ME2085 Transformation in Energy Systems and Industries 6.0 credits

Omvandling av energisystem och energirelaterad industri

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

Establishment

On 2024-10-12 the Director of First and Second Cycle Education of the ITM School has decided to establish this official course syllabus to apply from spring semester 2025 (registration number M-2024-1860).

Grading scale

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

Education cycle

Second cycle

Main field of study

Industrial Management

Specific prerequisites

Achieved the requirements for a Bachelor's degree in technology or natural sciences.

English B/ English 6, or equivalent.

Language of instruction

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

Intended learning outcomes

After completing the course, students are intended to be able to:

1. empirically analyse business models in relation to energy systems and/or energy industries,
2. explain the diffusion of innovation in relation to energy systems and/or energy industries and their role for energy transitions,
3. discuss the mechanisms that underlie industrial transformations and technical changes and their implications in relation to energy systems and/or energy industries,
4. evaluate theoretical concepts and current research from the field of industrial dynamics for managing technological and industrial change processes in relation to energy systems and/or energy industries,
5. analyse industrial and technological change and independently discuss problem formulations and their solutions to tackle complex change in energy systems and/or energy industries,
6. present results and conclusions based on a scientific investigation for different types of audiences (e.g. academia, business).

Course contents

The course deals with the challenges and opportunities that drive transformations of energy systems and energy-related industries. This includes discussing the relevance of global challenges like climate change and sustainable development and analyzing how they contribute to transformations of energy systems and industries.

The course contains a series of lectures with an in-depth review and analysis of the drivers of transformations of energy systems and energy-related industries, as well as the mechanism of these changes from an economic, socio-technical, political and environmental perspective.

The course includes lectures on the theories and concepts for understanding energy systems and energy industries in transition, on the role of energy businesses for managing these transitions, energy-related innovation and the diffusion of innovation, business models, energy markets and the introduction of renewable energy.

The course contains an individual essay and group work. Throughout the course you will be provided with tools to carry out these assignments. In the project, and during seminars, focus will be on critical review and evaluation of the applicability of the theoretical concepts from the field of industrial dynamics for managing and leading technological and industrial change in the energy sector (energy systems and energy-related industries).

Examination

- INL1 - Assignment, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- SEM3 - Seminars, 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.

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.