



# Wood material science

INTRODUCTION 8.1.2024

CHEM-E2225 5 cr

# Welcome!



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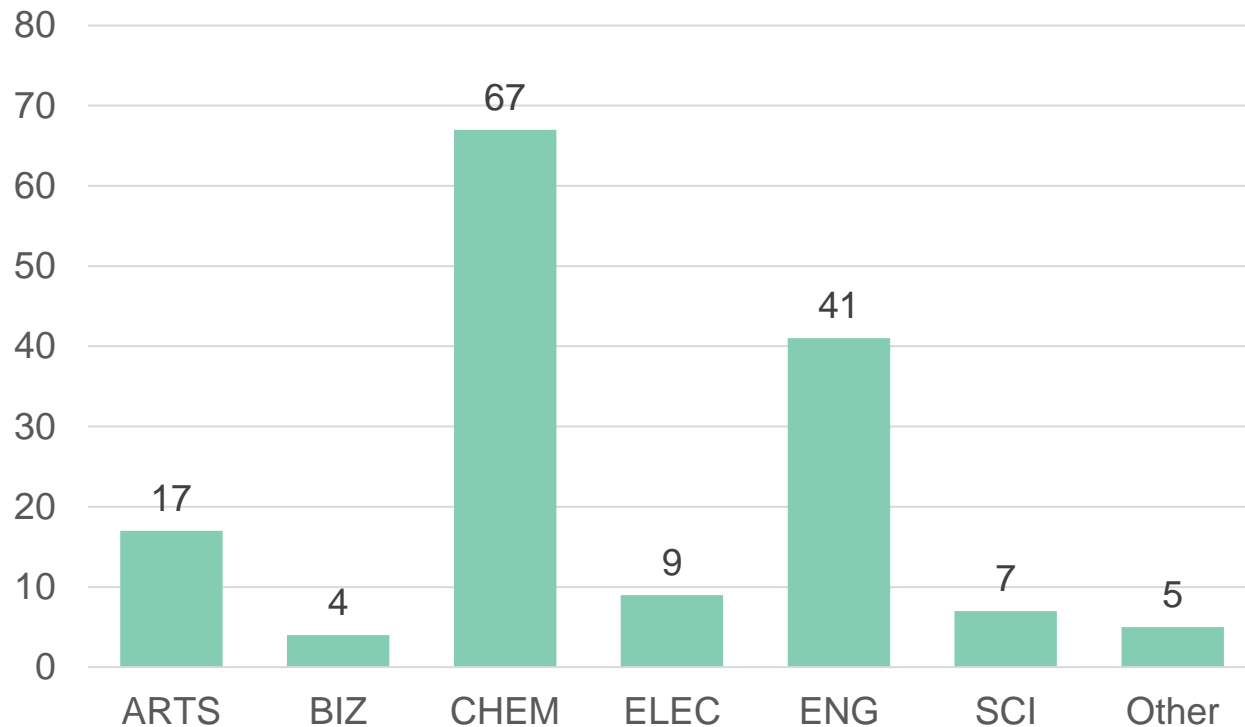
Wood material technology & Wood material science  
Department of Bioproducts and Bioprocesses  
School of Chemical Engineering

**wood-teaching@aalto.fi**

# Students by department

7.1.2024

Altogether **150** students



# Wood material science

ONLINE

course

Students will learn about the formation and structure of wood, as well as its physical and mechanical properties.

The course explains how the structure of wood affects its physical and mechanical properties, as well as describing factors that affects its durability.

**8.1.-16.2.2024**

For students in all fields  
Proceed at own pace!

Registration in  
Sisu by 15.1.2024

Course description and  
registration in Sisu:



# After the course, students know...

- the **key anatomical features** of wood and can identify wood species from their microstructures
- the **anisotropic nature** of wood and be able to describe how the anatomical structure of wood **affects its physical and mechanical properties**.
- how **moisture** affects the mechanical and physical properties of wood
- anatomical factors influencing wood **density**
- some of the thermal, acoustic, electrical and combustion **properties** of wood
- the short-term and the long-term **mechanical behavior** of wood and how structure/anatomy, density and moisture affect these
- the key **degrading** organisms that are responsible for the breakdown of wood

# How to pass the course?

*Tue 8.1.2024 at 13:15 Introduction @Zoom*

- 1. Study the material at Aalto MyCourses workspace**
  - Practice with all the 10 online quizzes (100% correct)
- 2. Do the 3 online exams in the workspace**
  - The exams you may do only once
- 3. DL Wed 14.2.2024**
- 4. Give feedback in MyCourses**

*Fri 16.2.2024 at 13:15 Closing @Zoom*

*Participation to intro + closing sessions recommended*

→ **Grading 0-5 (scale determined later)**

# Course info in MyCourses

A?

[Home](#) [Dashboard](#) [My own courses](#) [Schools](#) [Course feedback](#) [Service Links](#) [Intelliboard](#)

x

## > COURSE INFO

▼ [Forest and trees](#)

▼ [Fundamentals](#)

▼ [Wood properties](#)

▼ [EXAMS](#)

## CHEM-E2225 - Wood Material Science, Online teaching, 8.1.2024-16.2.2024

[Course](#) [Grades](#) [Course feedback](#)

### COURSE INFO

The course is organized as **online course**. You may follow the course **independently** whenever it is suitable for you during the III period / 2024. The course includes reading materials, short videos, exercises and online exams. Teaching language is English.

