GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00062955		
Field of study	Civil Engineering		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
Education level	first-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	4	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
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. Dariusz Kowalski	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	0.0	0.0	0.0	30.0	0.0	30

E-learning hours included: 0.0

Additional information:

1. Practical Projects and Calculations: During classes, students can work on structural projects using steel as the material. They can design and calculate steel elements such as beams, columns, and girders, as well as entire structures. This will help them understand how constructions evolve from the idea stage to final realization.

2. Laboratories and Workshops: Organize practical labs and workshops where students work with real steel elements. They can learn techniques like welding, cutting, bending, assembly, and joining. Understanding corrosion phenomena is also essential. This hands-on experience will equip them with manual skills and insights into steel processing.

3. Computer Simulations: Introduce students to software tools for simulating steel structures. They can model different scenarios, analyze their impact on strength and behavior, and explore various load conditions.

4. Construction Site Visits: Arrange visits to construction sites where students can observe steel utilization in practice. They can witness the assembly process, quality control, and other aspects related to steel structures.

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	30	0.0	0.0	30

Subject objectives

The subject is intended to provide students with practical knowledge of metal structures. Cognitive aspects of the subject include: material tests, corrosion tests, issues of assembly and disassembly of structures, implementation of a structural design, destructive analysis, computer simulations, safety and standards.

Students develop the ability to work in teams on posed problems and verbally present their thoughts and ideas to the group. They acquire manual skills in using the material and tools for its processing as well as basic experimental research.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_K02] Can work effectively in a group, as well as function in teams, which may consist of representatives of various branches and levels.	The student performs tasks assigned as part of a project implemented by the team. Performs and/or coordinates assigned tasks together with members of the implementation team.	[SK1] Assessment of group work skills [SK2] Assessment of progress of work [SK3] Assessment of ability to organize work [SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice
[K6_U05] Conducts research (obtaining information, simulations, experimental methods) in the field of construction in order to solve specific tasks and report research results.	The student performs practical issues in the field of metal structures based on real materials. Able to use basic research equipment. He can use metal processing tools.	[SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment
[K6_K03] Can effectively, clearly and unambiguously convey information, describe activities and communicate their results/ outcomes to engineers or a wider audience using appropriate communication methods and tools.	The student is able to plan work and prepare a simple executive project containing: a description and a graphic part. Uses appropriate methods of presenting data and requirements.	[SK3] Assessment of ability to organize work [SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice
[K6_W05] Demonstrate knowledge and understanding of research methods (obtaining information, simulations, experimental methods) in the field of civil engineering.	The student is able to identify an engineering problem and propose a way to solve it. Knows what parameters are needed to describe the issue.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects

Subject contents

Course content – project
Practical classes in the "Hands on Engineering" module of the subject: "Experimentation in metal structures". The main goal of the course is teamwork in conducting experimental tasks related to metal materials. The classes include the following thematic modules:

1. Corrosion of metals.
2. Stability of bar elements under load.
3. Designing a simple volume structure.
4. Creation of a real structure using available materials and a group-developed project
5. Lift the weight. Getting to know the problems of assembling steel structures - simple machines and modern assembly devices
6. Implementation of screwed and welded connections in metal elements.
7. Construction of a composite ceiling/beam/column structure
8. Construction of spatial models of hall facilities.

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Design of a cubature facility	80.0%	20.0%
Construction of a cubature facility	80.0%	30.0%
Experimental study - Corrosion	60.0%	10.0%
Experimental study - member stability	60.0%	10.0%
Experimental classes - Lift the weight	60.0%	10.0%
Participation in classes	80.0%	20.0%

Recommended reading	Basic literature	1. Structure design standards of the Eurocode 3 series - Metal Structures 2. Literature on metal building structures
	Supplementary literature	Thematic film materials available on online platforms
	eResources addresses	
Example issues/ example questions/ tasks being completed	1. Preparation of an executive design for a simple and small structure consisting of bar elements and typical cladding materials 2. Implementation of a large-scale structure based on bar and cladding elements. 3. Testing of elements subjected to corrosion 4. Experiments with bar compression elements 5. Construction of a composite structure	
Practical activites within the subject	Not applicable	

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