GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00071084		
Field of study	Civil Engineering		
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	Part-time studies	Mode of delivery	at the university
Year of study	4	Language of instruction	Polish
Semester of study	8	ECTS credits	4.0
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. Arkadiusz Sitarski	
	Teachers	dr inż. Arkadiusz Sitarski mgr inż. Maciej Malinowski	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	20.0	0.0	0.0	20.0	0.0	40

E-learning hours included: 0.0

eNauczanie source address: https://enauczanie.pg.edu.pl/2025/course/view.php?id=5319

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

The aim of the course is to familiarize students with a specific group of bridge structures made of both steel and concrete.
In particular, the course will present beam and slab concrete structures, as well as structures made of precast concrete elements.
The lectures on steel bridges will mainly cover small and medium-sized bridges, as well as pedestrian footbridge structures.

The aim of the course is to carry out a design project of a composite steelconcrete bridge.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[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.	Not applicable	[SK3] Assessment of ability to organize work
[K6_U05] Conducts research (obtaining information, simulations, experimental methods) in the field of construction in order to solve specific tasks and report research results.	Not applicable	[SU1] Assessment of task fulfilment [SU3] Assessment of ability to use knowledge gained from the subject
[K6_W03] Demonstrate knowledge and understanding of the processes, established standards and design methods in the civil engineering subject area and of their limitations.	The student is able to use standards in the basic scope of designing bridge structure cross-sections.	[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects
[K6_K04] Engages in independent lifelong learning and individually follows the development of science and technology in the field of civil engineering.	Not applicable	[SK1] Assessment of group work skills
[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 identify the type of bridge structure and present the main actions affecting it, including long-term and short-term loads. The student is also able to assess whether the given structure is dynamically sensitive. The student is able to identify the static schemes of bridge structures. The student can determine the tools necessary to calculate internal forces in various types of structures.	[SK2] Assessment of progress of work [SK1] Assessment of group work skills

Subject contents

Course content – lecture
Lectures on Concrete Structures Cover slab and beam bridges, as well as bridge supports, including abutments and piers.
Lectures on Steel Bridges Cover plate girder structures and small-span bridges with orthotropic decks; truss structures; composite structures, including prefabricated composite girders; and methods for connecting steelconcrete composite structures.

Course content – project
Identification of actions affecting the structure.
Determination of internal forces in the specified steelconcrete grillage, taking into account the construction technology.
Determination of stress magnitudes resulting from quasi-static loads, rheological effects (creep and shrinkage), and temperature differences between steel and concrete.

Prerequisites and co-requisites

Has knowledge of calculation procedures for steel and concrete cross-sections.
Is familiar with methods of determining internal forces using analytical approaches and basic engineering software for the analysis of frame and beam (3D) structures.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Project	60.0%	25.0%
Project test	51.0%	25.0%
Lecture, exam	51.0%	50.0%

Recommended reading

Basic literature	1) Koreleski J. Zespolone Konstrukcje Mostowe. PWN Warszawa-Kraków 1967 2) Karlikowski J. Madaj A. Wołowicki W. Mostowe konstrukcje zespolone WKŁ 3) Karlikowski J. Madaj A. Wołowicki W.: Mosty zespolone stalowo-betonowe. Zasady projektowania PN-EN 1994-2 WKŁ 2015 4) Siwowski T> Turoń B. Projektowanie mostów zespolonych według Eurokodu 4. Rzeszów 2016
Supplementary literature	1) Ryżyński A i inni Mosty Stalowe, PWN Warszawa-Poznań 1984 2) Kazimierz Furtak: Mosty Zespolone PWN 1999 2) Madaj A., Wołowicki W.: Budowa i utrzymanie mostów. WKiŁ, Warszawa 1995 3) Franciszek Szelągowski Mosty metalowe część i i II WKŁ Warszawa 1966
eResources addresses	

Example issues/ example questions/ tasks being completed	Determination of internal forces in a grillageslab bridge structure. Determination of stresses resulting from quasi-static loads and from effects related to concrete creep and shrinkage, as well as temperature-difference impacts. Presentation of equipment and ancillary components used in road bridges. Able to sketch the structure of bridge supports and their elements.
Practical activites within the subject	Not applicable

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