GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00069290		
Field of study	Konstrukcje metalowe - projekt zaawansowany		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2025/2026
Education level	first-cycle studies	Subject group	Optional subject group
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	4	Language of instruction	Polish
Semester of study	7	ECTS credits	2.0
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 hab. inż. Piotr Iwicki	
	Teachers	dr inż. Aleksander Perliński	

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

eNauczanie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=2266

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	2.0	18.0	50

Subject objectives

The aim of the course is to perform static calculations and spatial dimensioning of the hall model. The construction drawing will be created in AutoCAD and then exported to the ROBOT Autodesk Structural Analysis program. In this program, a geometric model (bars, supports, releases) as well as cladding and structural loads will be created. The structure will then be dimensioned. Selected structural nodes will also be dimensioned. After these analyses, the stiffness of selected nodes will be verified or corrected. Finally, the results of the calculations and dimensioning will be compared with the corresponding results for flat models.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W06] Demonstrates practical knowledge and understanding of materials, devices and tools, processes and technologies in the field of civil engineering (and their limitations).	The student has knowledge of the limitations in the construction of structural models.	[SW1] Ocena wiedzy faktograficznej
[K6_W07] Understand the investment's impact on the environment and the interrelationships and dependencies between the building structure and the natural environment	The student has knowledge of the need for economical structural design.	[SW1] Ocena wiedzy faktograficznej
[K6_K01] Is aware of the key aspects of professional, ethical and social responsibility related to management, business operation, decision making and opinion formulation in civil engineering.	The student has knowledge related to structural safety risks.	[SK2] Ocena postępów pracy
[K6_U06] Conduct engineering activities in civil engineering subject area, using and applying practical knowledge and understanding of materials, equipment and tools, processes and technologies.	The student is able to build a numerical model of a spatial steel bar structure in the ARSA program and perform static calculations and dimensioning of its elements.	[SU1] Ocena realizacji zadania [SU3] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu
[K6_U07] Design and build engineering structures in a sustainable manner, with care for the natural environment and a minimum carbon footprint	The student has knowledge of the need for economical structural design.	[SU1] Ocena realizacji zadania

Subject contents

Course content – project

Construction of a spatial calculation model of a steel hall, performing static calculations and dimensioning of selected elements:
construction of a spatial structural system, defining supports, exemptions, loads and their combinations, and dimensioning of hall members.

Prerequisites and co-requisites

knowledge of the basics of metal structure design:
metal structures I and II

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
defense of the project	60.0%	100.0%

Recommended reading

Basic literature

1. Rykaluk K.: Zagadnienia stateczności konstrukcji metalowych, DWE, Wrocław, 2012
2. Pałkowski Sz.: Konstrukcje stalowe. Wybrane zagadnienia obliczania i projektowania. PWN, Warszawa 2010.
3. Pałkowski Sz.: Podstawy stateczności stalowych konstrukcji prętowych. Wydawnictwo Uczelniane Politechniki Koszalińskiej, Koszalin 2016.
4. Falborski T., Knabe W., Perliński A., Urbańska-Galewska E.: Wybrane zagadnienia projektowania stalowych konstrukcji prętowych z wykorzystaniem programu Autodesk Robot Structural Analysis. Wydawnictwo PG, Gdańsk 2019.
5. PN-EN 1993-1-1 Eurokod 3: Projektowanie konstrukcji stalowych. Część 1-1: Reguły ogólne i reguły dla budynków
6. PN-EN 1993-1-6 Eurokod 3: Projektowanie konstrukcji stalowych. Część 1-6: Wytrzymałość i stateczność konstrukcji powłokowych
7. PN-EN 1993-1-8 Eurokod 3: Projektowanie konstrukcji stalowych. Część 1-8: Projektowanie węzłów
8. PN-90/B-03200 Konstrukcje stalowe. Obliczenia statyczne i projektowanie

	Supplementary literature	Current research issues concerning the load-bearing capacity of steel hall structure elements on the website of the Gdańsk University of Technology library
	eResources addresses	
Example issues/ example questions/ tasks being completed	Present a comparison of internal forces in a spatial and 2D model of a hall. Present a comparison of the load-bearing coefficient of the basic elements of a hall in a spatial and 2D model.	
Practical activites within the subject	Not applicable	

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