GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Physical metallurgy and corrosion, PG_00048569		
Field of study	Chemical Technology		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2024/2025
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	4	Language of instruction	Polish
Semester of study	7	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. Michał Szociński	
	Teachers		

Lesson types and methods of instruction

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	43.0	75

Subject objectives

The aim of the subject is to familiarize students with: fundamental information concerning structure of metals and alloys, their properties with a special emphasis on susceptibility to corrosion, fundamental procedures connected with preparation of metallographic specimens and their evaluation.-

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U08	student can relate properties of most popular construction materials to their susceptibility to corrosion and potential protection methods	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
K6_W07	student can evaluate the risk of various corrosion types and propose anticorrosion protection methods	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge

Subject contents

Structure and properties of metals and alloys, general classification of metals and alloys, detailed structure of carbon steels, stainless steels, cast irons and non-ferrous alloys (copper and aluminum), preparation of metallographic specimens for microscopic analysis, preparation of samples for standard corrosion tests, procedure of macro- and microexamination of metallographic specimens, metallographic examination of corrosion damages of metals and alloys.

Prerequisites and co-requisites

Fundamentals of physics and physical chemistry.

Fundamentals of materials science.

Fundamentals of mechanics of materials.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Tests and reports from laboratory exercises	60.0%	50.0%
Test from lectures	60.0%	50.0%

Recommended reading	Basic literature	Dobrzański L.A.: Podstawy nauki o materiałach i metaloznawstwo. WNT. Gliwice-Warszawa 2002. Dobrzański L.A. i in.: Metalowe materiały inżynierskie. WNT. Warszawa 2004. Dobrzański L.A. i in.: Metaloznawstwo i obróbka cieplna materiałów narzędziowych WNT. Warszawa 1990. Przybyłowicz K.: Metaloznawstwo (wyd. VIII). WNT. Warszawa 2007. Pr. Zb. [red. M. Głowacka]: Metaloznawstwo. Wyd. Politechniki Gdańskiej. Gdańsk 1996. Pr. Zb. [red. J. Hucińska]: Metaloznawstwo. Materiały do ćwiczeń laboratoryjnych. Pr. Zb. [red. M. Głowacka]: Metaloznawstwo. Wyd. Politechniki Gdańskiej. Gdańsk 1996. Pr. Zb. [red. J. Hucińska]: Metaloznawstwo. Materiały do ćwiczeń laboratoryjnych. Wyd. Politechniki Gdańskiej. Gdańsk 1995.
	Supplementary literature	Pr. Zb. [red. M. Głowacka, A. Zieliński]: Podstawy materiałoznawstwa. Pr. Zb. [red. M. Głowacka]: Metaloznawstwo. Wyd. Politechniki Gdańskiej. Gdańsk 2014. Pr. Zb. [red. J. Hucińska]: Metaloznawstwo. Materiały do ćwiczeń laboratoryjnych. Wyd. Politechniki Gdańskiej. Gdańsk 2014.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1. Name and describe the examples of point and linear defects of crystalline lattice. 2. How is the hardness measurement according to the Vicker's method performed? 3. Characterize brasses based on their alloy composition. 4. Provide the characteristics of the passive layer on aluminium. 5. Describe the phenomenon of intergranular corrosion of stainless steels.	
Work placement	Not applicable	