Forests, wood, and carbon

CLOSING 14.10.2022

CHEM-C2740 5 cr

Aalto University
School of Chemical
Engineering

Thank you!

Dr. Kristiina Lillqvist

Dr. Daniela Altgen

Dr. Callum Hill

Prof. Lauri Rautkari

Wood material science
Department of Bioproducts and Bioprocesses
School of Chemical Technology

wood-teaching@aalto.fi

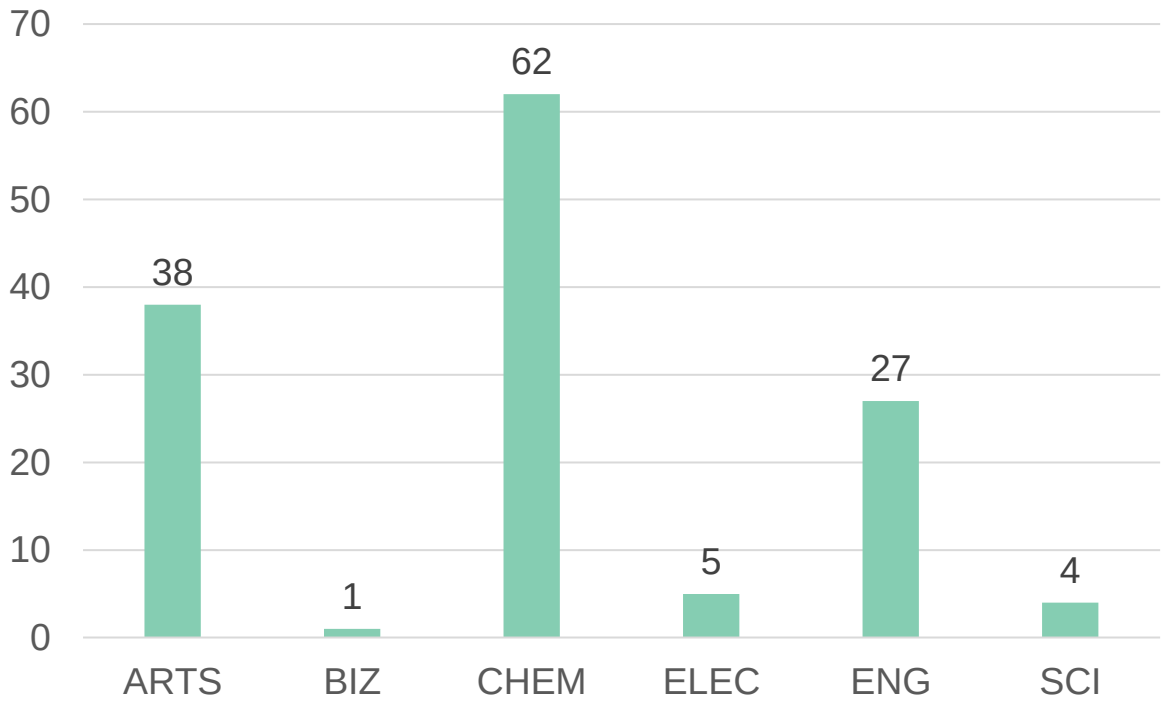
Aalto University
School of Chemical
Engineering

Students by department

13.10.2022

Altogether

- **137** finished the course
  - *160 registered*



After the course, students are able…

- to describe the role of **forests in the carbon cycle**
- to calculate the **carbon storage potential of wood**
- are able to list the common work phases of **life-cycle analysis**
- to describe the basic macro-level **structure of wood** and the basics of wood grain orientation
- to describe how moisture influences **wood dimensional changes and strength** at the cell-level
- to link the influence of grain angle, knots and other natural features of wood on its **movement, appearance, and mechanical** properties
- to list the most common **wood products** and their typical applications

LEARNING MATERIAL

EXAMS

Interactive Books:
Learning material with some exercises. Mark as **completed** by yourself.

+

Quizzes:
Exercise questions related to the topic. To **complete** the quiz you need to answer *everything correctly* before submitting.

Exam:
The exam are available once you have completed the interactive books and the quizzes of the section.

