GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Corrosion metallurgy, PG_00060764		
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. Michał Szociński	
	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

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 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] 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 determine the corrosion hazard of a given material in a specific operating environment.	[SU3] Assessment of ability to use knowledge gained from the subject
[K6_K01] understands the need for continuing education, and is aware of the opportunities to improve professional, personal and social competences	The student is aware of the need to seek information on the functional properties of construction materials in terms of their selection for various operating environments.	[SK5] Assessment of ability to solve problems that arise in practice
[K6_U02] is able to operate typical laboratory apparatus and conduct analyses related to materials testing	The student is able to prepare metallographic sample and perform its microscopic evaluation.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject
[K6_W07] has knowledge of structural materials used in the chemical industry and their corrosion, corrosion monitoring and protection, and corrosion metrology	The student knows the main areas of application of popular construction materials from the point of view of their corrosion resistance.	[SW1] Assessment of factual knowledge

Subject contents

Course content – lecture
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).

Course content – laboratory
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	

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.
Practical activites within the subject	Not applicable

Document generated electronically. Does not require a seal or signature.