This course is available to all Aalto students (register in [Sisu](#)) but also to anyone interested through [Aalto Open University](#).



**Aalto University**  
**School of Chemical**  
**Engineering**

# All materials in MyCourses

## Sections

- » COURSE INFO
- » Forest and trees
- » Fundamentals
- » Wood properties
- » EXAMS

“Interactive book”



HSP  
Forest and harvested products

Mark as done



Image by Mark Hughes

“Quiz”

100% correct  
unlimited attempts



QUIZ  
QUIZ: Forest and harvested products

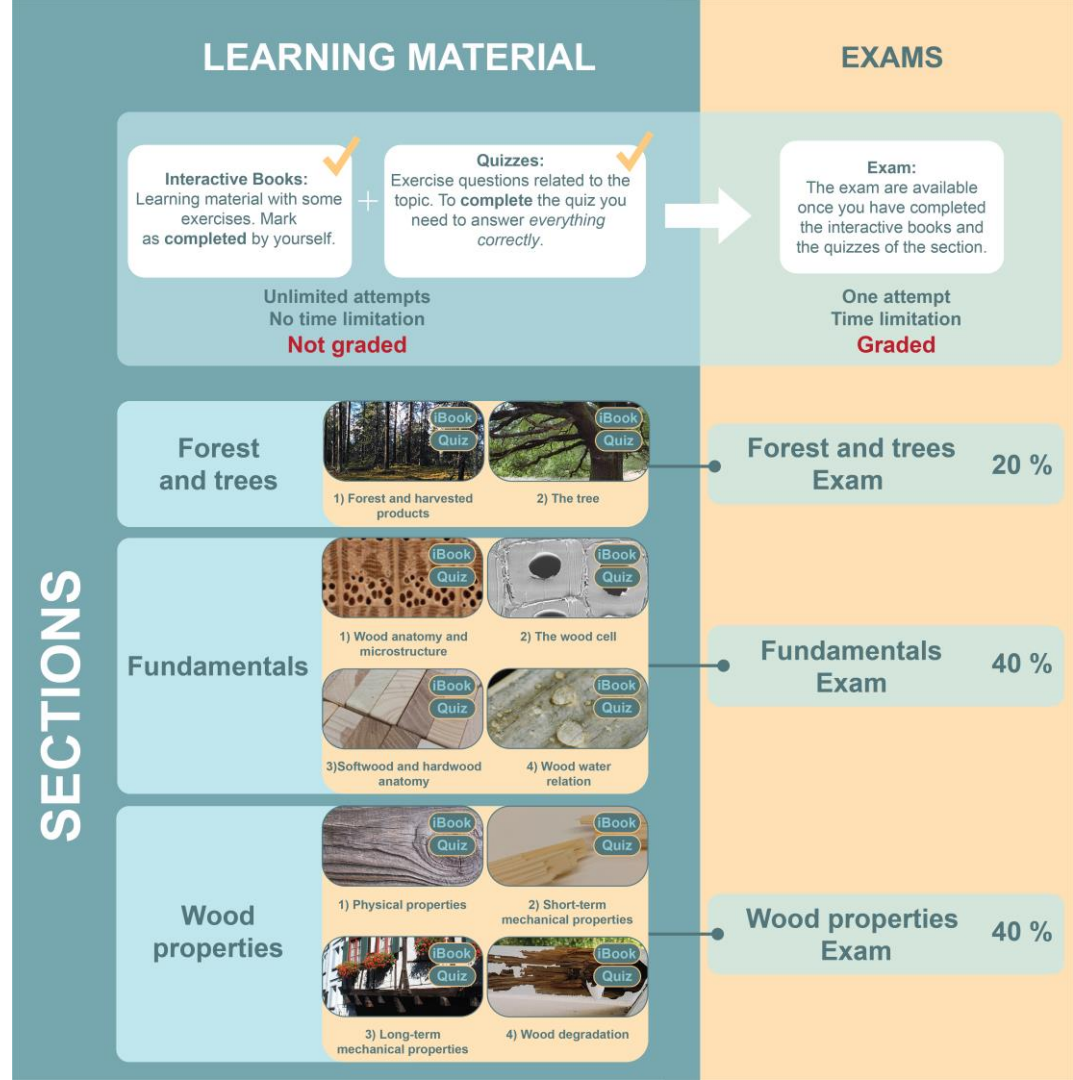
Receive a grade

Receive a pass grade



# Plan ahead!

- DL 14<sup>th</sup> Feb (23:59)
- < 6 weeks, start today!
- Make your own schedule
- Don't leave exams at the last minute!