Unlimited attempts
No time limitation
Not graded

One attempt
Time limitation
Graded

SECTIONS

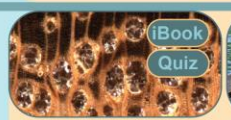
Forest

1) Global forests

2) Forests in Finland

→ Forest Exam 25%

Wood



1) Structure & anatomy

2) Built environment

3) Products & applications

→ Wood Exam 50%

Carbon

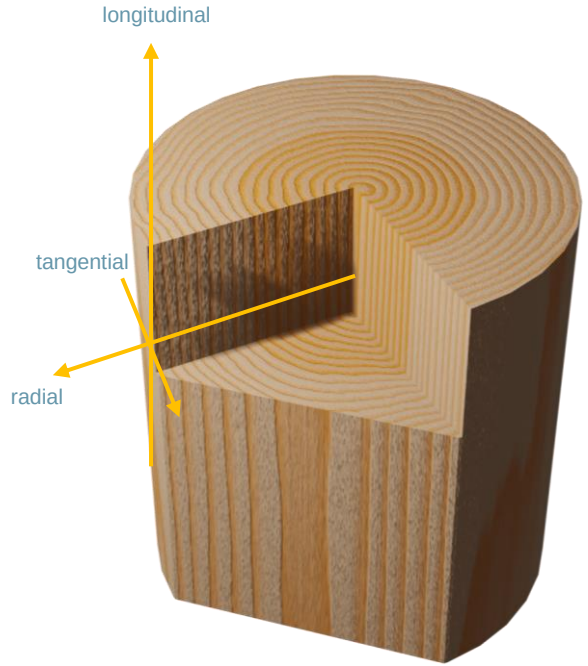
1) Carbon cycles

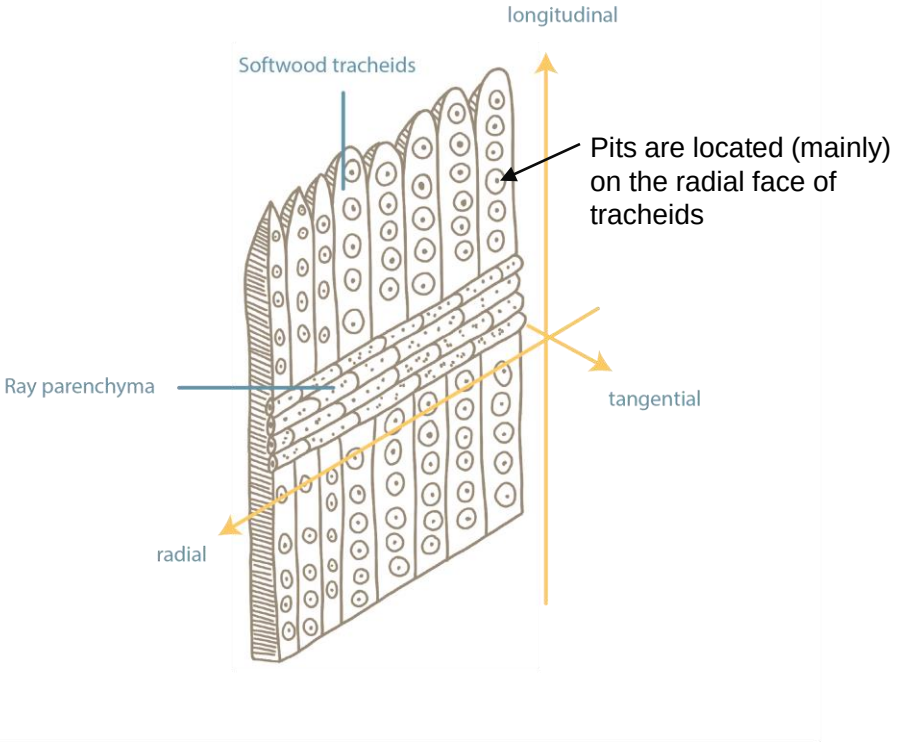
2) Wood products

→ Carbon Exam 25%

Aalto University
School of Chemical Engineering

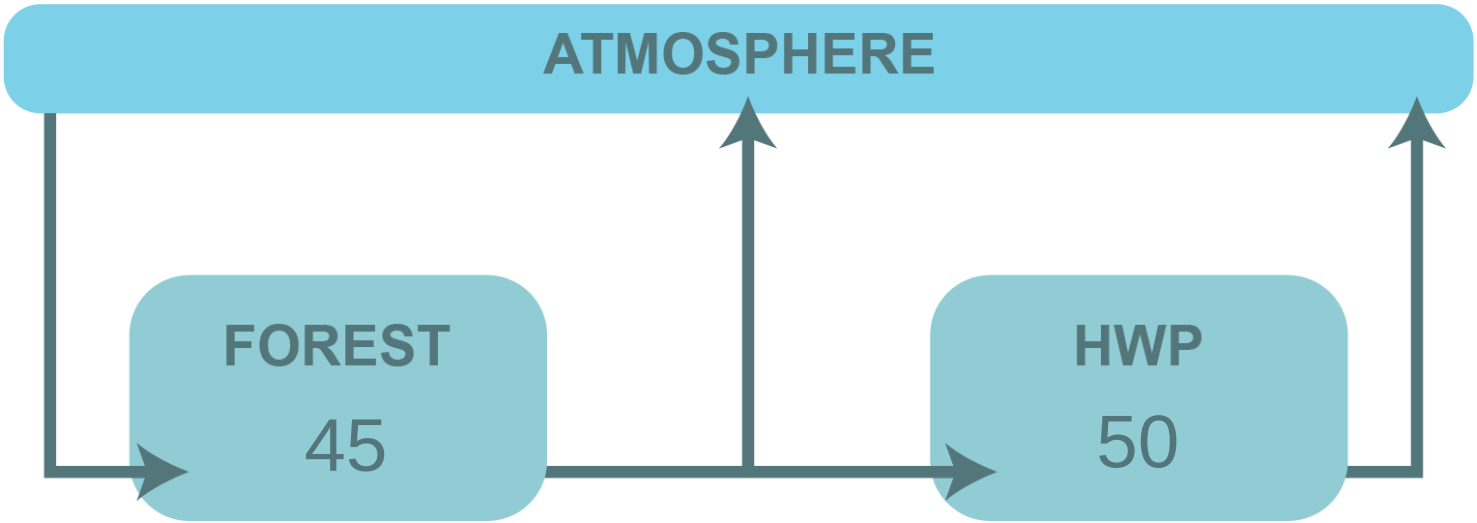
Wood orientation





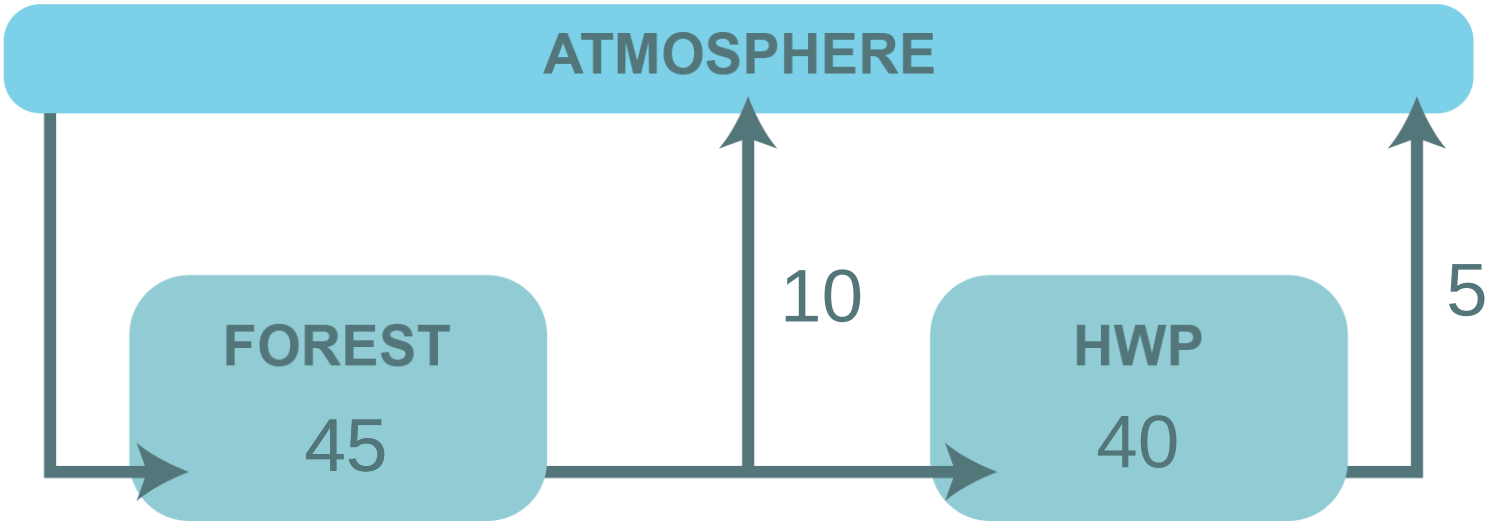
Carbon pool

- Harvest after 45 years
