GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00058881		
Field of study	Mechanical 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 POLISH
Semester of study	3	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Zakład Technologii Materiałów Konstrukcyjnych i Spajania -> 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	0.0	15.0	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 principles of designing welded structures, including significant variables affecting the weldability of structural materials, welding stresses and strains, and ways to minimize the adverse effects of the welding process. Students learn how to dimension welded joints.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U01] is able to acquire information from specialist literary sources and other sources regarding the construction and operation of machines and related disciplines in polish and in a foreign language, is able to conduct a self-learning process, is able to synthesize the information, form conclusions and justify opinions	The student is able to expand knowledge in the field of welded structures on the basis of available information and tools	[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information
[K7_W11] possesses organized knowledge useful in understanding ex-technical conditioning connected with performing the profession of an engineer and taking it into consideration in engineering practice; possesses well-established knowledge within the range of intellectual property, management and organization of manufacturing processes, including the management and life-cycle of a product	136 / 5 000 Wyniki tłumaczenia Tłumaczenie The student is able to link the normative, operational and manufacturing process management requirements with the structure design cycle.	[SW3] Assessment of knowledge contained in written work and projects [SW2] Assessment of knowledge contained in presentation
[K7_W06] possesses organized, profound knowledge necessary for designing and optimization of complex technological processes, modelling and calculations using numerical methods, knows modern manufacturing methods and tools for designing manufacturing processes of machines, devices, their elements and components	On the basis of the information obtained, the student is able to adapt the existing tools and acquired skills to solve the construction problem	[SW2] Assessment of knowledge contained in presentation

Subject contents	As part of the course, students learn about the factors determining the weldability of construction materials along with their indexes, types of cracks and ways to prevent them, the influence of the welding heat cycle on the properties of joints and welding deformations and stresses, the rules for making joints, including calculations, e.g. using the method of allowable stresses
Prerequisites and co-requisites	Basic information in the field of materials science and the basics of machine construction
Assessment methods and criteria	

Subject passing criteria	Passing threshold	Percentage of the final grade
	56.0%	50.0%
	56.0%	50.0%

Recommended reading	Basic literature	Chmielewski T.: Projektowanie procesów technologicznych spawalnictwo, Oficyna Wydawnicza Politechniki Warszawskiej, 2013 Ferenc J.: Kazimierz Ferenc: Konstrukcje spawane Połączenia, Wydawnictwo Naukowe PWN, WNT, Wydanie 3, 2021 Ferenc J.: Kazimierz Ferenc: Spawalnicze gazy osłonowe i palne, WNT, Warszawa, 2013 Siwek B.: Połączenia spawane, zgrzewane, lutowane i klejone, Wydawnictwo Politechniki Gdańskiej, 2002 Tasak E,: Metalurgia spawania. Wydawnictwo Jak. Kraków, 2008 Normy przedmiotowe
	Supplementary literature	Industry magazines
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1. Explain the influence of the welding process on the formation of welding deformations 2. Characterize the thermal cycle of welding depending on the welding process and the number of passes 3. Give the basic rules for calculating stresses in welded joints with butt and fillet welds 4. Explain the reasons for the formation of cold, hot and lamellar cracks 5. Explain the influence of the welding sequence on the formation of welding distortions 6. Give the methods of preventing welding deformations	
Work placement	Not applicable	