

Subject card

Subject name and code	Basic of Materials Engineering II, PG_00039791							
Field of study	Materials Engineering, Materials Engineering, Materials Engineering							
Date of commencement of	October 2021	Academic year of			2022/2023			
studies			realisation of subject					
Education level	first-cycle studies		Subject group			Obligatory subject group in the		
						field of study 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	2		Language of instruction			Polish		
Semester of study	3		ECTS credits			6.0		
Learning profile	general academic profile		Assessment form			exam		
Conducting unit	Department of Materials Engineering and Bonding -> Faculty of Mechanical Engineering and Ship Technology					hip		
Name and surname	Subject supervisor	dr inż. Grzegorz Gajowiec						
of lecturer (lecturers)	Teachers		dr inż. Grzego	orz Gajowiec				
			dr inż. Łukasz Pawłowski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM
	Number of study hours	15.0	0.0	45.0	0.0		0.0	60
	E-learning hours included: 0.0							
Learning activity and number of study hours	Learning activity Participation in classes include plan					Self-study		SUM
	Number of study 60 hours		15.0			75.0		150
Subject objectives	To acquaint students with issues related to the features and application of iron alloys and their heat and thermo-chemical treatment.							
Learning outcomes	Course outcome		Subject outcome			Method of verification		
	K6_U01		Can assess the microstructures and make the necessary calculations.			[SU3] Assessment of ability to use knowledge gained from the subject		
	K6_K01		He is aware of the difficulties involved in analyzing microstructures.			[SK2] Assessment of progress of work		
	K6_W03		Based on the observation of the microstructure, the student can recognize the type of steel and the type of processing it has been subjected to.			[SW1] Assessment of factual knowledge		
	_		He can prepare metallographic specimens and assess their microstructure			[SW1] Assessment of factual knowledge		
Subject contents	Iron-carbon alloys - types. Characteristics and application of white and graphite cast irons. Classification, marking and application of non-alloy and alloy steels. Heat treatment of steels - annealing, hardening and tempering. Issues of hardenability and its importance. The influence of alloying elements on the properties of steel. Characteristics of structural, corrosion-resistant and tool steel alloys. Heat and chemical treatment of steel.							
Prerequisites and co-requisites	Completion of the Fundamentals of Materials Science course I.							
Assessment methods	Subject passing criteria		Passing threshold			Percentage of the final grade		
and criteria	credit laboratory and written exam		75.0%			100.0%		

Data wydruku: 10.04.2024 19:29 Strona 1 z 2

Recommended reading	Basic literature	1.Podstawy materiałoznawstwa po redakcją M. Głowackiej i A. Zielińskiego, wydawnictwo PG, Gdańsk 2014 2. Głowacka M. (red.). Metalozawstwo, Politechnika Gdańska, Gdańsk, 1996				
	Supplementary literature	Ashby F.A., Jones D.R.: Materiały inżynierskie. Tom I i II. WNT, Warszawa, 1995. Callister W.D.: Materials Science and Engineering. Wiley and Sons, 2000-2006. Dobrzański L.A.: Metalowe materiały inżynierskie. WNT, Warszawa, 2004. 4. Ashby F.A., Shercliff H., Cebon D.: Inżynieria materiałowa. Tom 1 i				
		2. Galaktyka 2011				
	eResources addresses	Adresy na platformie eNauczanie: Podstawy Inżynierii Materiałowej II, W, IM, sem. 03, zimowy 22/23 - Moodle ID: 26338 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26338				
Example issues/ example questions/ tasks being completed	[1]. Definition of steel and classification criteria. [2] How does the eutectoid transformation affect the grain size in steel? [3] How alloying additives affect: - steel structures - hardenability of steel - steel resistance to corrosion? [4] Definition of cast iron. How does the form of coal occurrence affect the properties of cast irons? [5] What is cast iron, according to what criteria can it be classified. [6] What are ductile cast irons characterized by and where are they used. [7]. What is heat treatment and what are its basic types. [8] What is the hardenability of steel, what factors and how do they affect it, and what is its practical significance? [9] What structures are obtained after hardening the steel. What are they characterized by? [10] Explain the terms: - critical hardening speed - critical diameter D50 and D90.					
Work placement	Not applicable					

Data wydruku: 10.04.2024 19:29 Strona 2 z 2