- Sawmill efficiency 80%
- Product Life time 50 years

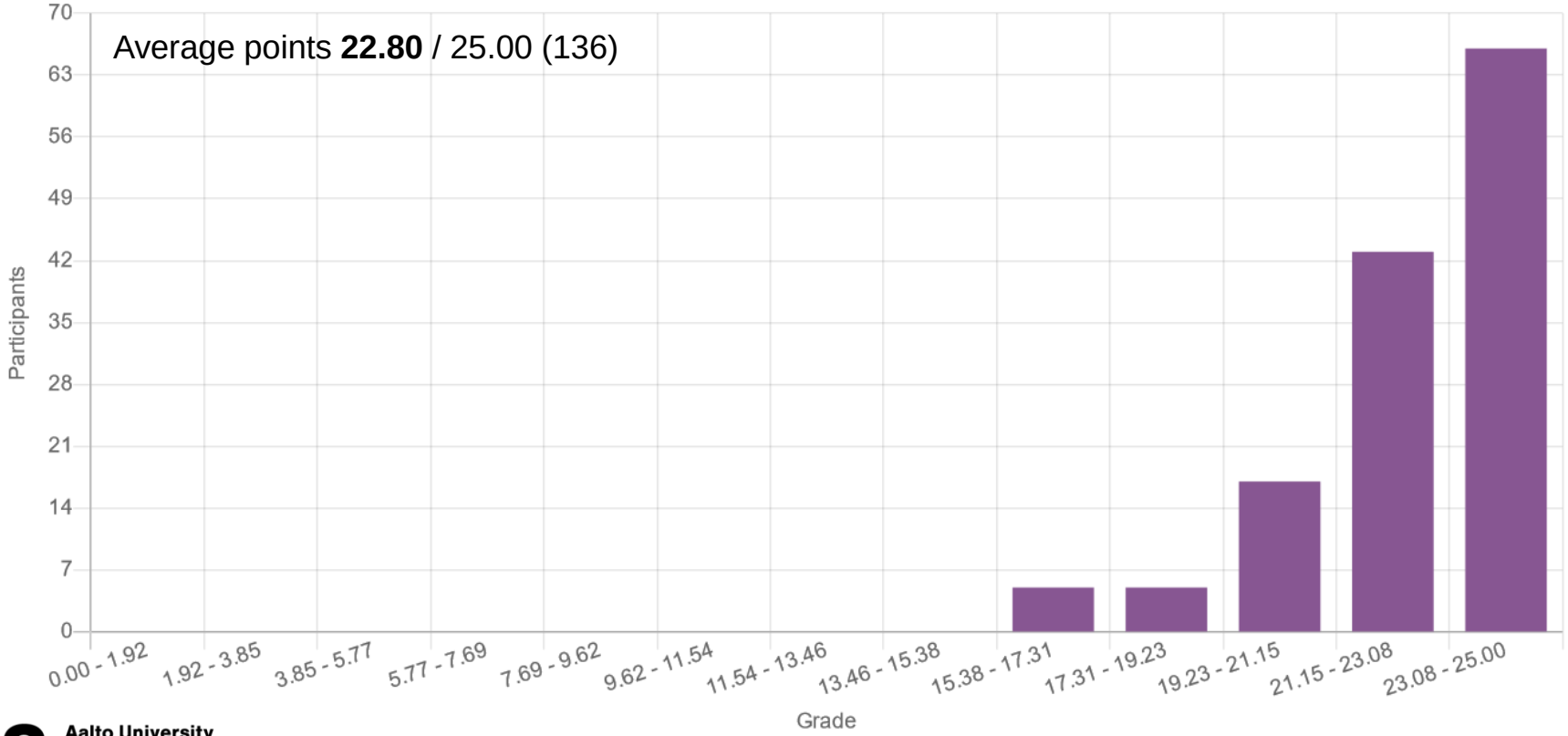


Carbon pool

- Harvest after 45 years
- Sawmill efficiency 80%
- Product Life time 50 years

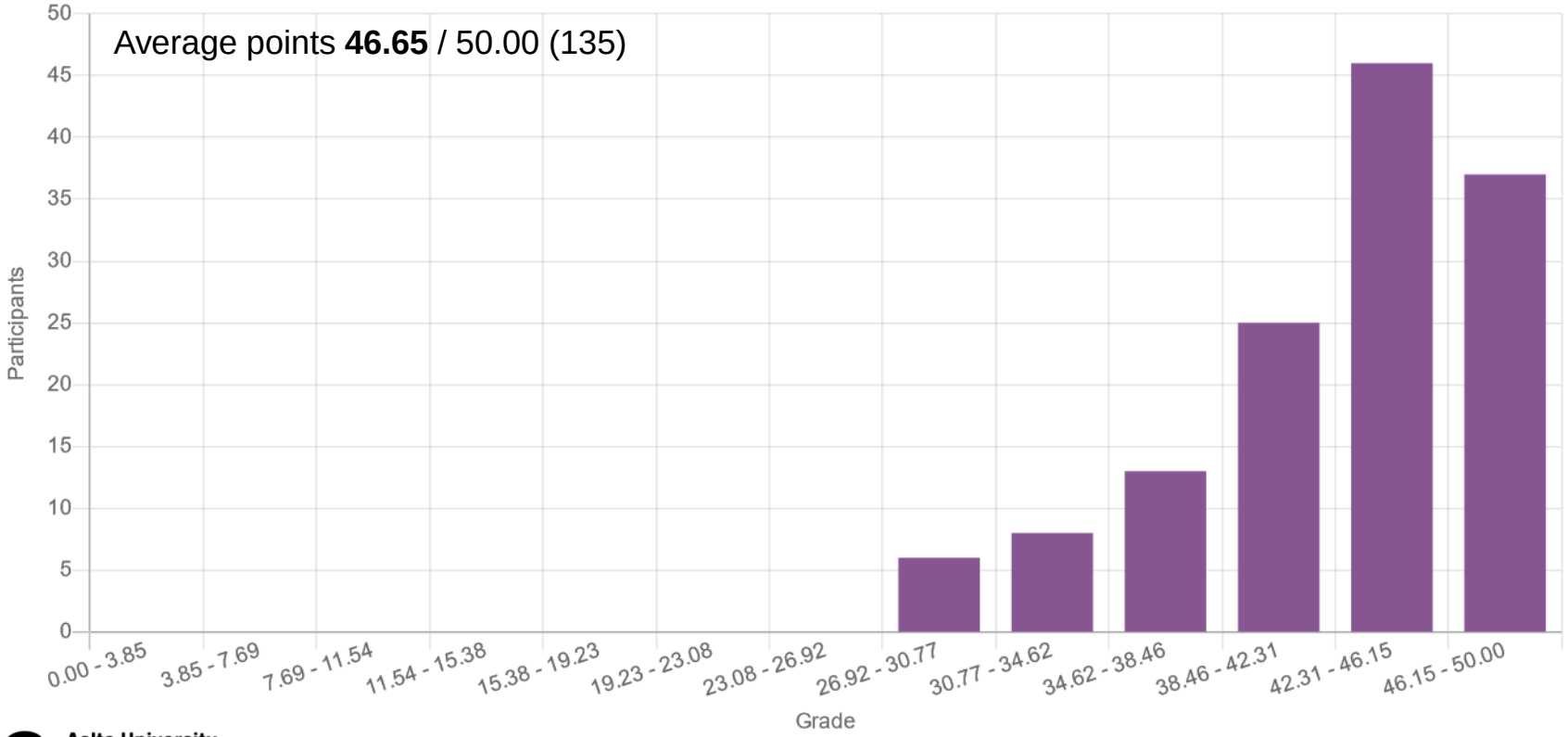


FOREST EXAM



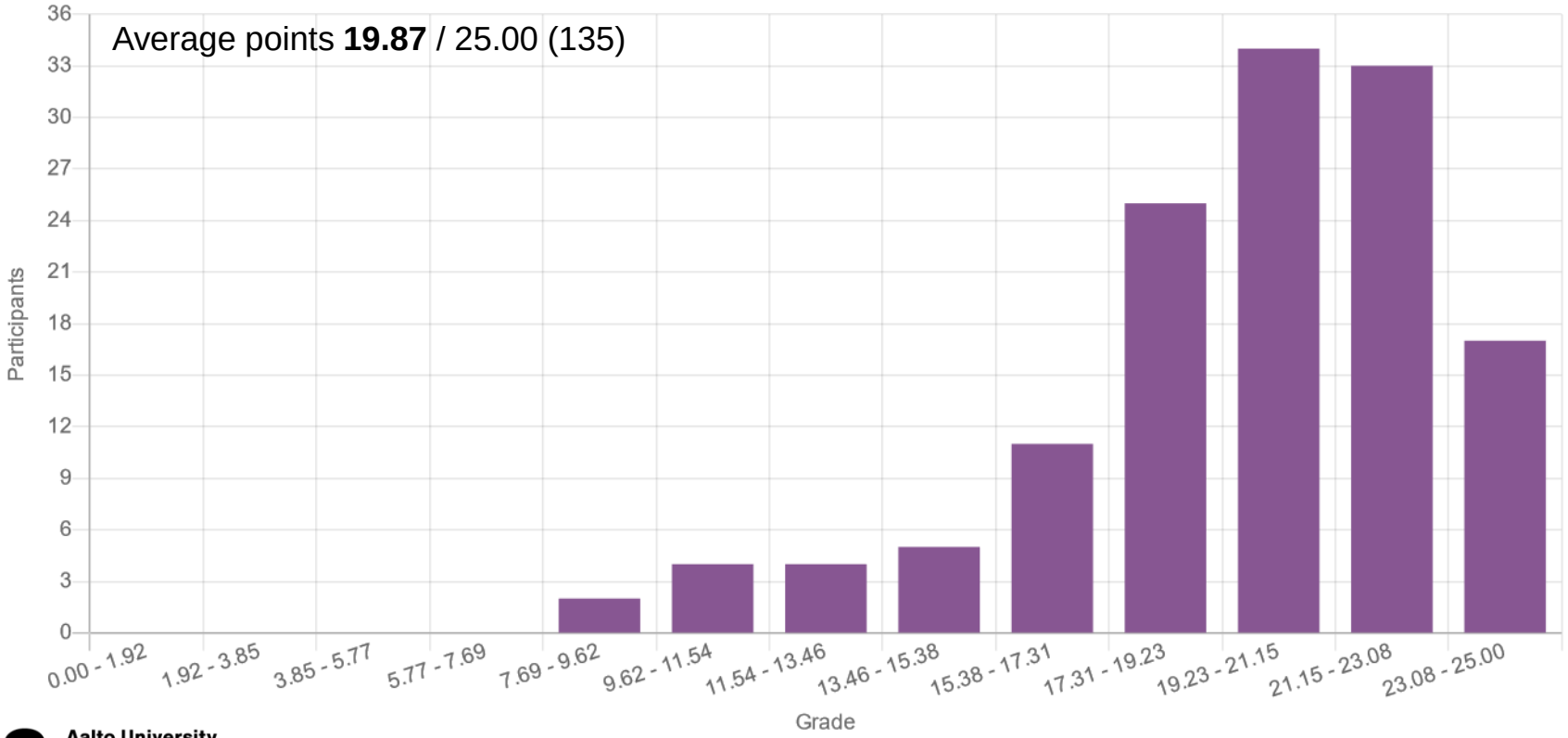
Aalto University
School of Chemical
Engineering

