CK1175 Chemical Process Engineering 5.0 credits

Kemisk processteknik

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

Establishment

Course syllabus for CK1175 valid from Autumn 2023

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

KE1140 Technical chemistry and either SF1625 One variable analysis or SF1624 Algebra and Geometry.

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:

- Size individual components/equipment in a chemical process system by taking into consideration sustainability aspects
- Analyze principles and theory of chemical reaction engineering and separation processes.
- Apply chemical kinetics and mass transport for designing and operating chemical reactors

Course contents

he course deals with the basics of chemical process engineering, and is based on relationships about chemical kinetics, thermodynamic equilibrium, diffusion, and conservation of mass to evaluate chemical processes producing chemicals, power and/or heat. The fundamental chemical engineering principles are based on both microscopic and macroscopic mathematical models to describe ideal processes in chemical processes equipment. During the course the students will:

- analyse production processes' energy and material use based on chemical engineering, environmental, social, and economic criteria.
- Reflect in a structured way on the role of engineer and the professional responsibility in relation to sustainable development.
- Discuss the fundamental principles of process intensification and environmentally friendly production processes.
- Explain how the driving force for mass transport affects the dimensioning of a separation process and suggest applied separation methods based on compounds physical properties.
- Identify safety risks during operation of chemical reactors and separation processes.
- Suggest design and operating conditions for ideal reactors in order to minimize waste deriving from the ideal reactors and selectivity concepts.

Examination

- BER1 - Calculation assignments and laborations, 1.5 credits, grading scale: P, F
- TEN1 - Written exam, 3.5 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.

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.