



## Subject card

Subject name and code	Materials Processing, PG_00038859						
Field of study	Mechatronics, Mechatronics						
Date of commencement of studies	October 2020	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	2	Language of instruction			Polish		
Semester of study	4	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 dr inż. Aleksandra Świerczyńska mgr inż. Adrian Wolski dr inż. Jacek Haras mgr inż. Anna Janeczek					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	E-learning hours included: 0.0						
	Adresy na platformie eNauczenie: Technologie materiałowe, W, MTR, sem. 04, lato 21/22, PG_00038859 - Moodle ID: 23710 <a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=23710">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=23710</a>						
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	30	5.0	15.0	50		
Subject objectives	Gaining knowledge about manufacturing techniques for polymer, metal and ceramic- matrix composite materials elements						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_W08	The student learns the techniques of producing elements from composite materials. The student understands the influence of parameters of technological processes on the functional properties of elements made of composite materials.			[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
	K6_U01	The student is able to use the knowledge contained in scientific articles and engineering guides. Student can efficiently draw conclusions from the information obtained.			[SU2] Assessment of ability to analyse information [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
	test	50.0%	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. Oczkoś, Kształtowanie ceramicznych materiałów technicznych, Oficyna wydawnicza Politechniki Rzeszowskiej 1996  3. J. Ślężona, Kompozyty, Politechnika Śląska 2000	
	Supplementary literature	M. Reyne, Composite solutions, JEC Group 2006	
	eResources addresses	Technologie materiałowe, W, MTR, sem. 04, lato 21/22, PG_00038859 - Moodle ID: 23710 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=23710">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=23710</a>	
Example issues/ example questions/ tasks being completed	Define the types of semi-products for manufacturing composite materials elements.  List the advantages and disadvantages of contact and vacuum forming.		
Work placement	Not applicable		