00039820		
Field of study	Materials Engineering, Materials Engineering, Materials Engineering		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2023/2024
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	3	Language of instruction	Polish
Semester of study	6	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Electrochemistry, Corrosion and Materials Engineering -> Faculty of Chemistry		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Stefan Krakowiak	
	Teachers	dr hab. inż. Stefan Krakowiak	

Lesson types and methods of instruction

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						

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	25.0	75

Subject objectives

Teaching students basic information about corrosion and presenting selected measurement methods used in the science of corrosion.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W04	Can select a research method to solve the problem related to corrosion.	[SW1] Assessment of factual knowledge
K6_U02	The student knows the methods of determining the corrosion rate and is able to assess the composition and type of construction material.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
K6_K01	The student knows what are the ways of improving professional competences in the field of corrosion and metal protection.	[SK2] Assessment of progress of work [SK3] Assessment of ability to organize work [SK5] Assessment of ability to solve problems that arise in practice
K6_U01	The student is able to determine the corrosion rate and indicate the type of corrosion attack.	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment

Subject contents

Lecture: 1 - Basics of corrosion; 2 - Corrosion environments; 3 - Corrosion protection basics; 4 - Potential and corrosion current measurements; 5 - Corrosion rate evaluation; 6 - Corrosion Monitoring; 7 - Paints and varnishes measurements; 8 - Coatings.**Laboratory exercises:** 1. Introduction and safety condition in laboratory, 2. Corrosion cells, 3. Reference electrodes, 4. Metallography, 5. Physiko-chemical properties measurements of solutions - density, pH, O2 content, 6. Total hardness of water, 7. Physiko-chemical properties of paint and coatings, 8. Diffusion of water in engeneering materials, 9. Corrosion rate of industrial alloys: mild steel, galvanized steel, copper and aluminium. Relative humidity effect, 10. Properties of copper slag as a abrasive.11. Reserve.

Prerequisites and co-requisites

Knowledge engeneering measurements basis: pH, conductivity, density, etc. Knowledge of voltmeter and zeroammeter service.

<table>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>doing laboratory</td><td>60.0%</td><td>50.0%</td></tr>
<tr><td>doing lecture</td><td>60.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">Textbooks available on https://enauczanie.pg.edu.pl/moodle/course/view.php?id=14123</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">no recommendation</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">Investigation of current and potential in galvanic cells.</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
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