

# SYLLABUS

Name: Steel Structures (BudAB>SI4STEELS19)

Name in Polish:

Name in English: Steel Structures

## Information on course:

Course offered by department: Faculty of Civil Engineering  
Course for department: Silesian University of Technology

### Default type of course examination report:

ZAL

### Language:

English

### Course homepage:

<https://platforma2.polsl.pl/rb/course/view.php?id=306>

### Short description:

The aim of the subject is to present major information from steel structures technology, teach of designing of the basic steel elements and steel civil engineering structures  
Characteristics of steel structures. Types of steel products. Mechanical properties of steel. Steel marking system. Classification of sections. Plastic reserve of the cross-section. Local stability. Elements bent, shear, compression, stretching. Connections in steel structures.

### Description:

LECTURES: 23 hours

Characteristics of steel structures. Advantages and disadvantages of steel as a construction material. Some examples of realizations. Charakterystyka konstrukcji stalowych. Steel production technology overview - some issues related to metallurgical process connected with steel properties. Manufacture and types of steel products Mechanical properties of steel (tensile graphs). Fatigue. Weldability and fragility steel. Grades of steel, their marking and use. Methods of dimension of steel structures. Limit states Plastic reserve: section and system Beams and plate girders. Bending, shear and twisted resistance of elements. Lateral buckling. Local stability. The phenomenon, calculation models, the coefficients of local instability. Tensile elements. compressed elements. Buckling resistance. Buckling characters. Bolted joints. Lap joints. End-plate joints – examples. Welded joints. Technology of welded joints Types and destiny of electrodes. Designation of joints. Types of welded joints. Design requirements. Selected disadvantages of welded joints. Calculations calls on fillet and but welds according to EC3.

CLASSES: 2 hours

Calculation of welded and bolted connections.

PROJECT: 20 hours

Construction of a steel floor, located in an industrial building. It includes the calculation of static-strength rolled beams, plate girder and column in option one and double branch and construction of connections, stiffeners, head and base plate. Design drawings (scale of 1:10)

### Bibliography:

[1] Basiński W: Calculation of the steel floor. Gliwice 2022.

[2] EN 1993-1-1:2006 Eurocode 3: Design of steel structures. Part 1-1: general rules and rules for buildings.

[3] EN 1993-1-5:2008 Eurocode 3: Design of steel structures. Part 1-5: Plated structural elements .

[4] EN 1993-1-8:2006 Eurocode 3: Design of steel structures. Part 1-8: Design of joints.

[5] EN 1991-1-1:2004 Eurocode 1: Actions on structures. Part 1-1: General actions - Densities, self-weight, imposed loads for buildings.

[6] EN 1990 2001 Eurocode - Basis of structural design.

### Learning outcomes:

KNOWLEDGE

(1) Student knows the principles of mechanics and analysis of bar structures in the field of statics, dynamics and stability and knows selected computer programs supporting the calculation and design of structures - [directional effect K1A\_W05].

(2) Student knows the standards and guidelines for the design of buildings and their components - [directional effect K1A\_W06].

SKILLS

(3) Student is able to assess and make a statement of loads acting on building objects - [directional effect K1A\_U02].

(4) Student is able to perform static analysis of statically determinate and indeterminate bar structures - [directional effect K1A\_U04].

### Assessment methods and assessment criteria:

Prerequisites: No requirements

Requirements for passing the course:

1) Attendance at classes (may be monitored)

2) Defense of the completed project.

3) The final grade for the Steel Structures is the value of 60% of the grade for the lecture content and 40% of the grade for the project classes.

In order to have partial grades rewritten, students should contact the instructor within the first two weeks of the semester.

The syllabus is valid from the summer semester of the 2025/2026 academic year, and its content is not subject to change during the semester.

### Element of course groups in various terms:

Course group description	First term	Last term

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

**Course credits in various terms:**

<b>&lt;without a specific program&gt;</b>			
Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	4	2020/2021-Z	