

Tadeusz Kosciuszko Cracow University of Technology

Course Card

Faculty of Civil Engineering

Field of study: Civil Engineering

Study profile: general academic

Study form: full-time

Field of study code: BUD

Study cycle: 1st

Specialty: no specialty

1 COURSE INFORMATION

Course name	Konstrukcje metalowe
Course name in English	Metal Structures
Course code	WIL BUD oIS C42 24/25
Course category	Basic
No. of ECTS points	7.00
Semester	5 and 6

2 CLASS TYPE, NUMBER OF HOURS ACCORDING TO THE STUDY PLAN

Semester	Lecture	Class exercise	Laboratory	Computer lab	Design exercise	Seminar
5	30	0	15	0	15	0
6	15	0	0	0	30	0

3 COURSE OBJECTIVES

Objective 1 To acquaint the students with system of European standards for the design and manufacture of metal structures

Objective 2 To acquaint the students with procedures of dimensioning and execution of simple structural systems: beams, columns and one-level frames

Objective 3 To acquaint the students with issues of dimensioning and execution of joints and connections of steel members

Objective 4 To prepare the students to scientific research

4 PREREQUISITES IN TERMS OF KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1 Issues of the full course of Strength of Materials and the first semester of Structural Mechanics

5 LEARNING OUTCOMES

LO1 Knowledge Individual supplementing and expanding knowledge of metal structures.

LO2 Knowledge of standards for the design of steel bar structures under static loads.

LO3 Knowledge Development of a structure model, load statement, interpretation of FEM program results, load capacity verification based on standards.

LO4 Skills Basic information on the design of aluminum structures.

6 COURSE CONTENT

Design exercise		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
P1	Design of steel roof made on lattice girders, purlins and bracings	15
P2	Design of technological platform made of hot-rolled I-beams	15
P3	Design of a single-bay workshop hall without gantries, made of hot-rolled I-beams	15

Lecture		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
L1	Metallurgical processes, selected issues of metallurgy of steel and aluminum, steel and aluminum products	2
L2	Mechanical properties of structural steels and aluminum alloys used in Civil Engineering	2
L3	Introduction to Eurocodes	2
L4	Cross-section classes of steel members	2
L5	Stability of simple steel members	2
L6	Imperfections in steel structures	2

Lecture		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
L7	Corrosion protection and fire protection of steel structures	2
L8	Rules for shaping of steel structures	4
L9	Lattice girders	2
L10	Bracings in steel structures	2
L11	Steel beams	4
L12	Steel columns	2
L13	Introduction to issues of joints and connections in steel structures	2
L14	Stiffness of steel joints	2
L15	Welds	4
L16	Welded and bolted joints and connections	9

Laboratory		
No.	Subject matter of the course Detailed description of thematic blocks	No. of class hours
L1	Geometrical characteristics of hot-rolled steel members	3
L2	Geometrical characteristics of welded steel and aluminum I-beams	3
L3	Tests of mechanical characteristics of steel and aluminum	5
L4	Microcrystalline structure of steel and aluminum	2
L5	Non-destructive testing of weld quality	2

7 TEACHING TOOLS

N1 Design exercises

N2 Lectures

N3 Consultations

N4 Work in groups

N5 Multimedia presentations

8 Student workload

Activity form	Number of hours of activity
Hours realized in contact with the teacher	
Hours resulting from the study plan	105
Consultation hours	10
Exams and tests during session	20
Hours of autonomous student work	
Preparing for classes, studying literature	30
Developing results	30
Preparing of reports, projects presentations, discussion	15
Total number of hours devoted to the subject	210
Total number of ECTS points	7.00

9 Methods of grading

Partial grades

F1 Individual design projects

F2 Reports from laboratories

Summary grade

P1 Exam

Conditions for passing the course

L1 All individual projects completed at least 3.0 (E)

L2 Exam completed at least 3.0 (E)

L3 All reports from laboratories completed at least 3.0 (E)

Assessment of activity without teacher participation

B1 Individual projects

B2 Reports from laboratories