WOOD EXAM



Aalto University
School of Chemical
Engineering

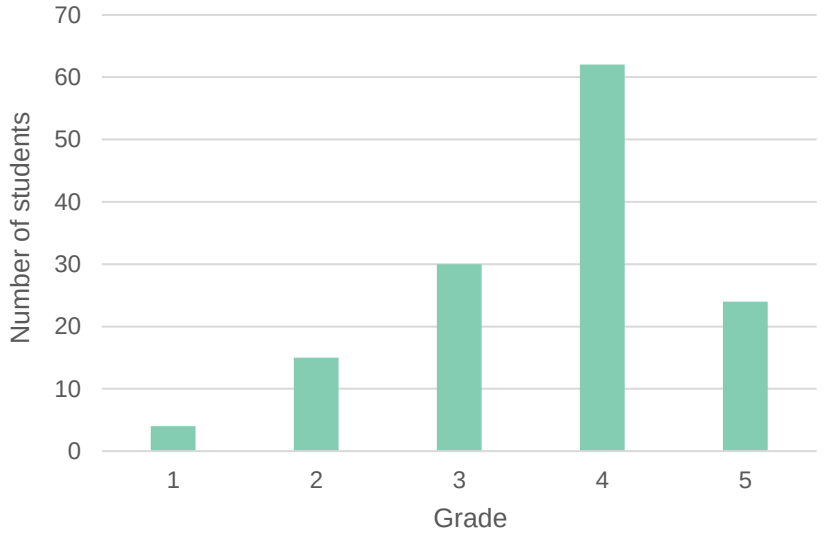
CARBON EXAM points



Grading

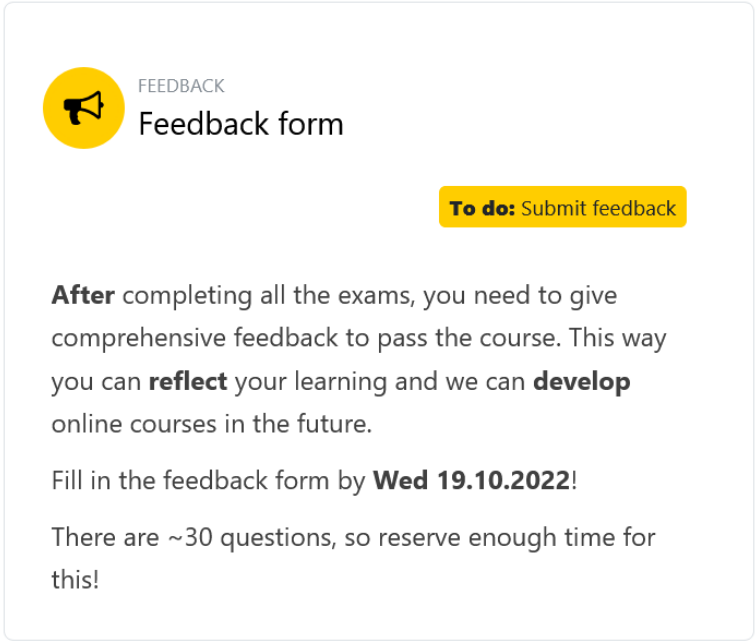
- **Max points 100**
- **Grading 0-5**

grade	min. points	amount	%
1	55	4	9 %
2	65	15	10 %
3	75	30	32 %
4	85	62	46 %
5	95	24	18 %

