



## Subject card

Subject name and code	Metal Science, PG_00044033						
Field of study	Ocean Engineering, Ocean Engineering						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2020/2021		
Education level	first-cycle studies		Subject group				
Mode of study	Part-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		1.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Ship Manufacturing Technology, Quality Systems and Materials Science -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Milena Supernak				
	Teachers		dr inż. Milena Supernak				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	0.0	0.0	0.0	10
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie: Metaloznawstwo studia Niestacjonarne - Moodle ID: 10157 <a href="https://enauzanie.pg.edu.pl/moodle/course/view.php?id=10157">https://enauzanie.pg.edu.pl/moodle/course/view.php?id=10157</a>						
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	10		2.0		13.0	25
Subject objectives	To acquaint the student with the structure of metals and their alloys. Determination and study of the structure of metals. Property Studymechanical and physical metals and their alloys.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U05] can formulate a simple engineering task and its specification within the range of design, construction and operation of ocean technology objects and systems		The student defines the properties materials. The student identifies basic properties metallic materials. Student identifies the types of research crystal structure: macroscopic and microscopic. The student defines the phase components and structural Fe-C alloys		[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject		
	[K6_W03] has a basic knowledge on hydromechanics, thermodynamics, machine construction, ecology, materials science and electronics necessary to understand the construction and operation principles of ocean technology objects and equipment		Student analyzes dependence between receiving, structure, properties and functionality material.		[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects		
Subject contents	1.Characteristics of solids. Structure of materials. Structure defects.2. Construction of metal alloys.3. Phase equilibrium systems. The iron-carbon system.4.Alloys with carbon.5. Heat treatment. Thermo-chemical treatment.6. Alloy steels.						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	test		50.0%		100.0%		
Recommended reading	Basic literature		1.Krzysztofowicz T.: Metaloznawstwo okrętowe-ćwiczenia laboratoryjne. WPG, Gdańsk, 2002 2. Dobrzański L.A.: Podstawy nauki o materiałach i metaloznawstwo.WNT, Warszawa, 2002				

	Supplementary literature	1. Głowacka M., Zieliński A.: Podstawy Materiałoznawstwa. WPG, Gdańsk 2011
	eResources addresses	Metaloznawstwo studia Niestacjonarne - Moodle ID: 10157 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=10157">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=10157</a>
Example issues/ example questions/ tasks being completed	1. Static Tensile Test2. Steel impact test3. Macro and microscopic research4. Analysis of the structures of the iron-carbon system5. Tests of iron alloys (cast steel, cast iron, unalloyed steels)	
Work placement	Not applicable	