



Universität Stuttgart

Institute of Construction Materials
Materials Testing Institute (MPA)

Contact person:

Jun.-Prof. Dr. Philippe Grönquist
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ECTS points: 3

Lecture language: English

Target study programmes:

- M.Sc. Civil Engineering
- M.Sc. Real Estate Engineering and Management
- M.Sc. Computational Mechanics of Materials and Structures
- M.Sc. Integrative Technologies & Architectural Design Research

Wood represents one of mankind's most important materials. Currently, its significance is increasing thanks to benefits such as its inherent sustainable nature as a construction material. This module aims at providing basic knowledge on the physical properties of wood. A focus is laid on the relationships between wood structure and resulting mechanical and physical properties across multiple hierarchical levels. A further focus is laid on the modelling of physical, especially mechanical, properties of wood. Knowledge will be gained about commonly used wood species used in timber construction in Europe. In addition, insight in current research in the field of wood science and technology will be provided. A main learning target is to establish an awareness of a material-appropriate usage of wood in construction regarding its physical properties, and to be able to critically reflect thereupon. This course represents a solid but facultative basis for the course "**Engineered Wood Products**".

Wood Physics

Description



(Image: P. Grönquist, IWB/MPA University of Stuttgart, 2022.
Modified from M. Harrington and J. Harrington)



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Lecture day: Thursday
Time: 15:45–17:15 pm
Location: PWR 4 – Seminar room 1st floor
Period: 20.10.2022–09.02.2023

Wood Physics

Lecture plan

Winter semester 2022/23

Date	Agenda	Lecturer
20.10.2022	The resource wood	P. Grönquist
27.10.2022	Wood structure and anatomy I	P. Grönquist
03.10.2022	No lecture (excursion)	-
10.11.2022	Wood structure and anatomy II	P. Grönquist
17.11.2022	Tree biomechanics	P. Grönquist
24.11.2022	Wood density	P. Grönquist
01.12.2022	Wood-water interaction I: Wood moisture	P. Grönquist
08.12.2022	Wood-water interaction II: Swelling and shrinkage	P. Grönquist
15.12.2022	Thermal and electrical properties	P. Grönquist
22.12.2022	No lecture (pause)	-
12.01.2023	Mechanics I: Elasticity	P. Grönquist
19.01.2023	Mechanics II: Strength	P. Grönquist
26.01.2023	Mechanics III: Rheological behavior	P. Grönquist
02.02.2023	Mechanics IV: Micromechanics	P. Grönquist
09.02.2023	Recap and exam preparation	P. Grönquist