FKE3110 Process Development in Chemical Engineering 3.0 credits

Kemiteknisk processutveckling

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 FKE3110 valid from Spring 2015

Grading scale

Education cycle

Third cycle

Specific prerequisites

MSc in chemical engineering or corresponding knowledge.

Language of instruction

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

Intended learning outcomes

To provide the students with skills for real-life process development and upscaling of catalytic processes. The course introduces a dual approach with scale down to well controlled experiments and fast scale up to pilot scale operating at industrial mass velocity making the scale up a learning process.

Course contents

1. Process and plant: definitions

Purpose of chemical process.

The process. Main reactions; temperatures; pressures; catalysts;The plant; Batch-wise vs. continuous operation

2. Elements of Basic Design

Basic conditions: plant capacity; plant location, legislation, raw materials

PFD and simplified P&I-D, detailed process description. Flow sheeting

Heat integration (Pinch technique)

3. Plant economics

Methods for estimating plant investment. Methods for calculating plant economics

4. Upscaling of catalytic processes

Lectures and seminars are primarily given by Prof. Rainer Reimert, Karlsruhe Institute of Technology and Prof. Jens Rostrup-Nielsen (former R&D Manager Haldor Topsøe)

Course literature

Vetenskapliga artiklar och utdelat material.

Scientific papers and hand-outs.

Examination

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.

Oral presentation and report. Active participation in discussions at seminars. At least 90 % participation is required.

Other requirements for final grade

Oral presentation and report. Active participation in discussions at seminars. At least 90 % participation is required.

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.