



## Subject card

Subject name and code	Metal Science, PG_00043671						
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	Full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		3.0		
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		mgr inż. Lech Nadolny  mgr inż. Krzysztof Emilianowicz  dr inż. Milena Supernak				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0	0.0	45
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie:						
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	45		5.0		25.0	75
Subject objectives	Familiarizing students with the construction of metals and their alloys. Determination and testing of the structure of metals. Study of mechanical and physical properties of metals and their alloys.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[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		The student analyzes the relationship between the receipt, structure, properties and functionality of the material.		[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation		
	[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 of materials. Student identifies the basic properties of metallic materials. Student identifies types of crystal structure research: macroscopic and microscopic. Student defines phase and structural components of Fe-C alloys		[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment		
Subject contents	Static Tensile Test  2. Impact test of steel  3. Macro and microscopic examinations  4. Analysis of iron-carbon structure structures  5. Tests of iron alloys (cast steel, cast iron, non-alloyed steels)  6. Research on copper and its alloys  7. Research on aluminum and aluminum alloys						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Final test of lectures	50.0%	50.0%
	Reports from laboratory classes	70.0%	50.0%
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		
Example issues/ example questions/ tasks being completed	1. Static Tensile Test 2. Impact test of steel 3. Macro and microscopic examinations 4. Analysis of iron-carbon structure structures 5. Testing of iron alloys (cast steel, cast iron, non-alloyed steels) 6. Research on copper and its alloys 7. Research on aluminum and aluminum alloys		
Work placement	Not applicable		