



# MH2051 Circular Economy for Materials Processing 7.5 credits

Cirkulär ekonomi för materialprocesser

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

The official course syllabus is valid from the autumn semester 2024 in accordance with decision M-2024-0536. Date of decision: 2024-03-15.

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Materials Science and Engineering

## Specific prerequisites

At least 150 credits in technology.

## 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 ...

- Explain the different principles of circular economy and apply them to different materials.
- Explain how properties of different processes and different materials contribute to a circular economy. For higher grades it is necessary to demonstrate the ability to question and analyze the constraints and challenges in the connection between different processes, materials and circular economics.
- Holistically analyze how changes in processes and / or materials composition affect sustainability goals and the conditions for a circular economy. A holistic perspective includes technical, organizational as well as society's perspective. For higher grades, the student is required to adapt the holistic analysis to the context of the problem.
- Demonstrate the ability to independently solve problems, as well as the ability to present the solution orally and in writing.

## Course contents

The course is based on 6 different themes:

1. Sustainable business and conditions for a circular economy
2. Materials and available resources (metals, ceramics, minerals, polymers and organic materials)
3. Natural raw materials
  - a. Exploration and environmental impact (metals and minerals)
  - b. Mining and environmental impact (metals and minerals)
4. Processing and recycling of materials (all materials)
5. Design, manufacture and use in a circular economy (all materials)
6. Recycling and reuse (polymers, ceramics, organic materials and metals)

## Examination

- PRO3 - Seminar assignment, 1.5 credits, grading scale: P, F
- PRO4 - Project assignment, 6.0 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.

The examiner, in consultation with the KTH Disability Coordinator (Funka), decides on any adapted examination for students with documented permanent impairment.

The examiner may grant another examination form for reexamination of single students.

## 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.