KF2480 Chemistry of a Biorefinery 7.5 credits

Bioraffinaderiets kemi

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

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for KF2480 valid from Spring 2024

Grading scale

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

Education cycle

Second cycle

Main field of study

Chemical Science and Engineering,Chemistry and Chemical 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 corresponding.

Completion of Biofiber Chemistry Course (KF2460) or similar Fiber Chemistry related courses.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

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

- Demonstrate understanding of mechanisms involved in pulping and biorefining techniques
- Understand and predict how the hierarchic structure of plant fibers are affected during biorefinery processes
- Understand the principles of characterization techniques and how they apply to generated substrates in biorefining
- Demonstrate understanding of chemical and physical aspects of processes for production of cellulose- and lignin- derivatives, platform chemicals and other chemicals produced from plant biomass with consideration taken to a sustainable society
- Demonstrate literature search capabilities, report writing and oral presentation capabilities

Course contents

The course consists of lectures, a literature seminar and eventually laboratory work. The examination is done in combination with a written examination and a written and an oral presentations of the seminar task.

Lectures:
Chemical reactions during, mechanical fiber release, chemical reactions during chemical fiber release, chemical reactions during biomass pretreatments, chemical reaction during acid hydrolysis, , generation and storage of process chemicals, the biorefinery and the environment, and its chemical cycle, Platform chemicals and Material concepts.

Examination

- SEMB - Seminar, 1.5 credits, grading scale: P, F
- TENB - Written exam, 6.0 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.

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.