Forests, wood, and carbon

INTRODUCTION 5.9.2022

CHEM-C2740 5 cr

Aalto University
School of Chemical
Engineering

Welcome!

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School of Chemical
Engineering

Students by department

4.9.2022

Altogether **107** students

CHEM-C2470 / 5 CR

Forests, wood, and carbon

ONLINE course

- Students will learn about the role of forests in the carbon cycle and carbon storage potential of wood products.
- The basic structure of wood is presented with links to its properties such as appearance, dimensional stability, and strength.

5.9.–14.10.2022

No pre-requisites
For students in all fields
Proceed at own pace!
Registration in Sisu by 12.9.2022

Course description and registration in Sisu:

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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

How to pass the course?

Mon 5.9.2022 at 9:15-10 Introduction @Zoom

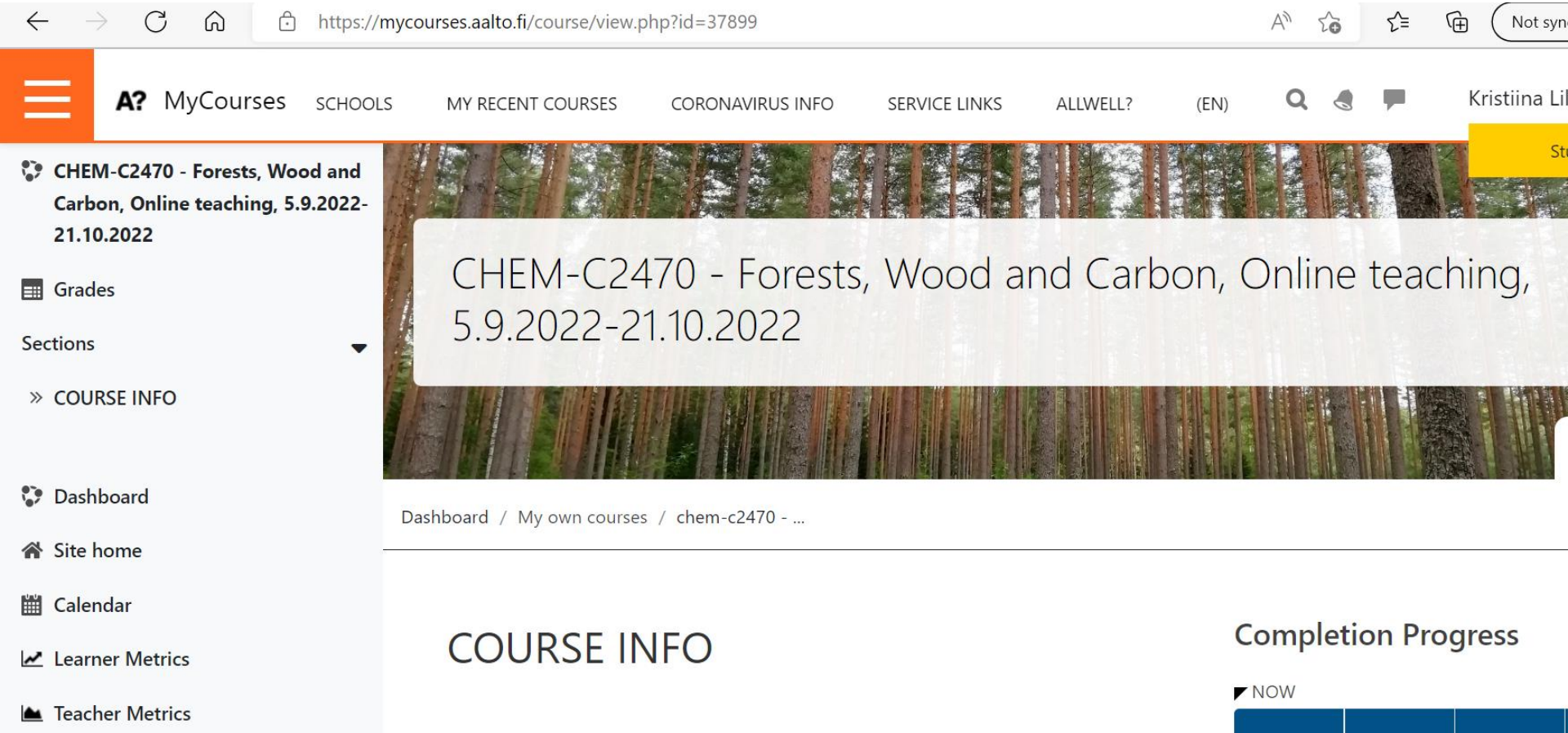
1. **Study the material at Aalto MyCourses workspace**
   - Practice with all the 7 online quizzes (100% correct)
2. **Do the 3 online exams in the workspace**
   - The exams you may do only once
3. **DL Wed 12.10.2022**
4. **Give feedback in MyCourses**

