COURSE DESCRIPTION CARD - SYLLABUS

Course name
Wooden construction [N2Bud1>BD]

Course

Field of study
Civil Engineering

Year/Semester
2/3

Area of study (specialization)
Construction Engineering and Management

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
18

Laboratory classes
0

Other (e.g. online)
0

Tutorials
0

Projects/seminars
10

Number of credit points

3,00

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 subject should have the ability to obtain information from the indicated sources, interpret them, draw conclusions, formulate and justify opinions and be ready to cooperate within the 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 main aim of the course is to familiarize students with issues related to the execution of wooden structures and their reinforcement as well as the design of wooden structures due to fire conditions.

Course-related learning outcomes

Knowledge:

1. Student know in detail the principles of analysing, constructing and dimensioning elements and connections in selected building structures.
2. Student know in detail currently utilised construction materials and products, their properties and testing methods as well as production and assembly technologies.
3. Student know in detail the rules of design, construction and operation of selected building units.
4. Student have structured and theoretically based knowledge of the processes in the full life cycle of building structures and their management rules. They also know and understand the need for systematic evaluation and maintenance of structure technical condition.
5. Student know in detail the Act of Building Law, standards and recommendations for building unit design: Polish standards (PN) and European standards (EN) as well as the technical conditions of constructing selected building units.

Skills:
1. Student can prepare an evaluation and statement of strengths influencing both simple and complex building units.
2. Student can design elements and connections in complex building units, working both individually and in a team.
3. Student can perform a classical static and dynamic analysis and stability analysis of statically determinate and non-determinate bar structures (trusses, frames and strands); as well as surface construction (discs, plates, membranes and shells).
4. Student are able to prepare a building unit design and technical documentation in the environment of selected CAD software, including the usage of BIM technology.

Social competences:
1. Student take responsibility for the reliability of working results and their interpretation.
2. Student are ready to autonomously complete and broaden (extend) knowledge in the field of modern processes and technologies of building engineering.
3. Student can realise that it is necessary to improve professional and personal competence; are ready to critically evaluate the knowledge and received content.

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 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
Repetition of basic information on wooden structures in the field of first-cycle studies Wooden materials and products - setting parameters, sorting, quality, etc. Construction of wooden buildings. Beams with a complex cross-section joined with nails. Glued laminated beams. Design of wooden structures due to fire conditions. Spatial wooden structures. Frame construction systems. Constructions made of glued laminated timber, knots. Strengthening wooden structures. Wooden bridges.
Projects
Implementation of the roof truss project.

Course topics

Lectures
Repetition of basic information on wooden structures in the field of first-cycle studies Wooden materials and products - setting parameters, sorting, quality, etc. Construction of wooden buildings. Beams with a complex cross-section joined with nails. Glued laminated beams. Design of wooden structures due to fire conditions. Spatial wooden structures. Frame construction systems. Constructions made of glued laminated timber, knots. Strengthening wooden structures. Wooden bridges.
Projects
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Teaching methods

Lecture: information lecture, problem lecture, demonstration
Projects: method of design and demonstration

Bibliography

Basic
1. PN-EN 1995-1-1 Eurokod 5. Projektowanie konstrukcji drewnianych. Część 1-1: Postanowienia ogólne. Reguły ogólne i reguły dotyczące budynków, Polski Komitet Normalizacyjny, 2010
2. PN-EN 1995-1-2 Eurokod 5: Projektowanie konstrukcji drewnianych. Część 1-2: Postanowienia ogólne. Projektowanie konstrukcji z uwagi na warunki pożarowe, Polski Komitet Normalizacyjny, 2008
3. PN-EN 1995-2 Eurokod 5: Projektowanie konstrukcji drewnianych. Część 2: Mosty, Polski Komitet Normalizacyjny, 2007
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
6. Lis Z., Rapp P., Drewno i materiały drewnopochodne. Rozdział 10 w: Budownictwo ogólne, tom I, Arkady, Warszawa 2005, 2006
7. Mielczarek Z., Budownictwo drewniane, Arkady, 2014
8. Neuhaus H., Budownictwo drewniane, Polskie Wydawnictwo Techniczne, Rzeszów, 2004
9. Nożyński W., Przykłady obliczeń konstrukcji budowlanych z drewna. Wyd. 2. WSiP, Warszawa 2004
10. Rudziński L. , Kroner A. Przykłady obliczeń wybranych konstrukcji drewnianych, Wydawnictwo Naukowe PWN, 2018
11. Wajdzik Cz., Więźby dachowe. Wyd. Akad. Roln. we Wrocławiu, Wrocław, 2001
Additional
1. Dziarnowski Z., Michniewicz W., Konstrukcje z drewna i materiałów drewnopochodnych, Arkady, Warszawa, 1974
2. Gołębiowski Z., Konstrukcje drewniane, PWN, Warszawa, 1978
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	90	3,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	60	2,00