MJ2513 Circular Economy and Energy System 6.0 credits

Cirkulär ekonomi och energisystem

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

Establishment

The official course syllabus is valid from the autumn semester 2023 in accordance with head of school decision: M-2021-2018. M-2021-2018. Decision date: 14/10/2021

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

The upper secondary course Eng B/6 or the equivalent Knowledge in Energy systems for sustainable development (equivalent to MJ2508) and Transformation in energy policy and climate agenda (equivalent to MJ2512)

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:

1. Formulate and critically discuss principles and strategies for circular economy and consequences of circular transitions for sustainable development in specific sectors, such as resource management, energy and resource-intensive industries.
2. Apply tools and methods that are relevant for the assessment of circular performance and choose an appropriate assessment tool based on a problem description.
3. Give an account of and illustrate the importance of business model innovation for value creation in a circular economy.
4. Evaluate possibilities and challenges to utilise the potential in the innovation of the business models in connection with the transition to a circular business model in the energy-intensive industries.
5. Communicate in an organised and structured way solutions and scientific results orally and written.

Course contents

1. Principles and strategies for circular economy in energy systems and the role of the circular economy for resource and energy efficiency and limitation of climate changes.
2. Methods and tools for evaluation of circular economy and circularity.
3. Business model innovation and value creation in circular economy in the energy sector;
4. Transition case to a circular finance model in energy-intensive industries.

Examination

- SEM1 - Seminar, 0.5 credits, grading scale: P, F
- SEM2 - Seminar, 0.5 credits, grading scale: P, F
- INL1 - Exercise, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- INL2 - Project work including oral 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.

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.