Fri 14.10.2022 at 9:15-10 Closing @Zoom

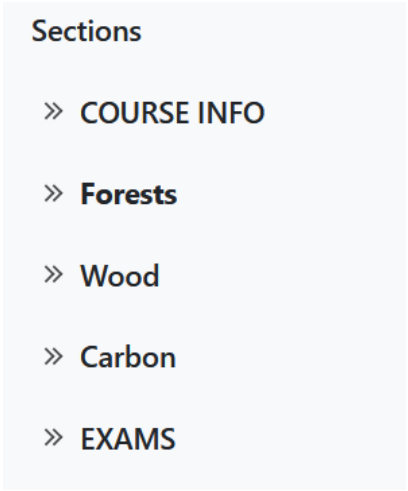
Participation to intro + closing sessions recommended (not compulsory)

→ Grading 0-5 (scale determined later)

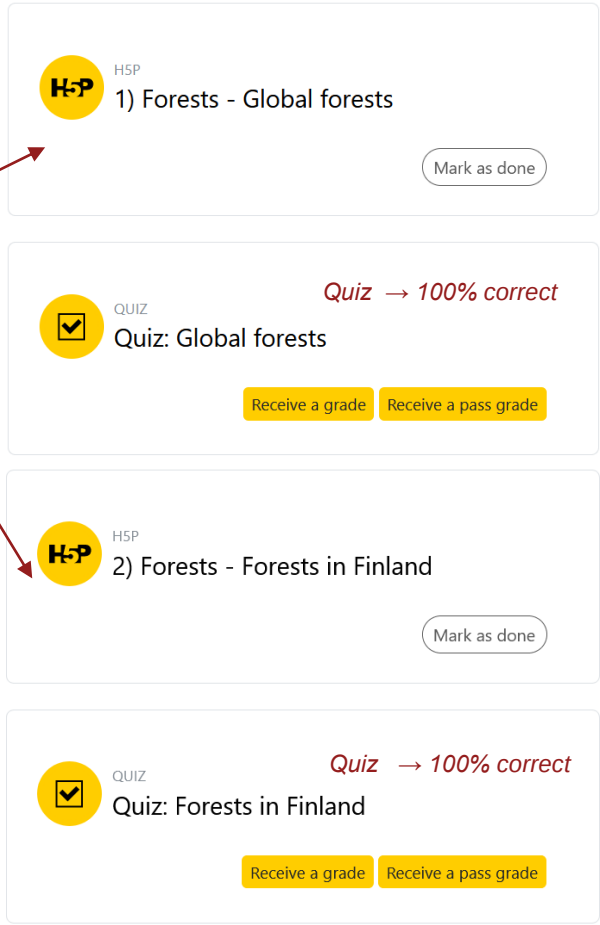
