GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00061830		
Field of study	Management and Production Engineering		
Date of commencement of studies	February 2023	Academic year of realisation of subject	2023/2024
Education level	second-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	4.0
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 hab. inż. Dariusz Fydrych	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	15.0	0.0	0.0	45

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	45	0.0	0.0	45

Subject objectives

The aim of the course is to familiarize students with the issues of weldability of materials.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_K02] is aware of the importance and understanding of non-technical aspects and effects of engineering activities, including its impact on the environment, and the related responsibility for decisions made demonstrates knowledge of actions to reduce risk and anticipate the social impact of engineering and manufacturing activities	Student is able to solve engineering problems	[SK5] Assessment of ability to solve problems that arise in practice
[K7_W01] knows and understands to a greater extent selected issues in the field of management and quality sciences and mechanical engineering, their location in the field of social sciences and engineering and technical sciences, as well as relationships with related disciplines, and sees the possibility of applying the knowledge in practice.	Student can choose the method of joining (welding, resistance welding, soldering) for a group of materials, properties of estimate and develop the technical specification	[SW1] Assessment of factual knowledge
[K7_K01] is aware of the need to expand knowledge and verify the methods of solving problems by consulting experts	The student is able to search for literature data.	[SK4] Assessment of communication skills, including language correctness
[K7_U01] can obtain information from literature, databases and others sources, also in English or another foreign language recognized as the language of international communication in a given engineering discipline; is able to integrate the obtained information, interpret it, as well as draw conclusions and formulate and justify opinions.	The student is able to analyze literature data	[SU3] Assessment of ability to use knowledge gained from the subject

Subject contents	Definition of weldability. Thermal processes in welding. Thermal welding cycle. Cooling time $t_{8/5}$. Welding cracks. Mathods of evaluation of weldability. Weldability of non-alloy, low alloy and high alloy steels. Weldability od aluminium alloys. Weldability od copper alloys. Weldability od titanium alloys. Weldability od plastics. Laboratory: Determining the preheating temperature. Measurements of the diffusible hydrogen amount. Cold cracking. Hot cracking. Assessment of the weldability of alloy steels.
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Written test	60.0%	40.0%
Written test	60.0%	60.0%

Recommended reading	Basic literature	Butnicki S.: Spawalność i kruchość stali. WNT Warszawa 1975. Tasak E.: Spawalność stali. Fotobit Kraków 2002. Węgrzyn J.: Fizyka i metalurgia Spawania. Politechnika Śląska 1990.
	Supplementary literature	Praca zbiorowa. Poradnik inżyniera. Spawalnictwo. Tom 1. WNT Warszawa 2003. Jakubiec M., Lesiński K., Czajkowski H.: Technologia konstrukcji spawanych. WNT Warszawa 1987. Pilarczyk J., Pilarczyk J.: Spawanie i napawanie elektryczne metali. Wydawnictwo Śląsk Katowice 1996.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Describe weldability of heat resistant steel. Describe weldability of stainless steel. Describe weldability of aluminium alloys.	
Work placement	Not applicable	