



MJ2382 Energy Data, Balances and Projections 6.0 credits

Energidata, energibalanser och projektioner

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

On 22/04/2022, the Dean of the ITM School has decided to establish this official course syllabus to apply from autumn term 2021 (registration number M-2022-0602).

Decision to discontinue this course

<p>The course is discontinued at the expiration of the autumn semester 2023 according to a decision by the Dean of the ITM School : M-2022-0602. Decision date: 22/04/2022</p><p>The course was given for the last time during autumn semester 2021. Final opportunity for examination will be given during autumn semester 2023.</p>

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

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:

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.
2. Interpret the most important aspects of a national energy balance and its application.
3. Describe the economic drivers of long term energy transitions and critique how these are modelled.
4. Develop and apply a techno-economic model to policies, technologies and other interventions using scenario analysis.
5. Analyze key outputs of techno-economic models, including system costs and shadow prices, in combination with off-model data and interpret in terms of their social, economic and environmental dimensions and sustainable development.

Course contents

The overall objective of the course is to explore basic energy system concepts related to energy data, energy infrastructure investments, energy-environment economics and the role of indicators for sustainable development.

The students will gain practical experience in the use of a range of economic tools and models. These include basic linear programming techniques, the economic interpretation of energy models and economic indicators relating to policy and technology scenarios. In a group project, they will use an energy system model to map key economic indicators to sustainable development goals, and further develop their critical skills in modelling and results interpretation.

Specific prerequisites

Examination

- LABA - Laboratory work, 0.5 credits, grading scale: P, F
- PROA - Project, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- SEMA - Seminar, 0.5 credits, grading scale: P, F
- TENA - 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.

Transitional regulations

Students who have not completed the course with a previous set of examining modules will either be examined within the framework of the new modules or alternatively be offered replacement assignments for a period of three 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.