Course info in MyCourses



All materials in MyCourses

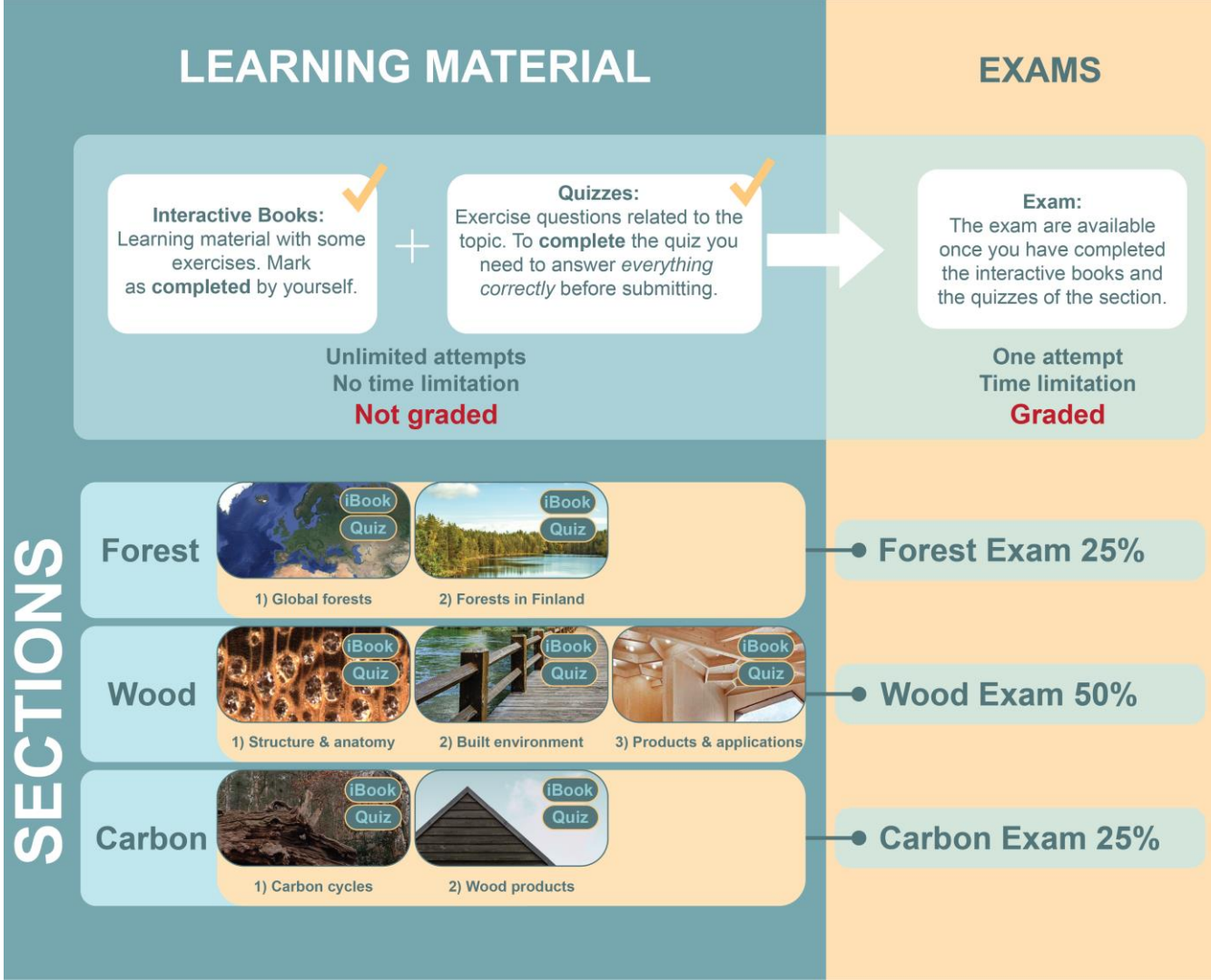


“Interactive book”



Plan ahead!

- DL 12th Oct
- 6 weeks, start today!
- Reserve enough time for exams and feedback!



