

SYLLABUS

Name of the course (as specified in the approved curriculum) Wood Science		Number of ECTS credits 6
Name of the course in Polish Nauka o Drewnie		
Unit providing the course (Department/Institute) Department of Wood Science and Thermal Techniques		
Course leader Przemysław Mania, PhD		
Field of study Wood Technology	Level Engineer	Semester 1
TYPE OF CLASSES (course load)		
- Lectures		30
- Practical classes		40
- Contact hours		8
- Self-study		75
Total number of hours		158
OBJECTIVE OF THE COURSE		
This course focuses on developing an understanding of basic knowledge of the biology of wood, its structures and defects of wood. Acquiring basic knowledge of the technical science of wood, the basic physical and the mechanical properties of wood.		
TEACHING METHODS		
Lectures: based on multimedia presentation with elements of discussion; classes: individual work: a) at the microscope – microscopic identification of various species of wood; b) with the use of a samples set – macroscopic identification of wood species.		
Course learning outcomes		The reference to field of study outcomes
Knowledge	O1 Students will have advanced knowledge of biology and related sciences adjusted to wood science	TD1A_W02
	O2 Students will have advanced knowledge of forest and wood resources, and basics of technology and development of environment as adjusted to wood science	TD1A_W05
	O3 Students will have advanced knowledge of functions of living organisms with different levels of complexity, technological engineering tasks as adjusted to wood science	TD1A_W06
	O4 Students will reveal expertise of advanced methods and tools used for solving problems in area of wood technology	TD1A_W07
Skills	O5 Students will have to seek out, understand and analyze information in a range of wood technology as coming from different sources and given in different form, as well creative interpretation of information, derive conclusions, express and justify opinion	TD1A_U01
	O6 Students will be able for independent and in team planning and carrying out research or design tasks in the area of wood technology, as well as analyzing and assessing correctness of carried out tasks	TD1A_U03
	O7 Students will be able to apply appropriate information technologies for seeking and processing different information in the area of wood science	TD1A_U04
Social skills	O8 Students will understand the need for continuous learning, will be able to inspire and organize learning processes of other persons	TD1A_K01
	O9 Students will be able to cooperate and work in a team, both as a leader and a member of a team	TD1A_K02
	O10 Students will be able to establish proper priorities connected with solving tasks being defined by a student or others	TD1A_K03
Methods of evaluation of outcomes achievement Exam, partial exam		Symbols of course learning outcomes O1, O2, O3
Work in group, discussion		O4, O5, O6, O7, O8, O9, O10

TEACHING CONTENT

Lectures: Wood formation and structure of cell wall. Anatomical elements of wood. Microscopic structure of softwoods and hardwood types of the temperate climate zone. Wood density as an indicator of the structural variability of wood and determinants its properties. Methods for determining density of the wood. Density of wood substance. Moisture content of wood. Effect of moisture and its changes in the physical and mechanical properties of wood.

Classes: Structure and function of phloem. Selected anatomical elements of softwood and hardwood types and their measurement using a computer image analyzer. Microscopic and macroscopic identification of European types of wood. Measurement of macrostructural parameters of wood. Determination of wood density. Moisture related wood properties. Determination of mechanical properties of wood. Determination of strength of wood: compression, tension and hardness. Determination of static bending strength and impact strength of wood. Measurement of static and dynamic modulus of elasticity.

The course completion criteria and methods

Rating of the exercises, exam

Percent of a final
grade
50/50

RECOMMENDED LITERATURE

1. Haygreen J.G., Bowyer J.L. (1996): Forest products and wood science. Iowa State University Press, Ames.
2. Kollmann, F.F.P., Côté, W.A. (1984). Principles of wood science and technology. Vol. I. Solid wood. Springer-Verlag, Berlin etc.
3. Richter, H. G., Grosser, D., Heinz, I., Gasson, P. E. (Eds.). (2004). IAWA list of microscopic features for softwood identification. *Iawa Journal*, 25(1), 1-70.
4. Wheeler, E. A., Baas, P., Gasson, P. E. (Eds.). (1989). IAWA list of microscopic features for hardwood identification.
5. Wagenführ R. (2006): Holzatlas. Fachbuchverlag Leipzig.
6. Zobel B.J., van Buijtenen J.P., (1989): Wood Variation. Springer-Verlag.

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