KE2010 Industrial Energy Processes 7.5 credits

Industriella energiprocesser

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 KE2010 valid from Autumn 2011

Grading scale

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

Education cycle

Second cycle

Main field of study

Chemical Science and Engineering,Chemistry and Chemical 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

To give the students: Knowledge of advanced applied thermodynamics of importance primarily to the chemical process industry, and knowledge of environmental and safety issues in connection with heat and power production. Knowledge and skill in using modern methods for the economic evaluation of the energy requirements in industrial energy processes.

To present the developments in research and application in the field of industrial ecology.

To discuss what role industrial ecology can play applied to strategic sustainable development on a global scale as well for strategies for manufacturing industries.

Course contents

Energy conversion for the different technical thermodynamic processes. Theoretical and real thermodynamic cycles. New energy technology of importance to process industry. The exergy concept is introduced and applied. Economic aspects and consequences of heat and power production. Measures to improve the efficiency in energy use. Analyses of industrial energy systems. Environmental and safety matters in connection with energy conversion processes.

Course literature

Moran, Shapiro: "Fundamentals of Engineering Thermodynamics" 2nd eller 3rd Ed., SI

Version, John Wiley & Sons.

Examination

- BER1 - Calculation Task, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 4.5 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.

The two examination components are evaluated and reported separately.
Over the course is offered two control formulations. The point of these may be counted on the exam.

Other requirements for final grade

Passed examination (TEN1; 4,5 credits)
Passed homework assignment (BER1; 3 credits)

The grades A-F are given as the final grade after the student received a passing grade on both 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.