WOODEN STRUCTURES

Subject code: **06.4-WILŚ- BUD- KDRW- IB17**

Subject type: Obligatory

Language of instruction: English

Responsible for the subject: Unit currently conducting lectures

Providing education: Department of Building Structures

Type of class	Number of classes per semester	Number of classes per week	Semester	Type of credit	ECTS points
Full time studies					2
Lecture	15	1	VI	credit with a grade	
Project	15	1		credit with a grade	
Part time studies					
Lecture	10	1	VI	credit with a grade	
Project	10	1		credit with a grade	

SUBJECT OBJECTIVE:

The objective of the subject is to teach about designing and dimensioning elements of wooden structures.

INITIAL REQUIREMENTS:

Strength of materials. Structural mechanics. General construction.

SUBJECT SCOPE:

Lecture

Physical and mechanical properties of wood. The rules for determining the strength of materials. Classification of wood strength. Classes of the use of structures. Material coefficients and type of use. Dimensioning of wooden structures with the limit states method. Ultimate limit states. Limit states of use. Impact of wood rheology on dimensioning.

Basics of designing construction elements. Axial stretching, axial compression, bending, complex strength cases. Joints in wooden structures: carpentry, nail, screw, tile and glue joints. Complex wooden structures. Elements for mechanical joints - wood, wood and wood-based panels. Wooden I-beams.

Elements made of glued wood. Technology basics. Projects. Multilayer poles. Classification. Dimensioning.

Trusses, arches and frames. Classification. Dimensioning. Roof trusses. Statics. Dimensioning.

Project

Designing elements of wooden structures: wooden ceiling, flat roof, glued girder and roof truss

EDUCATIONAL METHODS:

Lecture - conventional lecture,

Project - individual and team work on projects.

EDUCATION RESULTS:

Results after completion of the course	Symbol	Verification methods	Type of class
Knowledge			
The student acquires knowledge of methods and techniques for designing elements of wooden structures, such as beams, columns and engineering girders	**K_W06 K_W07**	Test with points	L
Abilities			
The student can correctly design beam and column elements made of solid and glued laminated wood. The student can design mechanical and glue joints in wooden constructions	**K_U09, K_U10**	Credits for projects	P
Social skills			
The student is aware of responsibility for individual work and is ready to comply with the rules of team work	**K_K04**	conversation during lectures initiated by the teacher	L,P

REQUIREMENTS TO OBTAIN A CREDIT:

Lecture — Credit based on a test with points:

50% - 60% correct answers	satisfactory,
61% - 70%	satisfactory plus,
71% - 80%	good,
81% - 90%	good plus,
91% - 100%	very good.

Project — The condition for a credit is a positive grade for all projects (2 projects).

Credit for the subject:

The final grade is the average of the grades: G = (L+P)/2

STUDENT WORK:

Interaction with the teacher	15l+15p +3cons. total	33 h.
Preparation for lectures		10 h
Projects – individual work	2proj x 10h	20 h.
Total	33+10+20	63 h
ECTS for the subject	63/25 = 2.52	2 ECTS.

BASIC LITERATURE:

1. PN-EN 1995-1-1:2010: Eurokod 5. Projektowanie konstrukcji drewnianych. Część 1-1: postanowienia ogólne. Reguły ogólne i reguły dotyczące budynków.
2. Kotwica J.: Konstrukcje drewniane w budownictwie tradycyjnym. Arkady, Warsaw, 2005.

COMPLEMENTARY LITERATURE:

1. PN-B-03150: 2000. Konstrukcje drewniane. Obliczenia statyczne i projektowanie.
2. Nożyński W.: Przykłady obliczeń konstrukcji budowlanych z drewna. WSiP. Warsaw, 2002.

3. Michniewicz W.: Konstrukcje drewniane. Arkady, Warszawa, 1958.
4. Czarnowski K., Hlebionek J.: Inżynierskie Konstrukcje drewniane. Skrypt. WPW, Wrocław, 1978.

SYLLABUS PREPARED BY:

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