GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Material technologies, PG_00005006		
Field of study	Medical and Mechanical Engineering, Mechanical and Medical Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2020/2021
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
Semester of study	2	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Materials Engineering and Bonding -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Michał Landowski	
	Teachers	dr inż. Michał Landowski	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	0.0	0.0	0.0	15

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	15	5.0	30.0	50

Subject objectives

Learning basic manufacturing techniques for ceramic and composite materials elements .

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_W10	The student has knowledge of the techniques of producing structural elements from ceramics and composites.	[SW1] Assessment of factual knowledge
K6_U09	The student is able to select the production technology and material for a given structure.	[SU3] Assessment of ability to use knowledge gained from the subject

Subject contents

Overview of processing methods for metallic, polymeric, ceramic and composite materials. Examples of glass processing. Stages of ceramics processing. Structural ceramic elements forming methods. Manufacturing SiC brake disc. Polymer composites processing: Processing glass and carbon fibres and BMC and SMC semi-products for composites forming. Vacuum and manual forming of polymer composites elements (hand lay-up, RTM, infusion, autoclave, RIM, SRIM, pipes and continuous elements forming). Carbon fibre car bonnet forming.

Prerequisites and co-requisites

none

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Final test	56.0%	100.0%

Recommended reading	Basic literature	1. Dobrzański L.A.: Podstawy nauki o materiałach i metaloznawstwo. WNT, Warszawa, 2002. 2. Sobczak, Kompozyty metalowe, Ed. Instytut Odlewnictwa 2002 K.E. Oczoś, Kształtowanie ceramicznych materiałów technicznych, Ed.Oficyna wydawnicza Politechniki Rzeszowskiej 1996 3. J. Śleziona, Kompozyty, Ed. Politechnika Śląska 2000
	Supplementary literature	1. M. Reyne, Composite solutions, JEC Group 2006
	eResources addresses	
Example issues/ example questions/ tasks being completed	Cite and describe the examples of typical forming methods for glass or ceramics. Characterize a given processing technique for metal matrix composites reinforced with short or long fibres. Cite 2 groups of applications for polymer composites. What materials and manufacturing techniques are employed in these groups? List and characterize semi- products used in the polymer composite forming a/ thermosetting b/ thermoplastic. Characterize one of the following forming methods. Hand lay-up, spray-up, vacuum bagging, infusion, RTM, autoclave. Cite advantages and drawbacks of each method. How are laminate pipes formed? Characterize pultrusion forming. What is the area of its applications? List the examples and applications of sandwich structures. List processing typical of thermoplastic polymer matrix composites. What are their perspectives?	
Work placement	Not applicable	