COURSE DESCRIPTION CARD - SYLLABUS

Course name
Metal structures III [N1Bud1>KMET3]

Course

Field of study
Civil Engineering

Year/Semester
4/8

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
polish

Form of study
part-time

Requirements
elective

Number of hours

Lecture
12

Laboratory classes
0

Other (e.g. online)
0

Tutorials
0

Projects/seminars
20

Number of credit points

6,00

Coordinators

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Lecturers

Prerequisites

Basic knowledge of the strength of materials and building mechanics, descriptive geometry, basics of construction, basics of metal structures The ability to obtain information from the indicated sources, e.g. standards, manuals. Ability to use basic design aiding software. Ability to prepare simple project documentation. Awareness of the need to expand one"s competences and take serious responsibility in future professional work.

Course objective

Acquiring skills in the practical design (construction and dimensioning) of steel hall structure elements (lattice trusses, purlins, bracings, columns) using 2D and 3D numerical models and BIM elements.

Course-related learning outcomes

Knowledge:
KB_W01 have the basics of general knowledge in mathematics, physics, forming theoretical principles appropriate to formulate and solve tasks related to building engineering. P6S_WG (O)
KB_W05 have advanced knowledge of construction theory and analysis of bar systems in the field of statics, dynamics, and stability. P6S_WG (I)

KB_W09 know the rules of constructing and analysing civil engineering, P6S_WG (I)
KB_W11 have basic knowledge of the operation of algorithms used in selected software (including applications of BIM technology) supporting calculations, design of building structures . P6S_WG (O/I)

Skills:
KKB_U02 are able to use advanced information and communication technologies (ICT) appropriate to perform typical engineering tasks. P6S_UW (O/I)
KB_U06 can prepare statements of strengths influencing the building units and perform static analysis of statically determinate and non-determinate bar structures; can determinate natural frequency for simple bar structures. P6S_UW (I)
KB_U09 are able to use modern software supporting the design decisions in building engineering, including programs based on the BIM technology; are able to critically estimate the results of numerical analysis of building facilities. P6S_UW (O/I)

Social competences:
KB_K01 are able to adapt to new and changing circumstances, can define priorities for performing tasks assigned by themselves and by other people, acting in the public interest and with regard to the purposes of sustainable development P6S_KK (O)
KB_K03 are ready to autonomously complete and broaden knowledge in the field of modern processes and technologies of building engineering. P6S_KR (O)
KB_K04 understand the need of team work, are responsible for the safety of their own work and team's work. P6S_KR (O)

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Credit for the lecture and design exercises on the basis of:
- substantive evaluation of the prepared 2D and 3D numerical model of the hall
- systematic work (entries in the consultation card and attendance at classes and lectures),
- formulated conclusions from the conducted analyzes (written and oral form)

Programme content

Introduction to 2D and 3D modeling in the standard engineering software Robot or AxisVM or others available.
Getting to know BIM elements in steel structures.
Ability to draw conclusions from comparing 2D and 3D analyzes

Teaching methods

Information lecture with a multimedia presentation on numerical modeling of halls in the area of 2D and 3D
Design exercises: preparation of a 2D and 3D model of a steel hall. Conducting static and buckling analyzes and formulating appropriate practical conclusions.

Bibliography

Basic
1. PN-EN 1990 Podstawy projektowania konstrukcji
2. PN-EN 1991-1 Oddziaływania na konstrukcje
3. PN-EN 1993-1 Projektowanie konstrukcji stalowych
Additional
1. Tutoriale programów Robot i AxisVM 3.

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	38	1,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	62	2,50