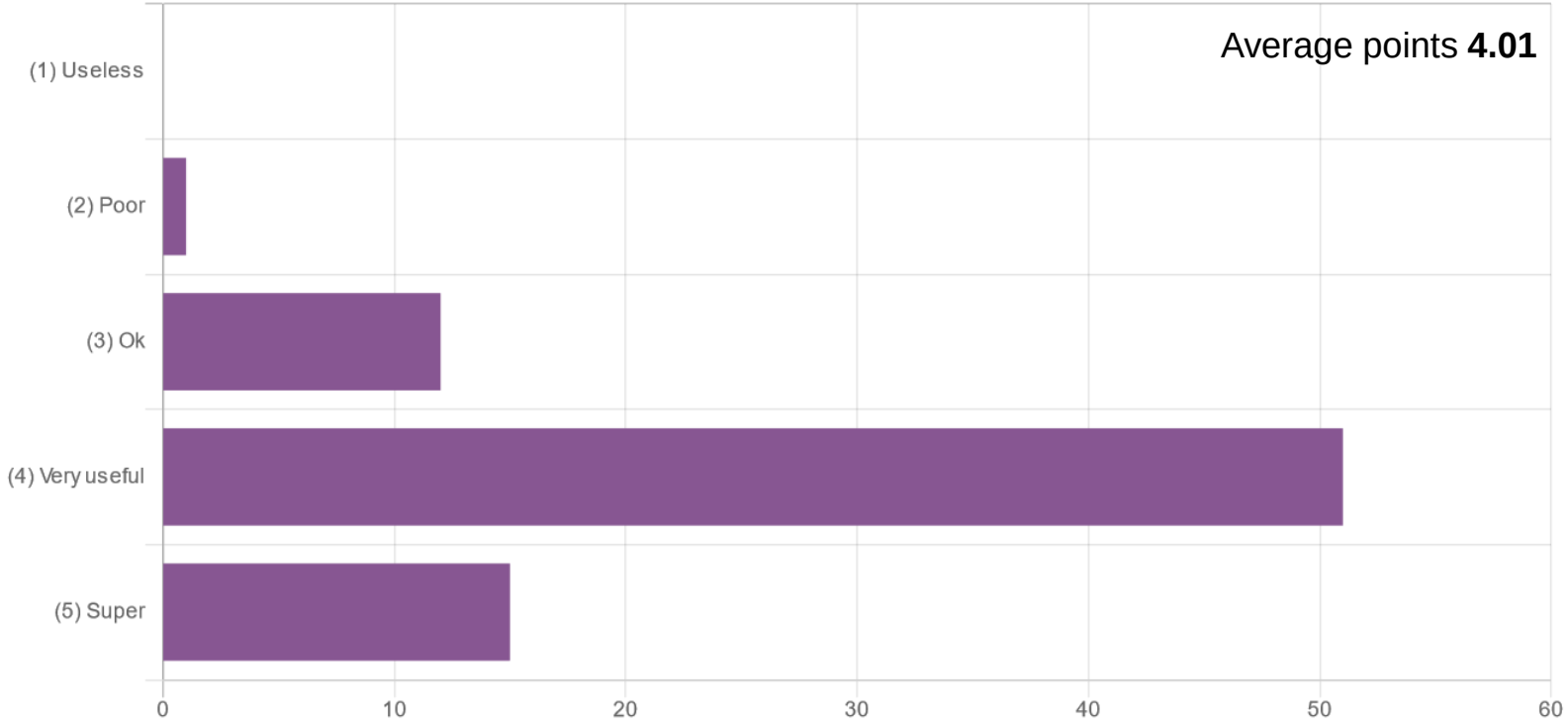


Course Feedback

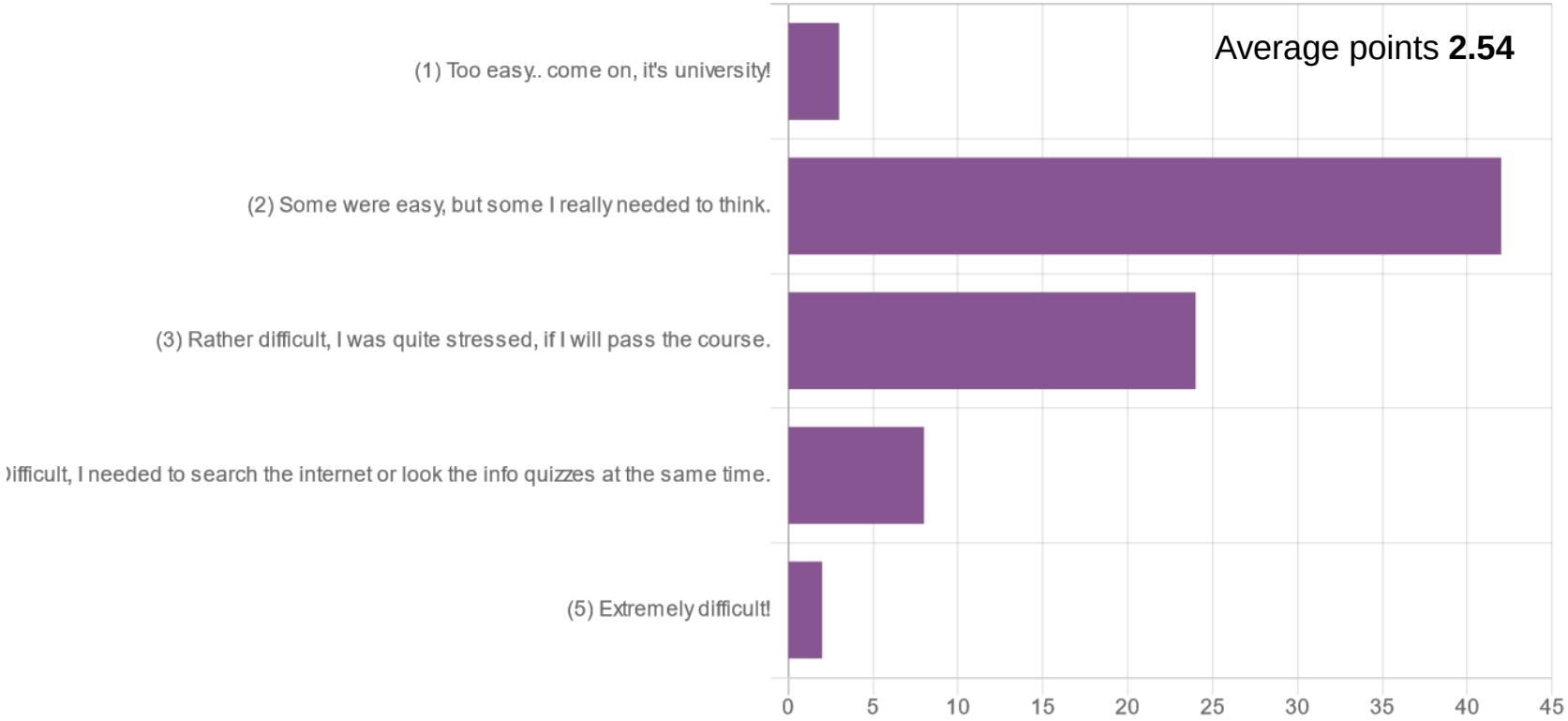
- **Everyone has to answer**
  - So far 79 answered
- **Open in MyCourses until Wed 19th Oct!!**
- **Also another Aalto-level webropol form**



