



Subject card

Subject name and code	Steel Structures I, PG_00064562						
Field of study	Civil Engineering						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2026/2027		
Education level	first-cycle studies		Subject group				
Mode of study	Part-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		6.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Department of Engineering Structures -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Tomasz Heizig				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	20.0	10.0	0.0	10.0	0.0	40
	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	40		0.0		0.0	40
Subject objectives	Introduction to the production and properties of steel and principles of basic steel members and joints structural design.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U04] Reads and prepares construction documentation (including drawings, graphic documentation in the CAD environment), efficiently uses maps as well as architectural, construction and geodetic drawings.		Knows the main principles of describing steel elements and their connections in construction drawings.		[SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment		
	[K6_W03] Demonstrate knowledge and understanding of the processes, established standards and design methods in the civil engineering subject area and of their limitations.		Knows and is able to use dimensioning procedures specified in standards for the design of steel structures.		[SW1] Assessment of factual knowledge		
	[K6_U03] Design engineering objects and details, processes and engineering systems by applying appropriate standards and methods of design.		Is able to design simple structural elements and their connections according to appropriate standards and methods.		[SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment		
	[K6_W06] Demonstrates practical knowledge and understanding of materials, devices and tools, processes and technologies in the field of civil engineering (and their limitations).		Knows the steel production process and its properties. Knows the product range of steel structures.		[SW1] Assessment of factual knowledge		

Subject contents	Course content – lecture History of building steel structures development. Production and properties of steel. Steel grades and its designations. Production of steel profiles and other steel materials. Limit States in steel structures design. Bolted and riveted joints. Welded joints. Welding methods, welding defects and NDT. Steel sections classification. Tension members. Uniaxial and biaxial bending of steel. Plate girders. Axially and eccentrically compressed columns. Joins xEULS and SLS. Bolt and welded connections. Steel beams and columns. Beam and column joints.		
	Course content – exercises Section classes. Steel tension member. Hole influence on section capacity. Axially compressed steel members. Bending of steel member. Shearing of steel member. Bolt joints. Welded joints.		
	Course content – project Design of a structural system consisting of a column and a steel beam.		
	Design of the connection of steel elements.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written lecture examination	60.0%	40.0%
	written tutorial test	60.0%	40.0%
	design work	60.0%	20.0%
Recommended reading	Basic literature	1. Praca zbiorowa: <i>Budownictwo ogólne. Tom 5</i>, Arkady, Warszawa 2010 2. Łubiński M., Filipowicz A., Żółtowski W.: <i>Konstrukcje metalowe. Część 1</i>. Arkady, Warszawa 2000. 3. Rykaluk K.: <i>Konstrukcje stalowe</i>. Dolnośląskie Wydawnictwo Pedagogiczne, Wrocław 2001. 4. Goczek J., Supel Ł., Gajdzicki M.: <i>Przykłady obliczeń konstrukcji stalowych</i>, Wydawnictwo PŁ, Łódź 2010 5. Praca zbiorowa pod red. A. Kozłowskiego: <i>Konstrukcje stalowe. Przykłady obliczeń według PN-EN 1993-1. Część pierwsza. Wybrane elementy i połączenia</i>, Oficyna Wydawnicza PRz, Rzeszów 2009 6. Praca zbiorowa pod red. A. Kozłowskiego: <i>Konstrukcje stalowe. Przykłady obliczeń według PN-EN 1993-1. Część druga. Stropy i pomosty</i>, Oficyna Wydawnicza PRz, Rzeszów 2011 7. PN-EN 1993-1-1 <i>Eurocode 3: Design of steel structures. Part 1-1: General rules and rules for buildings</i> 8. PN-EN 1993-1-8 <i>Eurocode 3: Design of steel structures. Part 1-8: Design of joints</i>	
	Supplementary literature	1. Bogucki W., Żybertowicz M.: <i>Tablice do projektowania konstrukcji metalowych</i>. Arkady, Warszawa 2007.	
	eResources addresses		

Example issues/ example questions/ tasks being completed	1. ULS and SLS verification of the simply supported beam made of hot-rolled I-section. 2. ULS verification of the axially compressed RHS column. 3. ULS verification of the overlapping bolted joint of three flat bars. 4. ULS verification of the welded joint between the cantilever beam and column.
Practical activities within the subject	Not applicable

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