



FMG3803 Sustainability and industrial production – contemporary issues and opportunities 7.5 credits

Hållbarhet och industriell produktion – aktuella utmaningar och möjligheter

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 course syllabus is valid from Autumn 2022 according to the Dean of ITM school decision: M-2021-2382. Date of Decision 2021-12-13.

Grading scale

P, F

Education cycle

Third cycle

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. Analyze sustainability through systems perspective while describing its impact on primarily and interrelated production systems and functions.
2. Explain sustainable production as a practice and as performance measure, in relation to established industrial procedures.
3. Perform stakeholder dialogue and analysis regarding sustainability under different production system scenarios.
4. Conceptualize and evaluate solutions for challenges connected to SDGs and circularity within industrial production by employing advanced technologies.
5. Describe sustainable development in relation to the student's own research domain by incorporating the concepts discussed in the course.

Course contents

The focus of the course is to facilitate students to visualize their research project through systems perspective while understanding the inter-link between various sub-systems and then relating the project with different aspects of sustainable development. This includes a holistic perspective in understanding the UN sustainability goals in Agenda 2030.

The course includes the following themes:

- Sustainable development and sustainability goals and how these relate to the concepts discussed in the course and to the student's own research domain.
- Sustainability-related issues through a systems perspective, with special focus on circumstances that are relevant to industrial production systems.
- Sustainability as a practice and as performance measure in industrial production, while describing ISO, environmental certification, sustainability reporting, scenario analysis and LCA.
- Value creation through well-thought-out sustainability work in industrial production.
- Relationship between global sustainability challenges and manufacturing footprint – the local versus the global; goal conflicts; sustainability linked to logistics; life cycle analysis; location issues linked to industrial production; manufacturing network.
- Industry 4.0 and how advanced technology can be used in industrial production to contribute to the Global Goals in Agenda 2030.
- The impact of digitalisation on the production system in terms of sustainability and distributed manufacturing for circularity.
- Effects linked to information exchange between different actors and the need for transparency and visibility to ensure sustainability.

Specific prerequisites

Admitted to postgraduate studies in the subject production engineering or the subject industrial economics and management, or equivalent.

Examination

- INL1 - Hand in assignment, 1.5 credits, grading scale: P, F
- INL2 - Hand in assignment, 1.5 credits, grading scale: P, F
- INL3 - Hand in assignment, 1.5 credits, grading scale: P, F
- INL4 - Hand in assignment, 1.5 credits, grading scale: P, F
- INL5 - Hand in assignment, 1.5 credits, grading scale: P, 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.

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.