GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00065832		
Field of study	Materials Engineering, Materials Engineering		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	second-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	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. Stefan Krakowiak	
	Teachers	dr hab. inż. Stefan Krakowiak	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	0.0	30.0	0.0	30

E-learning hours included: 0.0

eNauczanie source address: https://enauczanie.pg.edu.pl/moodle/course/view.php?id=5506

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	4.0	41.0	75

Subject objectives

Teaching students how to prepare a technological project of anti-corrosion protection and work on the selection of construction materials for the defined operating conditions of industrial installations.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U04] Can undertake a detailed analysis of the obtained results and develop a technical report or presentation, also in English.	The student is able to prepare a corrosion protection project based on data obtained from the lecturer.	[SU1] Assessment of task fulfilment [SU5] Assessment of ability to present the results of task
[K7_K02] Is aware of the importance of non-technical aspects and effects of engineering, including the influence on the environment and resulting responsibility for the decisions.	The student is able to link the design of corrosion protection with increasing the operational safety of the structure, also in relation to the natural environment.	[SK5] Assessment of ability to solve problems that arise in practice
[K7_W04] Has enhanced knowledge of materials sciences, within the scope required for describing and understanding the correlation between the chemical composition, structure and mechanical and physical properties.	The student uses knowledge of materials engineering to optimize corrosion protection at the design stage.	[SW1] Assessment of factual knowledge
[K7_W05] Knows methods, techniques, tools and materials for solving complex engineering tasks relevant to materials engineering.	Is able to carry out a project using the results of electrochemical and exposure tests performed independently or taken from the literature.	[SW1] Assessment of factual knowledge

Subject contents

Course content – project

PROJECT I - Based on environmental hazards, select a coating system that will effectively protect a structure exposed in this defined environment. Based on the manufacturer's information contained in the technical data sheet, present surface preparation technology, coating method, intervals between subsequent coatings, and inspection procedures at each stage of coating system development.
PROJECT II - The student receives a chemical and physicochemical description of the process medium. Based on this, selects a construction material an alloy that will exhibit corrosion rates below acceptable levels in this environment.

<table>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">Knowledge of basic problems related to anti-corrosion protection technology.</td></tr>
<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>Project 2 materials</td><td>100.0%</td><td>30.0%</td></tr>
<tr><td>Project 1 coatings</td><td>100.0%</td><td>70.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">R. Juchniewicz, Anti-corrosion technology, vol. 1 and vol. 2;

Branko N. Popov, Corrosion Engineering, Principles and solved problems</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Catalogs of companies producing paint and composite coatings;
Catalogs of companies producing industrial alloys;</td></tr>
<tr><td>eResources addresses</td><td colspan="2"></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">Design of corrosion protection for the supporting structure of a pipeline trestle for reloading petroleum products in a seaport on the Baltic Sea.
Selection of construction material for a tank for sulfuric acid (variable concentrations from 45 to 76%) containing chloride ions (2000 ppm).</td></tr>
<tr><td>Practical activites within the subject</td><td colspan="3">Not applicable</td></tr>
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