

SYLLABUS

Name: Urban, Industrial and Transportation Structures (BudAB>SI4URINTS19)

Name in Polish:

Name in English: Urban, Industrial and Transportation Structures

Information on course:

Course offered by department: Faculty of Civil Engineering
Course for department: Silesian University of Technology
Term: Summer semester 2025/2026
Cordinator of course edition: Prof. dr hab. inż. Leszek Szojda

Default type of course examination report:

ZAL

Language:

English

Course homepage:

<https://platforma2.polsl.pl/rb/course/view.php?id=756>

Short description:

Urban Structures - overview of structures in buildings; introduction to contemporary concepts in the design of modern cities.

Industrial Structures - general information about mines, power plants, industry of settings materials, car parks and industrial halls.

Transportation Structures - overview of structures used in ground transportation, air transportation and water transportation infrastructure.

Description:

The subject consists of two different activities - lectures and project. The lectures are divided into two parts: Urban and transportation structures (U&TS), and Industrial structures (IS) The course ends with tests (U&TS + IS) and preparation of the project with final defence.

Final mark is composed of three parts: results of U&TS test 35%; results of IS test 35%; project with its defence 30%.

Student workload for passing the exam:

- participation in lectures (U&TS + IS) 15h;
- participation in project 10h;
- participation in tests 2h;
- student's own work 27h;

The total work of the student is 54h;

Number of ECTS credits 2

Course content:

Lectures:

Urban Structures - overview of structures in buildings: from single-family housing, through high-rise buildings and skyscrapers to open-plan, large-span hall buildings; introduction to contemporary concepts in the design of modern cities: sustainability in construction industry, smart cities – smart building and smart structures, biomimicry in civil engineering, Building Information Modelling.

Industrial Structures - general overview of industrial facilities principles, description of basic concepts connected to surface and underground mines as well as offshore platforms. Information about power plants: conventional, nuclear and hydro. General overview about cement plants, ironworks and brickyards. Basic information about car park and industrial hall.

Transportation structures - overview of structures used in ground transportation (bridges, tunnels, culverts, retaining walls), air transportation (design of commercial aerodromes) and water transportation (natural vs artificial waterways and structures in navigation infrastructure, design of passenger and freight port).

Bibliography:

- Varyani U. H.: Structural Design of Multi Storeyed Building – Standard Publication-Dehli; 2014
- Zalka K.: Structural Analysis of Multi-Storey Buildings – CRC Press; 2020
- Jürgen A., Hausmann K., Jüttner F.: Industrial Buildings (Design Manual) – Birkhäuser Architecture; 2004
- El-Reedy M. A.: Construction Management and Design of Industrial Concrete and Steel Structures – CRC Press; 2010
- Weyer J., Baragaño S.: Industrial building Planning and Design – Design Media Publishing (UK) Limited; 2014
- Unsworth J. F.: Design and Construction of Modern Steel Railway Bridges – CRC Press; 2014
- Mann C.: Prestressed Concrete Bridges – Springer, Basel; 2011
- Neufert E. and Neufert P.: Architects' Data, 4th ed. Wiley-Blackwell, 2012

Learning outcomes:

- K1A_W05 - Student knows and understands general principles of construction, dimensioning, strengthening and repair of construction elements
- K1A_W06 - Student knows and understands standard and guidelines for design of selected general and industrial buildings, as well as road and rail transport infrastructures facilities
- K1A_U01 - Student can classify the construction work
- K1A_U02 - Student can perform the load combination and the standard load combination for the construction works in accordance with relevant design situation at the limits state
- 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 in bridges/communication structures

Assessment methods and assessment criteria:

Prerequisites:

Passing the subjects from semester 3: Engineering Geology and Soil Mechanics; Structural Mechanics; Concrete Structures; Masonry & Timber Structures

Course Passing Requirements:

A pass mark will be issued after receiving positive marks of U&TS and IS tests and preparation of the project. The tests are conducted in writing, in the case of direct contact in the form of open answers, and in the case of remote classes, in the form of a test. In order to obtain a positive evaluation, it is necessary to obtain a minimum of 50% positive answers. Final mark is composed of three parts: results of U&TS test 35%; results of IS test 35%; project with its defence 30%.

Requirements for transferring a course grade:

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

The syllabus is effective from the 2025/2026 summer semester. Its content is subject to change during the semester.

Information on course edition:**Default type of course examination report:**

EGZ

Bibliography:

missing bibliography in English

Details of classes and study groups

lecture (15 hours)

Study groups details

missing study groups details

project (10 hours)

Study groups details

missing study groups details

Element of course groups in various terms:

Course group description	First term	Last term
<i>missing group description in English (BudAB-S1-2019-sem4)</i>	2020/2021-L	

Course credits in various terms:

<without a specific program>			
Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	2	2020/2021-Z	