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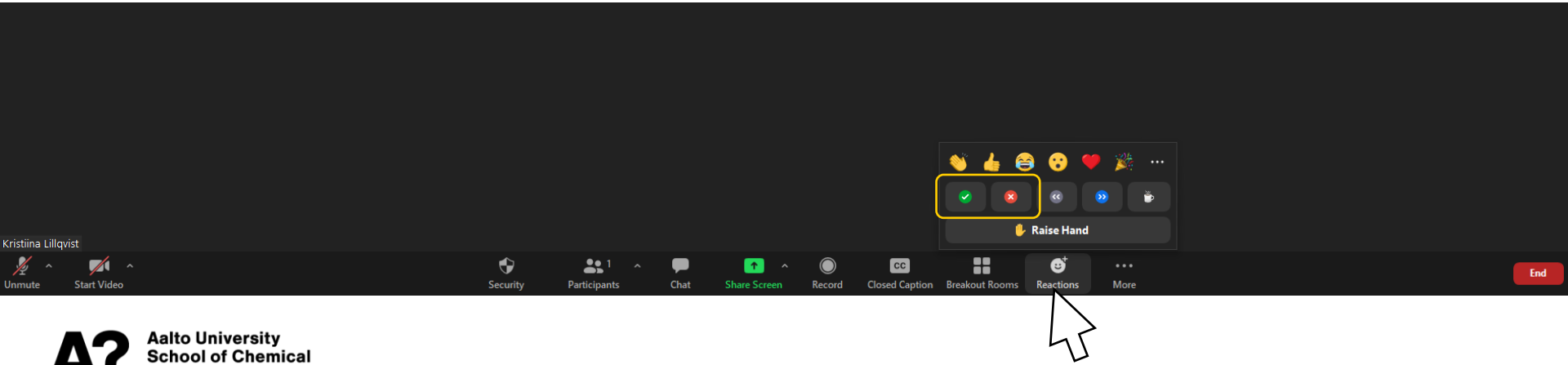
Yes / no questions!

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



In Finland we are cutting more forests than they yearly grow?

YES
The area and biomass is reducing

NO
The area and biomass is increasing

Finnish forests (2017)

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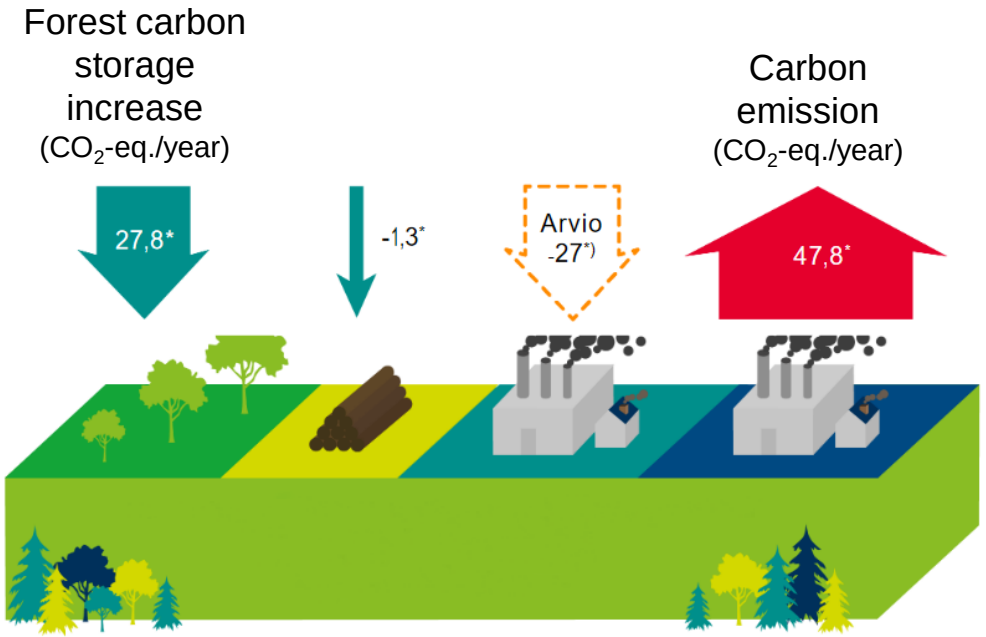
Source: https://yle.fi/aihe/artikkeli/2018/11/19/suomi-on-euroopan-metsaisin-maa-tutki-milta-hiilinielumme-nayttaa-numeroina

The forest carbon sink currently covers 50% of the carbon emissions of Finland?

YES
Forests cover 50% of emissions

NO
Forests cover less than 50%



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Source: https://mmm.fi/documents/1410837/22836561/Metsien+rooli+ilmastonmuutoksen+hillinnassa.pdf/b8b48104-a90c-ed4d-647d-8982f8f507d5/Metsien+rooli+ilmastonmuutoksen+hillinnassa.pdf?t=1657261749936

Carbon in a tree gets released to the atmosphere when the tree is felled?

YES
It is released.

NO
It is not released.

