



Subject card

Subject name and code	Physical metallurgy and corrosion, PG_00048569						
Field of study	Chemical Technology						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2023/2024		
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		dr hab. inż. Michał Szociński				
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_W07		student can evaluate the risk of various corrosion types and propose anticorrosion protection methods		[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects		
	K6_U08		student can relate properties of most popular construction materials to their susceptibility to corrosion and potential protection methods		[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information		
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		
	Test from lectures		60.0%		50.0%		
	Tests and reports from laboratory exercises		60.0%		50.0%		

Recommended reading	Basic literature	<p>Dobrzański L.A.: Podstawy nauki o materiałach i metaloznawstwo. WNT. Gliwice-Warszawa 2002.</p> <p>Dobrzański L.A. i in.: Metalowe materiały inżynierskie. WNT. Warszawa 2004.</p> <p>Dobrzański L.A. i in.: Metaloznawstwo i obróbka cieplna materiałów narzędziowych WNT. Warszawa 1990.</p> <p>Przybyłowicz K.: Metaloznawstwo (wyd. VIII). WNT. Warszawa 2007.</p> <p>Pr. Zb. [red. M. Głowacka]: Metaloznawstwo. Wyd. Politechniki Gdańskiej. Gdańsk 1996.</p> <p>Pr. Zb. [red. J. Hucińska]: Metaloznawstwo. Materiały do ćwiczeń laboratoryjnych. Pr. Zb. [red. M. Głowacka]: Metaloznawstwo. Wyd. Politechniki Gdańskiej. Gdańsk 1996.</p> <p>Pr. Zb. [red. J. Hucińska]: Metaloznawstwo. Materiały do ćwiczeń laboratoryjnych. Wyd. Politechniki Gdańskiej. Gdańsk 1995.</p>
	Supplementary literature	<p>Pr. Zb. [red. M. Głowacka, A. Zieliński]: Podstawy materiałoznawstwa. Pr. Zb. [red. M. Głowacka]: Metaloznawstwo. Wyd. Politechniki Gdańskiej. Gdańsk 2014.</p> <p>Pr. Zb. [red. J. Hucińska]: Metaloznawstwo. Materiały do ćwiczeń laboratoryjnych. Wyd. Politechniki Gdańskiej. Gdańsk 2014.</p>
	eResources addresses	<p>Adresy na platformie eNauczanie:</p> <p>Metaloznawstwo korozyjne (dla Technologii Chemicznej) - Nowy - Nowy - Moodle ID: 27340 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=27340</p>
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 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	