



CK2480 Biorefining and Emerging Applications 7.5 credits

Bioraffinaderi och morgondagens tillämpningar

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

Establishment

The official course syllabus is valid from the autumn semester 2026 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 in engineering or in sciences including 50 credits in chemistry or chemical engineering. English B/6.

Intended learning outcomes

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

- demonstrate understanding of chemical and physical aspects of processes for the production of cellulose, hemicellulose and lignin derivatives, platform chemicals and other chemical products from plant biomass
- link principles and concepts for biorefinery to the UN Sustainable Development Goals
- link molecular structure, fiber structure and chemistry to advanced functionality
- understand the processing, property and performance chain for new applications
- understand the processes for designing a new fiber-based product, including one or more processing routes and compare the solutions from a sustainability perspective
- summarize scientific information in a report and also orally present it at seminars

Course contents

The course will cover the following:

- Chemistry related to biofiber production processes and strategies for recycling biopolymers, monomers and chemicals used during the process
- Emerging biorefineries and the relationship to circularity and the environment
- Emerging applications from biobased platform chemicals, biofibers and biopolymers

Challenges and opportunities will be discussed.

A project work is included in the course. The project work will be carried out in groups and will consist of a laboratory part and a seminar part.

Examination

- PRO1 - Project work, 3.5 credits, grading scale: P, F
- TEN1 - Written exam, 4.0 credits, grading scale: A, B, C, D, E, FX, 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.