KE2130 Renewable Fuel Production Processes 7.5 credits

Förnybara bränslen - produktionsprocesser

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

Establishment

Course syllabus for KE2130 valid from Autumn 2007

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

Basic courses at undergraduate level in chemistry and chemical engineering.

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 bulk- as well as of fine- and specialty chemicals.

• Analyse and find solutions to chemical process problems when regarding product formulation, conversion and optimisation of different parameters.

• Suggest relevant process schemes.

• Decide what type of reactor is the most suitable for a certain application.

• Identify and judge different opportunities for process integration when producing chemical products.

• Evaluate strategies for development of new technologies and/or products taking into account environmental and process safety issues in the chemical industry.

• Compare and judge different raw materials for production of a product, 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 product.

Course contents

The course deals with methods for analyses of industrial chemical processes. Industrial chemical processes include traditional inorganic or petrochemical processes for production of bulk chemicals, processes for production of pharmaceutical and fine chemicals as well as new types of processes in the technical front line, such as environmentally friendly utilization of the fuels. The lectures, the exercises as well as visits to industrial companies deal with the problems above.

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, J.A. Moulijn, M. Makkee and A. van Diepen, John Wiley and Sons, Chichester, New York, Wenheim, Brissbane, Singapore, Toronto, 2001
Additional material

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.

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

Other requirements for final grade

Written examination (TEN1; 4,5 hp) 6 hrs, Project report and presentation (PRO1; 3,0 hp)

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.