



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	Part-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	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	dr hab. inż. Grzegorz Rogalski					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	18.0	0.0	0.0	9.0	0.0	27
	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	27	0.0		0.0		27
Subject objectives	Familiarizing students with in-depth information on the characteristics of the work of a welded structure and the shaping of welded joints under the influence of static and dynamic loads. The student is able to apply various methods of dimensioning complex structures operating in various environmental conditions. He is also able to select a material for a welded structure in a systemic manner based on the weldability analysis.						

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	Student on the basis of obtained information can plan construction stages steel and estimate initial production costs.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation
	[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 relate construction aspects, technological, quality control in with respect to manufacturing steel structures based on acquired knowledge and information	[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject
	[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	The student is able to adapt the obtained information existing tools and acquired skills to problem's solution construction	[SW1] Assessment of factual knowledge
Subject contents	Basic concepts and definitions in the field of strength of materials in relation to welded joints. Construction of the welded joint and its marking on the technical drawing. Elastic and plastic deformation of the material under the influence of external load. Relationships between the state of stress and strain. Influence of temperature and type of loads on the behavior of the material. Basic principles of designing welded structures: stress calculation methods, equilibrium conditions, geometrical conditions, physical relationships, allowable stresses. Characteristics of types of welding stresses and strains. Calculation of complex structural joints containing butt and fillet welds.		
Prerequisites and co-requisites	Basic knowledge of mechanics and strength of materials		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Lecture	56.0%	50.0%
	Laboratories	56.0%	50.0%
Recommended reading	Basic literature	1. K. Ferenc, J. Ferenc: Projektowanie konstrukcji spawanych" WNT W-wa 2002 2. Poradnik inżyniera - Spawalnictwo - T 1, WNT W-wa 2003 3. J. Augustyn, E Śledziewski: Technologiczność konstrukcji stalowych Arkady W-wa 1981 4. M. Porebska, A. Skorupa: Połączenia spójnościowe, Wyd. Naukowe PWN W-wa 1997	
	Supplementary literature	Czasopisma techniczne 1. Przegląd spawalnictwa 2. Biuletyn Instytutu Spawalnictwa 3. Welding Journal 4. Metallurgical Transaction	
	eResources addresses	Adresy na platformie eNauczanie: Projektowanie konstrukcji spawanych, W, P, MiBM, Sem.3, niestacjonarne II stopień, Lato 2023/2024 - Moodle ID: 36543 https://enauzanie.pg.edu.pl/moodle/course/view.php?id=36543	
Example issues/ example questions/ tasks being completed	1. Designation of welds in the drawings 2. Methods of dimensioning joints 3. Design of welds - calculation formulas 4. Relations between stresses and strains 5. Principles of selection of materials for welded structures		
Work placement	Not applicable		