Picture: Kristiina Lillqvist

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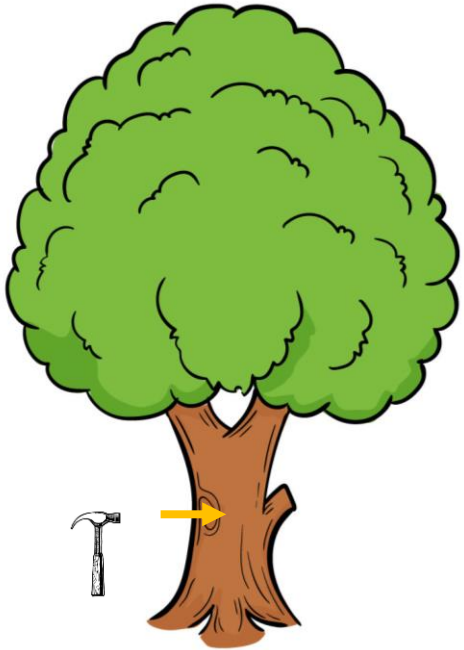
Nail stays at the same height after 10 years?



YES
It stays approximately at the same height

NO
It moves upwards

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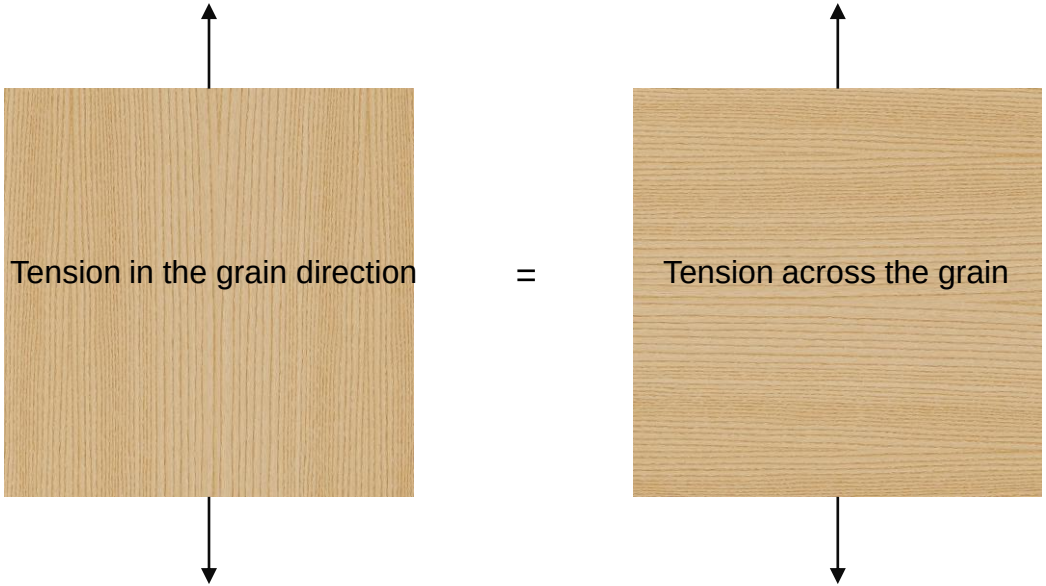
Tree illustration: https://iheartcraftythings.com/tree-drawing.html

Grain orientation does not influence wood strength?



YES
Strength is the same

NO
Strength is different

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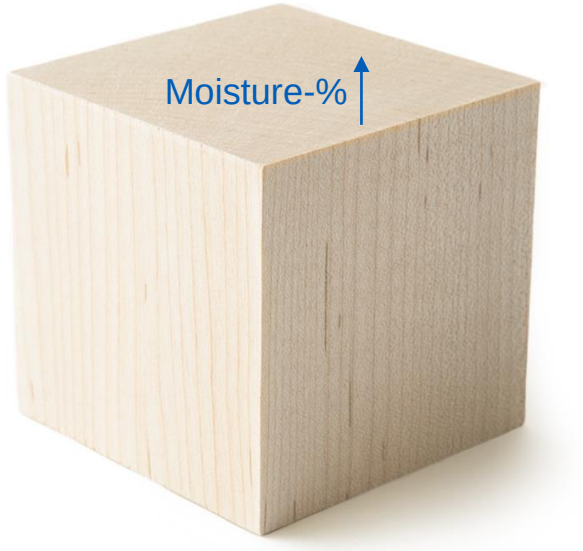
Wood photo: https://www.archiexpo.com/prod/lamin-art/product-59285-1281491.html

If relative humidity in the air increases, moisture content in wood increases?



