KE2130 Renewable Fuel Production Processes 7.5 credits

Förnybara bränslen - produktionsprocesser

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 KE2130 valid from Autumn 2015

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

Admission requirements for independent students:
75 university credits (hp) in chemistry or chemical engineering, 20 university credits (hp) in mathematics and 6 university credits (hp) in computer science or corresponding. Documented proficiency in English corresponding to English B.

Admission requirements for programme students at KTH:
At least 150 credits from grades 1, 2 and 3 of which at least 110 credits from years 1 and 2,

and bachelor's work must be completed, within a programme that includes:
75 university credits (hp) in chemistry or chemical engineering, 20 university credits (hp) in mathematics and 6 university credits (hp) in computer science or corresponding.

Language of instruction

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

Intended learning outcomes

The general aim of the course is to develop the students' skill in analysing and in a creative way solving problems related to process chemistry. The starting point for the course is the raw materials, including renewables as well as fossil materials, and it then continues via the process system to products and side products, energy use and the placing of the process in the regional and global surroundings.

After completion of the course the student should be able to:

- Identify important chemical and chemical engineering process steps in industrial applications for production of renewable fuels.
- Analyse and find solutions to chemical process problems when regarding product formulation, conversion and optimisation of different parameters with relevance for the production of renewable fuels.
- Suggest relevant process schemes.
- Decide what type of reactor is the most suitable for a certain process.
- Identify and judge different opportunities for process integration when producing renewable fuels.
- Evaluate strategies for development of new technologies and/or products taking into account environmental and process safety issues in the production of renewable fuels.
- Compare and judge different raw materials for production of a certain fuel, considering environmental and safety issues.
- Compare, in particular, fossil and renewable raw materials taking into account the different process systems needed for production of a specified fuel.

Course contents

The course describes a number of processes for the production of renewable fuels. In lectures, and in a visit to an industrial process, more traditional processes as well as new types of processes in the technical front line will be treated. Important chemical, chemical engineering and biochemical process steps are discussed in detail in the course.

The course includes a project assignment in which the students in groups investigates different process systems and present their work orally and as a written report.

Course literature

Chemical Process Technology, 2nd edition, J.A. Moulijn, M. Makkee and A. van Diepen, John Wiley and Sons, Chichester, New York, Wenheim, Brisbane, Singapore, Toronto, 2013.

Särtryck

Examination

- PRO1 - Project, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 4.5 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.

Other requirements for final grade

To pass the course the student must pass the examination(TEN1) and pass the project work.

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.