



## Subject card

Subject name and code	Design of welded structures, PG_00058894						
Field of study	Mechanical Engineering						
Date of commencement of studies	February 2024	Academic year of realisation of subject			2024/2025		
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			English		
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. Jacek Tomków				
	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 distortions, and ways to minimize the adverse effects of the welding process.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[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		The student is able to design a structure with welded joints, taking into account existing standards and requirements.		[SW3] Assessment of knowledge contained in written work and projects		
	[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		On the basis of the information obtained, the student is able to adapt the existing tools and acquired skills to solve the construction problem.		[SW1] Assessment of factual knowledge		
[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			

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 effect of the welding thermal cycle on the properties of joints as well as welding deformations and stresses, the rules for performing joints, including calculations.		
Prerequisites and co-requisites	Basic knowledge in the field of materials science, and the machine construction.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	51.0%	51.0%
	Laboratories	51.0%	49.0%
Recommended reading	Basic literature	Hicks J: Welded design. Theory and practise. WOODHEAD PUB. London, 2000.	
	Supplementary literature	Siwek B.: Połączenia spawane, zgrzewane, lutowane i klejone, Wydawnictwo Politechniki Gdańskiej, 2002	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	1. Cracking mechanisms in welded joints. 2. Weldability.		
Work placement	Not applicable		