GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Welding Processes Equipment, PG_00055491		
Field of study	Mechanical Engineering		
Date of commencement of studies	October 2023	Academic year of realisation of subject	2025/2026
Education level	first-cycle studies	Subject group	Optional subject group 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	3	Language of instruction	Polish
Semester of study	5	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Grzegorz Rogalski	
	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	15.0	0.0	60

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	60	4.0	36.0	100

Subject objectives

The aim of the course is to familiarize students with the processes of bonding and cutting construction materials. They will also learn about the construction of devices used in joining processes and the elements of electrical engineering related to this area.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W03] possesses and is able to practically apply the knowledge on the construction, properties and testing methods of construction materials	Based on the input data of the actual bonding and cutting process, the student is able to analyze it properly in order to solve a practical application problem.	[SW3] Assessment of knowledge contained in written work and projects
[K6_U10] is able to formulate the principles of selecting a material for a construction, ensuring the correct operation of a device	The student is able to choose the right bonding and cutting process in relation to the required application, which takes into account various groups of construction materials	[SU3] Assessment of ability to use knowledge gained from the subject [SU5] Assessment of ability to present the results of task

Subject contents

As part of the course, students learn the basic welding and cutting processes such as: MMA, TIG, MIG / MAG, SAW, OAW, brazing and soldering, oxygen cutting, plasma cutting, laser cutting. They learn about the construction of bonding devices and the main fundamental variables of the discussed processes together with elements of electrical engineering.

Prerequisites and co-requisites

Basic knowledge of materials science and electrical engineering is required

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Laboratory	56.0%	30.0%
Project	56.0%	30.0%
Lecture	56.0%	40.0%

Recommended reading	Basic literature	Klimpel A.: Spawanie zgrzewanie i cięcie metali, Wydawnictwo WNT, 2009 Walczak W. i inni: Spawalnictwo ćwiczenia laboratoryjne. Wyd. Politechniki Gdańskiej, Gdańsk, 2000 Ferenc K.: Spawalnictwo. WNT Warszawa 2007. Ferenc K.: Podręcznik spawania. Zagadnienia ogólne. Agencja Wydawnicza SIMP, 2018 Dobaj E.: Maszyny i urządzenia spawalnicze, WNT Wydawnictwa Naukowo-Techniczne, 2014 Pilarczyk J.: Poradnik inżyniera Spawalnictwo Tom 1, Tom 2 Wydanie II, Wydawnictwo: Naukowe PWN, 2017
	Supplementary literature	Tomasz Chmielewski: Projektowanie procesów technologicznych spawalnictwo, Oficyna Wydawnicza Politechniki Warszawskiej, 2013 Jarosław Ferenc, Kazimierz Ferenc: Spawalnicze gazy osłonowe i palne, WNT, Warszawa, 2013
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1. Explain the concept of static characteristics of an arc 2. What is electric arc self-regulation 3. Explain the differences between the various bonding processes (welding, fusing, soldering) 4. What do the abbreviations SAW, TIG, MMA mean? 5. What type of device should be selected for plasma cutting of 5 mm thick stainless steel elements? 6. provide the main fundamental variables for the MIG / MAG welding process. 7. What is the distance of the electric contact to the base material and what is its influence on the welding process. 8. Explain the role of shielding gases.	
Work placement	Not applicable	