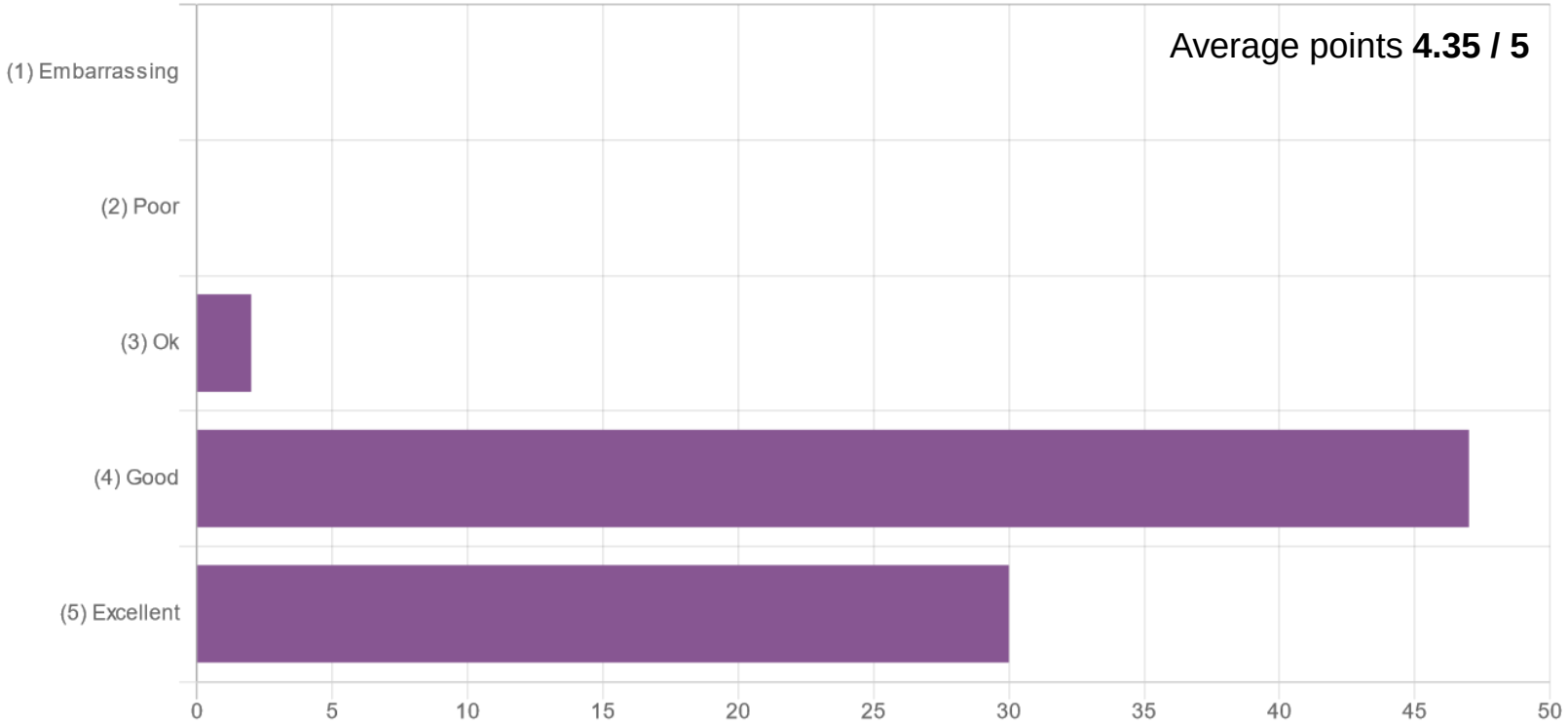
How did you like the overall structure with quizzes for practicing and final exam for grading: Was it a good way to learn?



