GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Non-metallic materials II, PG_00044034		
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	2	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Theory and Ship Design -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Leszek Matuszewski	
	Teachers	dr hab. inż. Leszek Matuszewski mgr inż. Piotr Bela	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	20.0	0.0	0.0	20

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	20	3.0	27.0	50

Subject objectives

The transport includes all kinds of materials come across on markets. Their acquaintance is essential for the correct forwarding service, especially during the storage and the trans-shipment. It is regarding both profiles of the speciality Transport because in the field of means of transport the knowledge of materials is even more important. During classes the student is getting to know the most important non-metallic materials met in the economy. Review of non-metallic materials applied in ship's structures. Connection of the structure with the technology in composite structures.

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 knows the rules of creating polymer composites i armored execution methods polymer composites. The student knows the basic rules use of construction technology shipbuilding.	[SU2] Assessment of ability to analyse information
[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 knows the basic concepts in the field of plastics synthetic. knows the basic technological processes as a result whose property is acquired utilities of synthetic materials and knows the basic types of materials synthetic	[SW1] Assessment of factual knowledge

Subject contents

The close review of non-metal materials applied in technical constructions. Particular groups of materials like wood, thermoplastic materials, hardening resins, non reinforced polymers and other composites are researched closer. Research of relationship between the selection of the type of construction and the technology and in composite constructions. Review of critical constructional points and the principles of development, basic constructional calculations, the technological requirements, etc. Process of composites forming, technology of parts of the construction, technological tools, the technological process of production with non metallic materials. Investigation of the effectiveness of the technological process. Thermoplastic application and technology. Assembly of constructional elements and finishing works. Requirements resulting from the recipes of classifying companies and norms.

Prerequisites and co-requisites

Requirements concern the basic knowledge of materials strength and fatigue questions, and different criteria of the materials properties, e.g. corrosion resistance, aging, and particular chemical relationships.

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Practical exercise	45.0%	30.0%
	Essay	50.0%	30.0%
	Essay	50.0%	30.0%
	Practical exercise	50.0%	10.0%
Recommended reading	Basic literature	1. Dobrosz K.,Matysiak A.,Tworzywa sztuczne Warszawa WSZiP 1985 2. Kłosowska-Wałkowicz Z..Królikowski W.,Penczek P..Żywice i laminaty poliestrowe. Warszawa WNT 1980 3. Kozłowski J.,Wilczopolski M..Materiałoznawstwo okrętowe czIII Okrętowe Tworzywa Polimerowe. Gdynia WSMW 1982 4. Królikowski W., Tworzywa wzmocnione i włókna wzmacniające. Warszawa WNT 1988 5. Spychaj T. Spychaj D.,Farby i kleje wodorozcieńczalne Warszawa WNT 1996 6. Żuchowska D.,Polimery konstrukcyjne. Warszawa WNT 1995 7.	
	Supplementary literature	1. Kozłowski J., Wilczopolski M., Wituszyński K.: Konstrukcje okrętowe z kompozytów polimerowych; Wydawnictwo Morskie, Gdańsk, 1982. 2. Przepisy klasyfikacji i budowy jachtów morskich (JAC), Część II, Kadłub 1996/1998 3. Przepisy klasyfikacji i budowy łodzi motorowych (MOT), Część II, Kadłub 1996/1998	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Thermoplastic polymers - properties and methods of recognition Laminates - structure and ingredients		
Work placement	Not applicable		