COURSE DESCRIPTION CARD - SYLLABUS

Course name
Timber structures [N1Bud1>KD]

Course

Field of study
Civil Engineering

Year/Semester
4/7

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
20

Laboratory classes
0

Other
0

Tutorials
10

Projects/seminars
10

Number of credit points

4,00

Coordinators

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Lecturers

Prerequisites

KNOWLEDGE: The student starting this subject should have knowledge of mathematics, physics, chemistry, strength of materials and mechanics of buildings. He should also have the ability to obtain information from the indicated sources and be ready to cooperate as part of the team. SKILLS: A student starting this course should have the ability to obtain information from the indicated sources, interpret them, draw conclusions, formulate and justify opinions and be ready to cooperate as part of a team. SOCIAL COMPETENCES: A student starting this subject should be aware of the responsibility for the reliability of the results of his / her work and their interpretation, should be ready to independently supplement and expand knowledge in the field of construction, and should be aware of the need to increase professional and personal competences and understand the need for continuous training out.

Course objective

The aim of the course is to familiarize students with the following issues: the anatomical structure of wood, elastic and strength properties of wood, carpentry joints, mechanical joints, glued joints, methods of designing joints in wooden structures, methods of designing and dimensioning elements of wooden structures, beam structures, rafter rafter framing structures , collar beams, purlin-tongs, and trusses.

Course-related learning outcomes

Knowledge:
1. Student know building legislation, Polish standards (PN) and European standards (EN), technical conditions of constructing building facilities, as well as basic ideas and rules in the field of intellectual and industrial property protection.
2. Student knows detailed rules of constructing and dimensioning elements and metal connections; concrete, wooden, and brick building facilities.
3. Student have advanced knowledge of building materials and their properties, research methods, basic elements of design as well as performance and assembly technologies (including environment-friendly materials).
4. Student have detailed knowledge of the technologies of building engineering and rules of selecting tools, machines, and equipment to perform construction works.

Skills:
1. Student can classify buildings building structures.
2. Student are able to design selected elements and simple metal, concrete, wooden and brick constructions, working individually or as part of a team.
3. Student are able to dimension basic structural elements in the units of civil, industrial, road, bridge and railroad building, working individually or as part of a team.
4. Student are able to perform the analysis of linear stability and ultimate limit capacity of simple bar structures, in the aspect of evaluating critical and ultimate limit states of constructions and dynamic analysis of simple bar structures in the aspect of evaluating resonance states.
5. Student are able to read and interpret architectural, building, installation and geodetic drawings, prepare graphic documentation in a traditional way and using selected CAD software (including the BIM technology).

Social competences:
1. Student take responsibility for the accuracy and reliability of work results and their interpretation.
2. Student are ready to critically evaluate the knowledge and received content, and critically evaluate the results of their own work.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
The knowledge acquired during the lectures is verified through a written exam consisting of variously scored questions (test and / or open).
The knowledge acquired during the tutorials is verified as part of a written test carried out in the last weeks of classes.
The knowledge acquired during the projects verified as part of the design of the given structure and its oral defense.
The basic evaluation criterion is obtaining the appropriate number of points. Passing threshold above 50% of points. Grading scale:
over 90 to 100% of points - very good (A)
over 80 to 90% of points - good plus (B)
over 70 to 80% of points - good (C)
over 60 to 70% of points - a satisfactory plus (D)
over 50 to 60% of points - satisfactory (E)
up to 50% of points - insufficient (F)

Programme content

Lectures
Characteristics of wood as a building material. Anatomical structure, elastic and strength properties of wood. The influence of humidity and temperature on the properties of wood. Protection of wooden structures against biological corrosion and fire. Carpentry joints. Mechanical fasteners (nails, bolts, screws, screws, barbed plates, toothed rings). Glued joints. Methods of designing connections in wooden structures. Methods of designing wooden structures. Ultimate and serviceability limit states. Load capacity and stability of wooden elements. Beam structures, rafter, collar beam, purlin and claw truss structures, as well as suspension and truss structures.
Tutorials

Calculation examples concerning the dimensioning of selected elements and connections in wooden structures.
Projects
Implementation of the wooden truss project.

Course topics

Lectures
Characteristics of wood as a building material. Anatomical structure, elastic and strength properties of wood. The influence of humidity and temperature on the properties of wood. Protection of wooden structures against biological corrosion and fire. Carpentry joints. Mechanical fasteners (nails, bolts, screws, screws, barbed plates, toothed rings). Glued joints. Methods of designing connections in wooden structures. Methods of designing wooden structures. Ultimate and serviceability limit states. Load capacity and stability of wooden elements. Beam structures, rafter, collar beam, purlin and claw truss structures, as well as suspension and truss structures.
Tutorials
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Projects
Implementation of the wooden truss project.

Teaching methods

Lecture: information lecture, problem lecture, demonstration
Tutorials: exercise method (exercises, practice)
Projects: method of design and demonstration

Bibliography

Basic
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4. Kotwica E., Konstrukcje drewniane - przykłady obliczeń, Stowarzyszenie Producentów Płyt Drewnopochodnych w Polsce, 2015
5. Kotwica J., Konstrukcje drewniane w budownictwie tradycyjnym, Arkady, Warszawa, 2006
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8. Neuhaus H., Budownictwo drewniane, Polskie Wydawnictwo Techniczne, Rzeszów, 2004
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Additional
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3. Michniewicz W., Konstrukcje drewniane, Arkady, Warszawa, 1958
4. Zobel H., Alkhafaji T., Mosty drewniane, Wydawnictwa Komunikacji i Łączności, Warszawa, 2008

Breakdown of average student's workload

	Hours	ECTS
Total workload	105	4,00
Classes requiring direct contact with the teacher	40	1,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	65	2,50