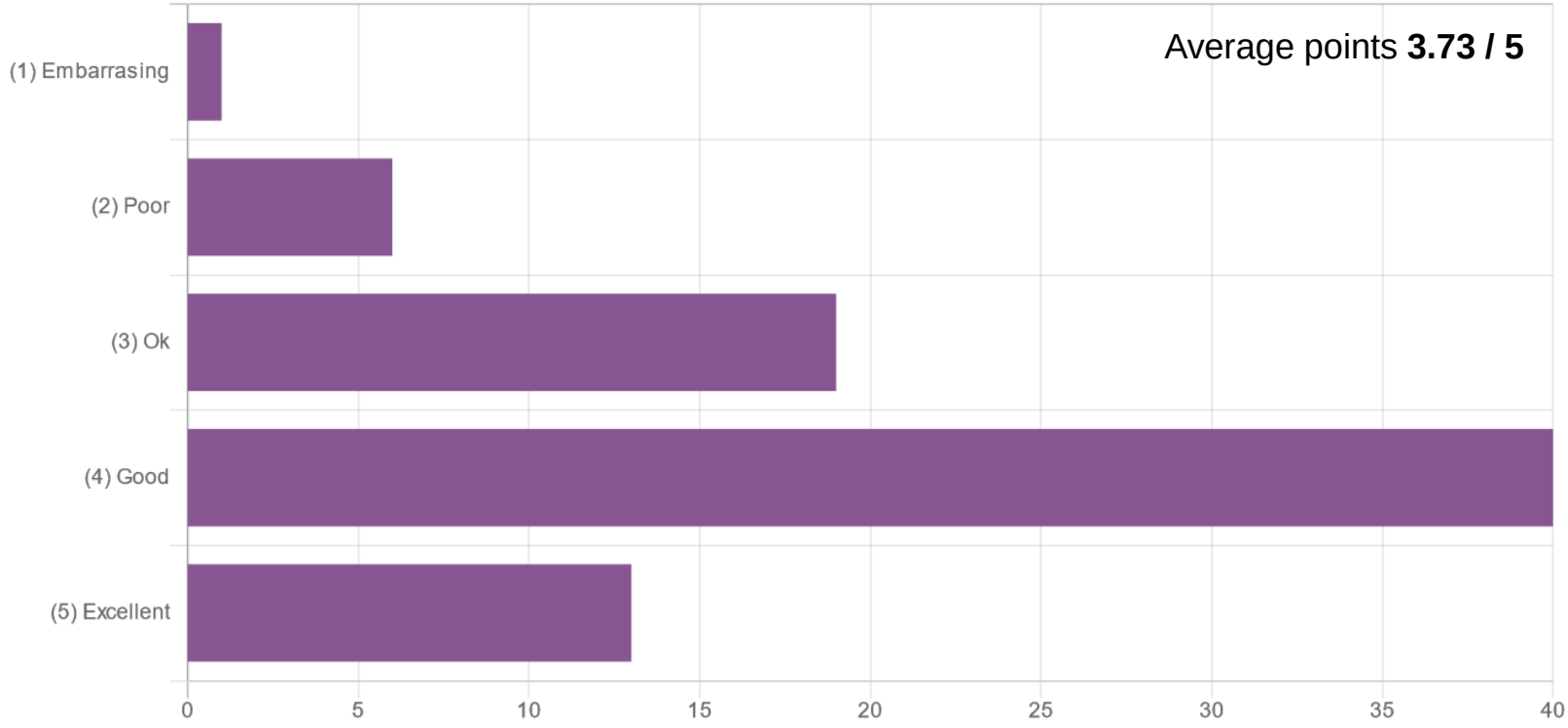
Were the final exams difficult or easy?



What overall grade would you give to the course?



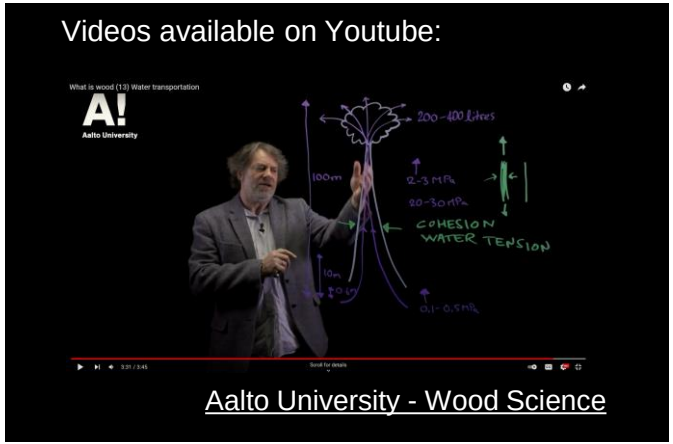
How well did YOU do? Were you able to keep your schedule and do your best?



See you again?

wood-teaching@aalto.fi

Videos available on Youtube:



Aalto University - Wood Science

Aalto University
School of Chemical
Engineering

NEW Aalto Wood –minor (MSc) 2022 →

Pre-requisite

CHEM-C2470	Forests, Wood and Carbon **online**	5 op **NEW**

- **Next time in V-period (24.4.-9.6.2023)**

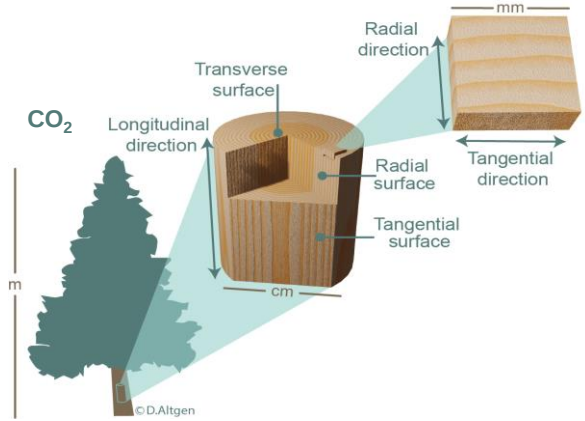
Mandatory courses (10 cr):

CHEM-E2225	Wood Material Science **online**	5 op **NEW**
CHEM-E2235	Wood Products + Processes **online**	5 op **NEW**

Elective courses (to fulfil 20-25 cr):

CHEM-E2170	Advanced Wood Science	5 op **NEW**
CHEM-E1100	Plant Biomass	5 op
CIV-E4110	Timber Engineering	5 op
CIV-E4120	Timber Structures	5 op
ARK-E401201	Wood in Architecture Construction	5 op
ARK-E4008	Industrial Wood Construction	5 op
SARK-E5016	Woodstudio: Design Project	10 op

New courses 2022-2023



NEW
100% online

• Forests, wood, and carbon 5 op

- Presents the role of wood in the carbon cycle, the basic properties of wood as well as processing from forest to different end-uses, such as construction.

I & V periods

NEW
100% online

Wood material science 5 op

- Dives deep into the wood material properties, such as wood and moisture interaction, from makro-level to the molecular level.

III period

NEW – Replaces “Wood products: Application and performance”
100% online

Wood products and processes 5 op

- Presents the most important wood-based products, such as veneer products and further processed sawn timber, their properties, end-uses and manufacturing prosesses.

IV period

NEW

Advanced wood science 5 op

- Shows some selected advanced analysing technology to investigate wood and wood-based materials.

I period / **2024**