



KE1180 Introduction to Chemical Engineering 7.5 credits

Inledande kemiteknik

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

Establishment

Course syllabus for KE1180 valid from Spring 2019

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Introductory chemistry or the equivalent.

Language of instruction

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

Intended learning outcomes

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

- Use the important tools - material and energy balances.
- Adapt the basecase for these to a given process, reactor or unit operation and solve the resulting equation system.
- Set up models for material and energy balances for different design alternatives, combine and apply these models in problem-solving and use enthalpy tables, specific heat and other material properties to aid the calculations.
- Describe and give examples of processes such as continuous/stepwise processes, stationary/non-stationary processes, open/closed systems, and explain the concepts of air surplus, recirculation, total yield, exchange and selectivity.
- Describe various types of reactors such as stepwise and continuous.
- Describe some unit operations such as distillation, sedimentation, adsorption and crystallisation.
- Apply a system approach to the problems of chemico-technical nature and identify the system limitations which apply to the problem, and choose system boundaries so that the problem becomes solvable based on the information given.

Course contents

The course consists of two parts. In the first part, an overview of material and energy balances is given and application of these to various types of technical systems. At the same time an introduction is given to unit operations and reactors, and material and energy balances are applied to these.

The teaching is given in part with a smaller number of lectures where fundamental concepts and methods are explained, and in part with exercises emphasizing the student's activity and ability to carry out calculations. This part ends with an examination. In parallel with the first part, written assignments are given out whose aim is to provide an opportunity to practice theories and concepts before the examination.

Course literature

Elementary Principles of Chemical Processes, R.M. Felder & R.W. Rosseau, John Wiley & Sons, Inc., 2005 edition, ISBN 978-0-471-37587-6.

Additional material will be distributed

Examination

- INL1 - Assignment, 1.5 credits, grading scale: P, F

- TEN1 - Examination, 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.

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

Other requirements for final grade

Passed examinations (TEN1) and passed written assignment (INL1) are required to pass the course.

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.