MJ2414 Energy Systems Analysis in an Environomical Context 6.0 credits

Energisystemanalys med exergi-, ekonomi- och miljöperspektiv

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

Establishment

Course syllabus for MJ2414 valid from Autumn 2015

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Bachelor's degree (BSc) 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 passing the course, the student should be able to:

- analyse the chain from primary energy sources to energy services in a system perspective which leads to the student being able to:

i) establish system borders for basic energy systems as e.g. using primary energy sources for comfort heating or cooling.

ii) carry out a general energy, environment and cost-benefit analysis of an energy system.

iii) see the basic relationships between energy, environment and economics in studied systems with exergy as a starting point.

Course contents

Energy system analysis with exergy, economical and environmental perspectives

Course literature

- Bejan, A., Tsatsaronis, G., Moran, M. 1996. Thermal Design & Optimization. John Wiley & Sons, Inc.

- Or other reference text books of your choice in Engineering Thermodynamics, e.g. (available as e-books):

i) Jalurya Y., Design and Optimization of Thermal Systems, 2nd edition. CRC Press 2007.

ii) Elliot J. R., Lira C. T., Introductory Chemical Engineering Thermodynamics, 2nd edition, 2012.

- Lecture “Handouts” including our commonly collected literature through Homework Assignments.

- Assigned references in class.

Examination

- TEN2 - Home Exam and Oral Exam, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Written Exam, 3.0 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.

Written and oral test

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.