KE2310 Sustainable Systems for Heat, Power and Materials Production 7.5 credits

Hållbara system för värme-, el- och materialproduktion

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 KE2310 valid from Autumn 2019

Grading scale

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

Education cycle

Second cycle

Main field of study

Chemical Science and Engineering

Specific prerequisites

Admission requirements for programme students at KTH:
At least 150 credits from grades 1, 2 and 3 of which at least 110 credits from years 1 and 2, and bachelor's work must be completed, within a programme that includes:

75 university credits (hp) in chemistry or chemical engineering, 20 university credits (hp) in mathematics and 6 university credits (hp) in computer science or corresponding

Admission requirements for independent students:
75 university credits (hp) in chemistry or chemical engineering, 20 university credits (hp) in mathematics and 6 university credits (hp) in computer science or corresponding. Documented proficiency in English corresponding to English B.

Language of instruction

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

Intended learning outcomes

After completion of this course, the students should be able to:

- Recognize the principle of process integration for the achievement of higher efficiency both concerning the use of raw material and for reaching a better energy utilisation.
- Understand and be able to explain why the simultaneous production of several products may be advantageous in many situations but also when it is not relevant.
- Describe a number of relevant existing processes, commercial or under development.
- Critically analyse new possibilities for the simultaneous production of several products
- Evaluate and critically analyse competing possibilities for producing different products by using the same raw material or the production of the same products using different raw materials
- Analyse and criticise the interaction between technical and economic aspects in the development of process integrated systems
- Be familiar with some basic evaluation tools for the evaluation of complex process systems relevant for this course (e.g. pinch technology)
- Be able to perform simple calculations using the methods introduced in the course for process analysis.
- Plan and gather the technical data required for the carrying out of mass and heat balances describing an actual process idea.
- Discuss and identify a relevant system boundary for the process analysis

Course contents

Concept for simultaneous production of more than one product from the same raw material with the aim of reducing energy use and raw material consumption. Description of a number of existing, commercial systems and the discussion of systems in a development stage.

Course literature

Kurslitteratur meddelas närmare kursstart.

Examination

- INL1 - Assignment, 3.5 credits, grading scale: P, F
- TEN1 - Examination, 4.0 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.

Other requirements for final grade

A pass grade on all parts

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.