



Subject card

Subject name and code	Processing technologies, PG_00061916						
Field of study	Materials Engineering, Materials Engineering						
Date of commencement of studies	October 2025	Academic year of realisation of subject				2026/2027	
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 -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Michał Landowski				
	Teachers		dr inż. Michał Landowski				
Lesson types	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						
eNauczenie source address: https://enauczenie.pg.edu.pl/moodle/course/view.php?id=13493							
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	The aim of the course is to provide students with basic knowledge about welding, casting and forming						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U02] Can operate typical laboratory equipment and analyze material tests	The student is able to determine the effect of cold forming on the properties of metals based on strength tests.			[SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment		
	[K6_W06] Knows selected methods, techniques, tools and materials used in solving simple engineering problems within the scope of materials engineering.	The student knows the methods of changing the properties of metallic materials through welding processes and forming.			[SW1] Assessment of factual knowledge		
	[K6_K01] Understands the need to improve professional and personal competencies; is conscious of own limitations and knows when to turn to experts, properly establishes priorities helping to accomplish tasks defined by oneself or others.	The student has basic knowledge of forming, casting and welding. Based on the basics, student understands the need to search for new solutions and expand own knowledge of these technologies.			[SK1] Assessment of group work skills [SK5] Assessment of ability to solve problems that arise in practice		

Subject contents	<p>Course content – lecture Preparation of metals and alloys. Casting of ferrous alloys and non-ferrous metals. Basic forming processes; rolling, forging and pressing, drawing, extrusion and pressing.</p> <p>Welding heat sources. Thermal field. Basic arc welding methods; shielded metal arc welding, gas metal arc welding, gas tungsten arc welding, submerged arc welding, laser beam welding. Thermal cutting methods. Resistance welding. Construction and properties of welded joints</p>											
Prerequisites and co-requisites	Basic knowledge of physics, chemistry, electrotechnics, mechanics and materials science.											
Assessment methods and criteria	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:33%;">Subject passing criteria</th> <th style="width:33%;">Passing threshold</th> <th style="width:34%;">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>Test on the laboratory</td> <td>56.0%</td> <td>30.0%</td> </tr> <tr> <td>Test</td> <td>56.0%</td> <td>70.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Test on the laboratory	56.0%	30.0%	Test	56.0%	70.0%
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Recommended reading	<p>Basic literature</p> <ol style="list-style-type: none"> 1. Klimpel A.: Technologia spawania i cięcia metali. WNT. Warszawa 1999. 2. Walczak W. (red.): Spawalnictwo. Ćwiczenia laboratoryjne. Wydawnictwo Politechniki Gdańskiej. Gdańsk, 2000. 3. Butnicki S.: Spawalność i kruchość stali. Wydawnictwo WNT. Warszawa 1991. 4. Pilarczyk J., Pilarczyk J.: Spawanie i napawanie elektryczne metali. Wydawnictwo Śląsk, Katowice 1996. 5. Skoblik R., Wilczewski L.: Technologia metali. Laboratorium. 2006. www.wbss.pg.gda.pl 6. Murza-Mucha. K.: Techniki wytwarzania. Odlewnictwo. PWN. Warszawa 1978. 											
	Supplementary literature	<ol style="list-style-type: none"> 1. Poradnik inżyniera - Spawalnictwo. WNT Warszawa 2003. 2. Dobrucki W.: Zarys obróbki plastycznej metali. Wyd. Śląsk 1992. 										
	eResources addresses											
Example issues/ example questions/ tasks being completed	<p>Describe the welding method.</p> <p>Describe the casting method.</p> <p>Describe the method of forming.</p>											
Practical activities within the subject	Not applicable											

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