# Independent learning

*Tips from our study psychologist Henna Niiva*

## 1. Pomodoro co-study sessions

- [Start your studies with Pomodoro | Aalto University](#)

## 2. Self study material about time-management

- [Course: Time to Get Cracking – 3 week Self-study material on time management for students \(aalto.fi\)](#)

## 3. Self study material about getting things done

- [Course: ABCs of getting things done \(aalto.fi\)](#)

## 4. Podcast episode about time-management

- [Time-management - a skill everyone can learn with time](#)
- [The Best Thing Today podcast series | Aalto University](#)

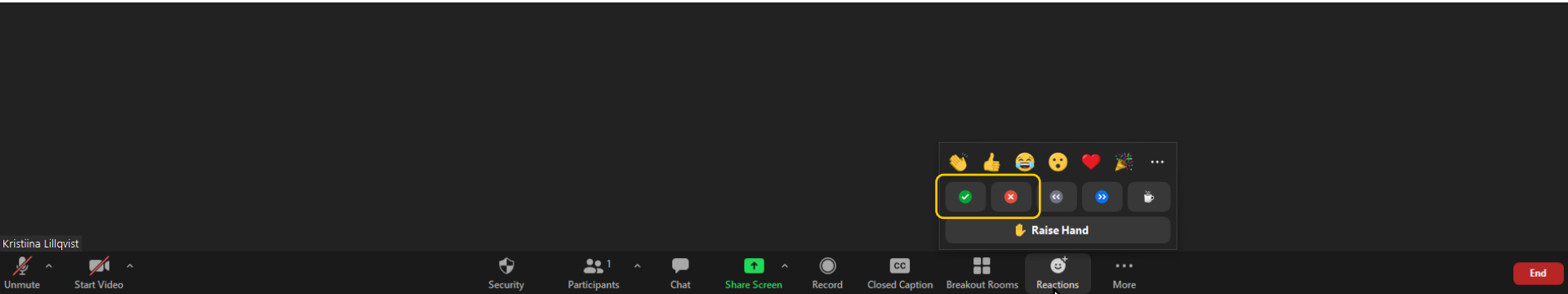
## 5. Students may also visit guidance counsellor in Starting point of wellbeing and get support for time-management.

- Guidance counsellor's drop in on Thursdays at 13-15. [Starting Point of Wellbeing | Aalto University](#)



# Yes / no questions!

- To start learning process
- Does not influence your grade
- Use yes / no –buttons in Zoom



# Most of the cells in a growing tree are dead?



YES

Most of the cells are dead



NO

Most of the cells are alive



# Softwoods have a more complex cell structure than hardwoods?



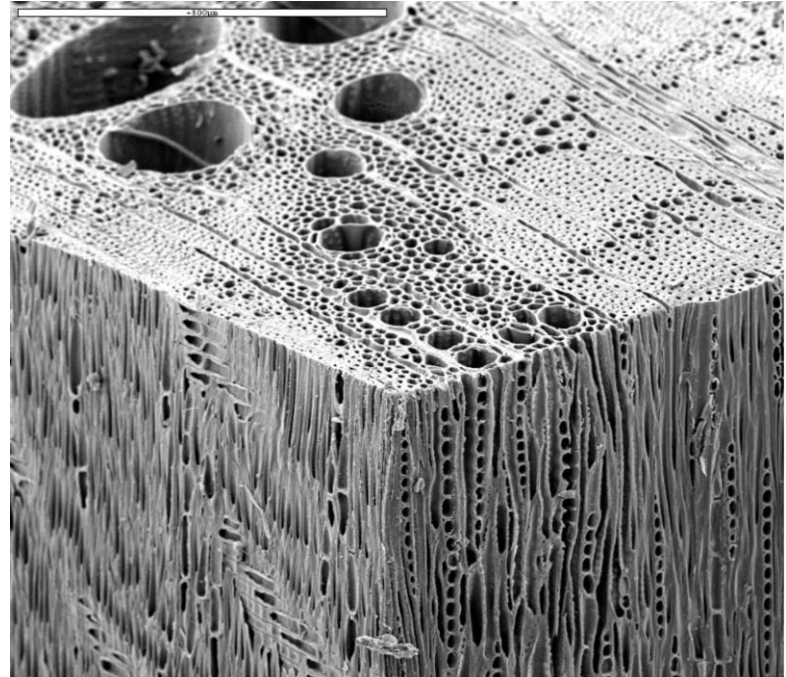
YES

Softwood cell structure is more complex.



NO

Hardwood cell structure is more complex.



**A wet wood sample and dry wood sample are brought to the same room condition. After some time, they will have the same moisture content?**



YES

Moisture content is the same.



NO

Moisture content is different.



# Thermal conductivity for concrete is about 1.7 (W/m.K). That of wood is lower?



YES

Wood thermal conductivity is lower



NO

Wood thermal conductivity is higher

# Questions / comments?

wood-teaching@aalto.fi

- Are you able to find MyCourses –page?
- Can you find and access the interactive books?

Videos available on Youtube:

What is wood (13) Water transportation

Aalto University

200-400 litres

100m

2-3 MPa

20-30 MPa

COHESION  
WATER TENSION

0.1-0.5 MPa

10m

0.1m

3:31 / 3:45

Scroll for details

Aalto University - Wood Science