GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00064180		
Field of study	Civil Engineering		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2024/2025
Education level	first-cycle studies	Subject group	
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	5.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Department of Engineering Structures -> Faculty of Civil and Environmental Engineering		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Aleksander Perliński	
	Teachers	dr inż. Natalia Korcz-Konkol mgr inż. Arkadiusz Jenta mgr inż. Paweł Pieczka dr inż. Tomasz Heizig dr inż. Aleksander Perliński dr inż. Witold Knabe dr hab. inż. Piotr Iwicki	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	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	0.0	0.0	60

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.	Can perform static calculations and dimensioning of the simple steel members and joints.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
[K6_U03] Design engineering objects and details, processes and engineering systems by applying appropriate standards and methods of design.	Can design simple steel members (beams and columns) and their joints using EC3 codes.	[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools
[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 fields of application of steel in civil engineering	[SW1] Assessment of factual knowledge
[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 the methods relating to simple steel members and joints design	[SW3] Assessment of knowledge contained in written work and projects

Subject contents

Lectures: History of building steel structures developement. 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 coluns. Joins xeULS and SLS. Bolt and welded connections. Steel beams and columns. Beam and column joints.

Tutorials: 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.

Project: Two design exercises relating to simple joints and simple steel members

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
design exercises	60.0%	20.0%
written lecture examination	60.0%	50.0%
written tutorial test	60.0%	30.0%

Recommended reading	Basic literature	1. Praca zbiorowa: *Budownictwo ogólne. Tom 5*, Arkady, Warszawa 2010 2. Łubiński M., Filipowicz A., Żółtowski W.: *Konstrukcje metalowe. Część 1.* Arkady, Warszawa 2000. 3. Rykaluk K.: *Konstrukcje stalowe.* Dolnośląskie Wydawnictwo Pedagogiczne, Wrocław 2001. 4. Goczek J., Supeł Ł., Gajdzicki M.:*Przykłady obliczeń konstrukcji stalowych*, Wydawnictwo PŁ, Łódź 2010 5. Praca zbiorowa pod red. A. Kozłowskiego: *Konstrukcje stalowe. Przykłady obliczeń według PN-EN 1993-1. Część pierwsza. Wybrane elementy i połączenia*, Oficyna Wydawnicza PRz, Rzeszów 2009 6. Praca zbiorowa pod red. A. Kozłowskiego: *Konstrukcje stalowe. Przykłady obliczeń według PN-EN 1993-1. Część druga.Stropy i pomosty*, Oficyna Wydawnicza PRz, Rzeszów 2011 7. PN-EN 1993-1-1 *Eurocode 3: Design of steel structures. Part 1-1: General rules and rules for buildings* 8. PN-EN 1993-1-8 *Eurocode 3: Design of steel structures. Part 1-8: Design of joints*
	Supplementary literature	1. Bogucki W., Żyburtowicz M.: *Tablice do projektowania konstrukcji metalowych*. Arkady, Warszawa 2007.
	eResources addresses	Adresy na platformie eNauczanie: Konstrukcje Metalowe I (2024/25) - Moodle ID: 38581 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=38581
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 axialy 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.	
Work placement	Not applicable	

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