SYLLABUS

Course title: Industrial Structures Design

Course title (in Polish): Projekt z Budownictwa Przemysłowego

The syllabus is valid since the summer semester of the academic year 2025/26 and its content is not subject to changes during the semester.

Course details:

Unit offering the course: Faculty of Civil Engineering

Course designated for the unit: The Silesian University of Technology

Specialization: Structural Engineering

Didactic cycle: Summer semester 2025/2026 - the first year of second degree studies

Coordinator of the course: Leszek Szojda

Delivery mode: in-person/~~hybrid~~

Number of ECTS credits: 4

Language:
English

Course homepage:
https://platforma.polsl.pl/rb/course/view.php?id=896

Prerequisites :
Passing semester 5 subjects: Structural Mechanics, Concrete Structures, Metal Structures, Masonry and Timber Structures, Special Structures, Foundations

Short description:
The course aims to prepare students for independent design work. The course provides skills related to the design of selected industrial structures using computer-aided modelling (CAD, FEM).

Description:
TOTAL NUMBER OF TEACHING HOURS: 45h LECTURE: 0h PRACTICAL CLASSES: 0h PROJECT: 45h LABORATORY: 0h The project focuses on a partially submerged water tank. The student's tasks include: conducting a literature review of the solutions used, adopting initial assumptions, compiling load calculations, preparing FEM and analytical models, performing calculations, interpreting the results, selecting reinforcement, verifying the ultimate limit state and serviceability limit state, and preparing

documentation in the form of a technical description, including static and strength calculations, as well as structural drawings of the tank using CAD technology. The project also involves comparing the results of the analytical calculations with the FEM results and critically interpreting them.

Bibliography:

• Halicka A., Franczak D.: „Projektowanie zbiorników żelbetowych. Zbiorniki na ciecze". PWN Warszawa 2010
• Kobiak J., Stachurski W.: „Konstrukcje żelbetowe, t. IV". Arkady 1991
• PN-EN 1991-4: „Eurokod 1 - Oddziaływanie na konstrukcje - Część 4: Silosy i zbiorniki". PKN, Warszawa 2008
• PN-EN 1992-3: „Eurokod 2 - Projektowanie konstrukcji z betonu - Część 3: Silosy i zbiorniki na ciecz". PKN, Warszawa 2008

Learning outcomes:

- K1A_U02 – Student can perform the load combination and the standard load combination for the industrial structures with relevant design situation at the limits state.
- K1A_U03 – Student can define computational models of computer analysis of industrial structure, simulate various construction variants, as well as critically evaluate of these results.
- K1A_U04 – Student can size selected structural elements and design simple metal, RC composite, timber and masonry structures, as well as simple foundation and structural elements for industrial structures.
- K1A_U07 – Student can read architectural, construction and geodetic drawings and prepare graphical documentation in the environment of selected CAD and BIM software.
- K1A_K03 – Student is present to critical evaluation of knowledge and recognition of the importance of knowledge in solving cognitive and practical problems, developing language skills and formulating expert opinions on technical and technological processes carried out in the construction industry.

Assessment methods and assessment criteria:

Course Passing Requirements:
Project: Preparation and submission of a paper project (or alternatively, uploading PDF files of the project to the submission task on the distance learning platform).
Course Passing Criteria: Submitting and presenting a project work that meets the specified requirements of the project task.

Requirements for transferring a course grade:
Personal application for transferring the course must be submitted within the first two weeks of the semester.

Description of the ECTS calculation method:

Type of activity	Number of hours
Number of class hours, regardless of the delivery mode	45
Student's individual work 1[*] - *literature review*	10
Student's individual work 2[*] - *project consultations out of classes*	5
Student's individual work 3[*] - *preparation of projects*	40
Student's individual work 4[*] - *preparation for a project defence*	8
Other[**]	-
Total hours	108
Number of ECTS credits assigned to the course	4

Legend: