MJ2382 Energy Data, Balances and Projections 6.0 credits

Energidata, energibalanser och projektioner

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

Establishment

Course syllabus for MJ2382 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 passing the course, the students should be able to:

ILO 1: Explain why political decisions and planning for the development of sustainable national energy systems require a reliable energy balance and prognoses for future energy requirements.

ILO2: Interpret the most important aspects of a national energy balance and its application.

ILO 3: Make assessments concerning the use of 'bottom up' or 'top down' methods to project the energy requirements, with relevance for specific applications.

ILO 4: Collect relevant energy-related data to analyse current and future energy requirements in a country.

ILO 5: Based on a national energy balance, create the structure in a model for energy need projections

ILO 6: Develop prognoses for the future energy requirements in a country through the use of "bottom up" methods

ILO 7: Develop prognoses for the future energy requirements in a country through the use of "top down" methods

Course contents

The course will combine lectures, computer-based laboratory sessions, compulsory seminars and project work. Lectures and labs will be delivered by some local and external experts from various research organizations. The course will be taught both by KTH lecturers and guest lecturers from organizations such as the International Energy Agency (IEA) and UN-DESA. After completion of all computer labs, students will be required to attend two seminars, followed by a detailed project report and an exam at the end of course.

The course instructors will provide lists of relevant projects during the first week of the course. Each project will be completed by group of 3 to 4 students. The project should be documented in a written report (in English). Each project group should also deliver a peer review report as opponent group for another project. This should also be in English. For the mandatory seminar during the course, the students will prepare the presentation of their progress in the computer lab exercises they performed. For the compulsory seminars, each group will prepare presentations of the progress of the project, based on the contents of each computer-based laboratory session.

During the course, the students will be exposed to energy data classification, collection and prognosis work from the International Energy Agency (IEA), the UN´s statistical commission (UN Stats) and the UN's International Atomic Energy Agency (IAEA). The students should also interact with IEA, UN Stats and IAEA.

Course literature

Lecture handouts and laboratory instructions will be distributed by the course coordinator

The students will also carry out an individual literature search formaterial relevant to their independent project.

Examination

- SEM1 - Seminar, 0.5 credits, grading scale: P, F
- SEM2 - Seminar, 0.5 credits, grading scale: P, F
- PRO1 - Project, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Written exam, 2.0 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.

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.