MJ2404 Energy Conversion Systems 6.0 credits

Energiomvandlingssystem

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

Establishment

Course syllabus for MJ2404 valid from Autumn 2019

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Language of instruction

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

Intended learning outcomes

After a successfully completed course, the student would be able to:

- Describe the fundamental principles behind thermal energy conversion processes together with their environmental footprint in both conventional and renewable power generation cycles and systems.
- Characterize the parameters, draw the schematic layout, calculate the performance and assess the sustainability factors for Steam Cycles, Gas Cycles and Combined Cycles in power generation applications, in both conventional and renewable energy perspective.
- Justify possible efficiency improvements via innovative technologies or alternative energy solutions for the modern sustainable power generation and distribution system.
- Evaluate power system performance including electrical engineering factors for the control and management of smart electrical grids.

Course contents

The course MJ2404 "Energy Conversion Systems" is partially integrated with the larger course MJ2405 "Sustainable Power Generation" (SPG), having similar focus and contents regarding thermal power systems but with the addition of electrical engineering aspects relevant to the modern power sector. MJ2404 is run in partnership between KTH in Stockholm and UPC in Barcelona (Universitat Politécnica de Catalunya, BarcelonaTech), sharing teaching duties so that the course events proceed simultaneously at both universities.

Examination

- KON1 - Partial exam, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- KON2 - Partial exam, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Exercise, 1.0 credits, grading scale: P, F
- ÖVN2 - Exercise, 1.0 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.

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.