GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Metal corrosion, PG_00060748		
Field of study	Chemical Technology		
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	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	dr hab. inż. Stefan Krakowiak	
	Teachers		

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

eNauczanie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=2874

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

The aim of the course is to introduce students to the basics of corrosion processes and to familiarize them with the basic types of corrosion that constitute the greatest problem in the economy.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U08] is able to classify and apply knowledge of the driving forces of corrosion processes in different construction materials to the design of process installations and the selection of corrosion protection methods for installations	The student is able to diagnose corrosion of construction materials and The student is able to indicate factors influencing the development of corrosion and knows methods of limiting their impact on industrial structures.	[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information
[K6_W07] has knowledge of structural materials used in the chemical industry and their corrosion, corrosion monitoring and protection, and corrosion metrology	The student is able to diagnose corrosion of construction materials and is able to propose a method of protecting them against corrosion.	[SW1] Assessment of factual knowledge
[K6_K01] understands the need for continuing education, and is aware of the opportunities to improve professional, personal and social competences	The student understands the need for continuous improvement of professional skills	[SK5] Assessment of ability to solve problems that arise in practice
[K6_W02] has knowledge of inorganic, organic, physical and analytical chemistry useful for obtaining selected groups of compounds, determining their physical and chemical properties allowing for their quantitative and qualitative analysis, making measurements and determining the parameters of chemical reactions, phenomena and processes occurring in chemical technology	Has knowledge of chemistry enabling him to solve simple metal corrosion problems.	[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge

<table>
<tr><td>Subject contents</td><td>Course content – lecture
Metals and Alloys - Iron/Carbon Diagram;
Pourbaix Diagrams;
Corrosion Diagrams;
Galvanic Corrosion;
General Corrosion;
Local Corrosion;
Corrosion Cracking, Fatigue Corrosion;
Corrosion - Erosion, Cavitation;

Course content – laboratory
1. Electrochemical potential and corrosion potential;
2. Galvanic cells;
3. Concentration and temperature cells;
4. Passivity of metals and alloys;
5. Localized corrosion - pitting and crevice;
6. Intergranular corrosion;
7. Selective corrosion.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Basics of electrochemistry and physical chemistry.</td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Passing the lab</td><td>100.0%</td><td>50.0%</td></tr>
<tr><td>Passing the lectures</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>R. Juchniewicz, Anti-Corrosion Technology, Parts 1 and 2
G. Wranglen Basics of Corrosion and Metal Protection. WNT, Warsaw 1975
H.H. Uhlig Corrosion Protection, WNT, Warsaw 1976</td></tr>
<tr><td>Supplementary literature</td><td>K. Żakowski, K. Darowicki - Cathodic Protection, PG Publishing House
A. Miszczyk, M. Szociński, K. Darowicki, Paint Coatings in Anticorrosion Protection. Principles of Application and Quality Control, PG Publishing House</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>Evans Chart for Cathodic Control
Corrosion Reactions
Polarization
Galvanic Cells
Corrosion Cells</td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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