YES
Wood moisture increases

NO
No change in wood moisture

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Wood photo: https://www.walmart.com/ip/25-Pcs-3-Maple-Wood-Blocks-Soft-Maple-is-a-hard-wood-which-is-great-for-staining-or-painting/180744757

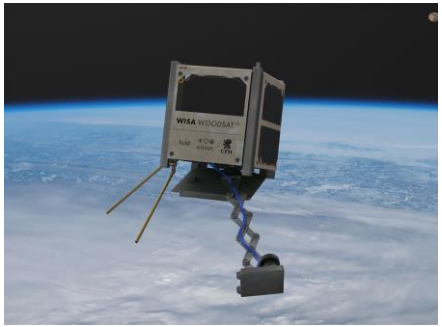
Wood is still used to make these products?

Aircraft 1940

Wind-mill ~1800

Boat ~1200

NO
It is not used



YES
It is used

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https://www.kulttuuriymparistomme.fi/fi-FI/Ajankohtaista/Artikkelit/Vanhat_tuulimyllyt_osana_kulttuurimaisem%2842723%29
https://en.wikipedia.org/wiki/De_Havilland_Mosquito
https://www.reddit.com/r/OldWoodenSailingShips/

Sources:
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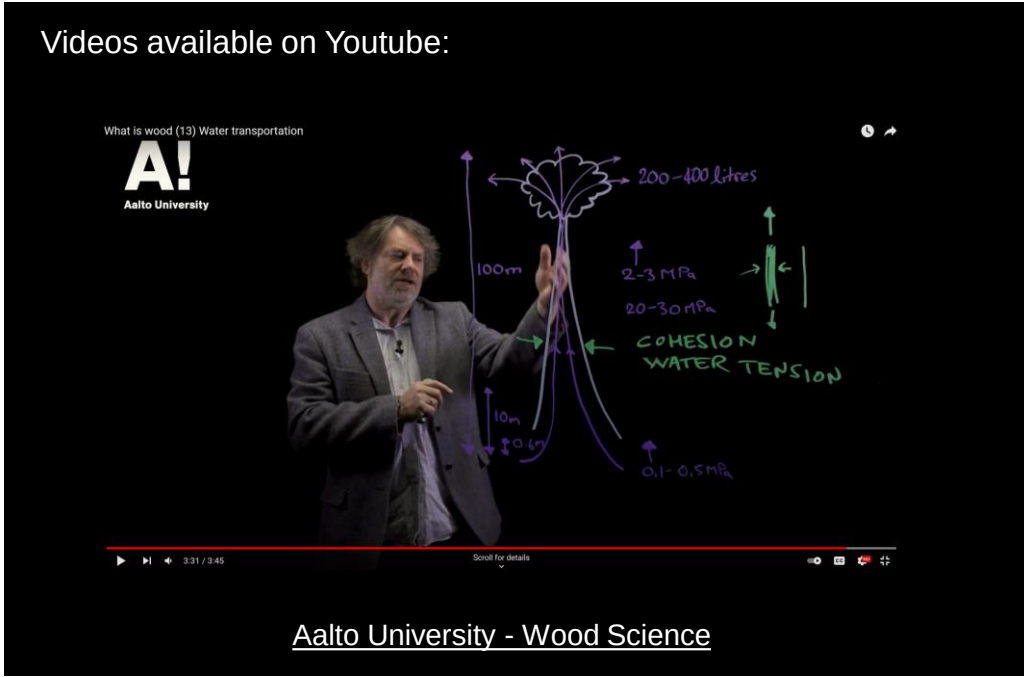
https://www.wisaplywood.com/news-and-stories/news/2021/04/worlds-first-wooden-satellite-slated-for-launch--upm-partners-with-finnishspace-companies-arctic-astronautics-and-huld/old w

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:



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