



## Subject card

Subject name and code	Advanced ocean engineering technologies, PG_00057282						
Field of study	Ocean Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2022/2023		
Education level	second-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	Part-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. Dariusz Duda dr inż. Milena Supernak					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	9.0	0.0	9.0	0.0	0.0	18
	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	18	5.0		52.0		75
Subject objectives	Extending existing knowledge in the field of metallurgy and materials science, including selected technological aspects. To acquaint students with materials used for the construction of floating and ocean-engineering facilities. Acquiring the ability to analyze phenomena and structural effects occurring in selected material groups, determining and their useful properties. Acquiring the ability to acquire information about new materials from popular science sources as well as domestic and English-language scientific and technical literature.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_W01] has a deepened and widened knowledge on certain fields of maths, used to formulate, solve and verify complex problems in ocean-technology	the student knows the principles of design material they are necessary for the application of the rules sustainable development knows how conduct literary studies and distinguishes concepts from the scope protection of industrial property i intellectual	[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge
	[K7_U02] can plan and conduct research experiments on selected problems in ocean technology using various research methods	the student has enough knowledge of materials science and is able to integrate it with knowledge from other subjects in for use in comprehensive process structure design or technological process, based on sustainable development	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject
[K7_W02] has a widened knowledge in the range of modelling technological processes, including knowledge necessary to describe and assess the functioning of selected elements of ocean technology objects and systems	student's knowledge of there is enough material science full and practical that together with they know from other subjects will enable him to choose the right one materials and processes processing for the purpose sufficiently produced modern and reliable construction	[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge	
Subject contents	<p>Lecture: Characteristics of the structure, properties, production method, operating conditions and applications of material solutions used for the construction of floating objects. It includes the following groups of materials: - Steadily - Aluminum alloys - Special-purpose feet - Tapons used in ocean technology</p> <p>Laboratory: - Characteristics of the microstructure and strength properties of steels used in the construction of floating objects - Characteristics of the microstructure and strength properties of aluminum alloys used in the construction of floating objects - Characterization of the microstructure of special purpose alloys - Concrete testing</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	60.0%	50.0%
	Raport	80.0%	50.0%
Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. Dobrzański L.A.: Metalowe materiały inżynierskie, WNT Warszawa 2004</li> <li>2. Dobrzański L.A.: Materiały inżynierskie i projektowanie materiałowe, WNT Warszawa 2006</li> <li>3. M. Blicharski: Wstęp do inżynierii materiałowej, WNT, Warszawa 2001</li> <li>4. Ciszewski A. i inni: Materiałoznawstwo, Oficyna wyd. Politechniki Warszawskiej, Warszawa 2006</li> <li>5. PRS- Przepisy klasyfikacji i budowy jachtów Morskich- 1996</li> </ol>	

	Supplementary literature	1. Ashby F.A., Jones D.R.: Materiały inżynierskie. Tom I i II. WNT, Warszawa, 1995. 2. Callister W.D.: Materials Science and Engineering. Wiley and Sons, 2000-2006. 3. D.R. Askeland, P.P. Phulé: The Science and Engineering of Materials, 4th ed
	eResources addresses	Adresy na platformie eNauczanie: Zaawansowane technologie w oceanotechnice_W/L_PG_00057283/ PG_00057282 - Moodle ID: 22472 <a href="https://enauzanie.pg.edu.pl/moodle/course/view.php?id=22472">https://enauzanie.pg.edu.pl/moodle/course/view.php?id=22472</a>
Example issues/ example questions/ tasks being completed	Overview of main material groups Basics of choosing materials for products and elements Shaping the structure and properties of metals and alloys by technological methods Dependence of working conditions and mechanisms of wear of engineering materials The importance and development trends of Materials Engineering	
Work placement	Not applicable	