



# CK2450 Fibre Technology - Natural and Synthetic Fibres 7.5 credits

Fiberteknologi - Naturliga och syntetiska fibrer

This is a translation of the Swedish, legally binding, course syllabus.

## Establishment

The official course syllabus is valid from the autumn semester 2025 as decided by the Faculty Board decision PA-2025-0010. Date of decision: 2025-10-01.

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

Second cycle

## Main field of study

Chemical Science and Engineering

## Specific prerequisites

Bachelor's degree within a programme that includes:  
50 university credits (hp) in chemistry or chemical engineering, 20 university credits (hp) in mathematics, and in computer science or a corresponding field.

# Intended learning outcomes

After completing the course, the student should  
To pass the course, be able to:

- describe which chemical components are included in the fibre wall, how they are affected by the fibre release processes, and what role they play in the fibre wall
- relate how the properties of the cellulose fibres (physical and chemical) are related to the fibre network structure and the properties of the fibre materials
- describe how fibres interact with water using thermodynamic basic principles and how this affects the properties of fibre-based materials
- understand which advanced experimental methods are available to characterize the structure, chemical, and surface chemical properties of the fibres
- account for how fibres can be modified via chemical and physical methods and how these can be used in existing and new materials
- explain how synthetic fibres are manufactured and explain the relationship between chemistry, process, and physical properties

## Course contents

A basic understanding of how fibres mainly liberated from wood are characterized and possibly modified to be used in different products such as hygiene materials, packaging materials, different paper qualities, and an insight into the research front for how fibres can be used in new materials, for e.g., energy storage and advanced composites.

A large focus will be on

- explaining how the hierarchical structure of the fibres is related to the properties of the materials produced by the fibres, and the examples given in the course are collected from hygiene materials, packaging materials, paper, and composites.
- describing how fibres interact with moisture and water, and how this can be described in a basic way and controlled to achieve optimal properties
- giving examples of how fibres can be chemically and physically modified

## Examination

- SEM1 - Seminar Task, 1.5 credits, grading scale: P, F
- TEN1 - Written exam, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability. The examiner may apply another examination format when re-examining individual students. If the course is discontinued, students may request to be examined during the following two academic years.

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.