



KE2045 Chemical Reaction Engineering 7.5 credits

Kemisk reaktionsteknik

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 KE2045 valid from Spring 2019

Grading scale

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

Education cycle

Second cycle

Main field of study

Chemical Science and Engineering

Specific prerequisites

Courses corresponding to the Bachelor programme Engineering chemistry at KTH or equivalent.

Language of instruction

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

Intended learning outcomes

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

- Recognise/Describe ideal reactors and their characteristics
- Develop mathematical expressions (models) to describe the behaviour of reactors and analyse how kinetics, mass- and heat transfer affect the performance of reactors.
- Apply analytical and numerical methods to determine reactor behaviour and analyse the results
- Design/Size chemical reactors and optimise operating conditions
- Apply RTD (residence time distribution) methods to diagnose non-ideal flows in reactors and calculate conversions in non-ideal reactors.

Course contents

Theory and problem solving

There are three sections in this part, ideal reactor models, heterogenous systems and non-ideal reactors.

Home and classroom problems

In this course there are exercises in the form of home and classroom problems that are solved by groups of three students each. Some of those problems are linked to the computer laboratory exercises.

Computer laboratory exercises

Computer laboratory exercises are carried out by groups of students. By this the students are to exercise the whole chain from a problem in chemical reaction engineering, formulating a mathematical problem, choosing numerical algorithms, calculation methods and computer software, and doing the computer calculations in the computer classroom.

Course literature

H. Scott Fogler 'Elements of Chemical Reaction Engineering' 5th Edition, 2016

Examination

- BER1 - Home and classroom problems, 3.0 credits, grading scale: P, F
- LAB1 - Laboratory work, 1.5 credits, grading scale: P, F

- TEN1 - Written exam, 3.0 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.

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.