GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00056276		
Field of study	Ocean Engineering		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2021/2022
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	1	Language of instruction	Polish no comments
Semester of study	1	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Milena Supernak	
	Teachers	dr inż. Paulina Strąkowska dr inż. Jacek Haras mgr inż. Lech Nadolny 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:

Metaloznawstwo , PG_00056149, PG _00056276. PG _00056241 - Moodle ID: 16738
https://enauczanie.pg.edu.pl/moodle/course/view.php?id=16738

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	6.0	24.0	75

Subject objectives

Presentation of the field of technical knowledge which is materials science. To acquaint the student with the structure of metals and their alloys. Determination and study of the structure of metals. Examination of mechanical and physical properties of iron alloys and non-ferrous metal alloys, such as aluminum and copper.

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 production, structure, properties and functionality of the material.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
[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	Student defines the properties of materials. The student identifies the basic properties of metallic materials. The student identifies the types of research on the crystal structure: macroscopic and microscopic. Student defines phase and structural components of Fe-C alloys. Student defines iron alloys as well as aluminum alloys and copper alloys	[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools

Subject contents	1. Materials and their importance in technology. Characteristics of the main groups of materials. 2 .. Characteristics of solids. Structure of materials. Structure defects. 3.. Construction of metal alloys. 4. Phase equilibrium systems. The iron-carbon system. 5. Iron-carbon alloys. 6. Heat treatment. Thermo-chemical treatment. 7. Alloy steels. 8. Standardization, classification and marking systems for steel and cast iron. 9. Copper and copper alloys. 10.Aluminium and aluminum alloys. 11. Bearing Alloys. 12. Degradation of metal materials
Prerequisites and co-requisites	
Assessment methods and criteria	

Subject passing criteria	Passing threshold	Percentage of the final grade
Credit for the laboratory - participation, tests and reports on the completed topics	60.0%	50.0%
Passing the content of the lecture - written form	60.0%	50.0%

Recommended reading	Basic literature	• Głowacka M., Zieliński A .: Fundamentals of Materials Science. WPG, Gdańsk 2011 • Dobrzański L.A .: Fundamentals of materials science and metallurgy .. WNT, Warsaw, 2002.
	Supplementary literature	• Dobrzański L.A .: Metal engineering materials, WNT Warsaw 2004 • Dobrzański L.A .: Engineering materials and material design, WNT Warsaw 2006
	eResources addresses	Metaloznawstwo , PG_00056149, PG _00056276. PG _00056241 - Moodle ID: 16738 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=16738
Example issues/ example questions/ tasks being completed	1. Macro and microscopic research2. Analysis of the structures of the iron-carbon system3. Tests of iron alloys (cast steel, cast iron, unalloyed steels)4. Alloy steels5. Research on copper and its alloys6. Tests of aluminum and aluminum alloys	
Work placement	Not applicable	