



ML2303 Digitalisation for Sustainable Production 9.0 credits

Digitalisering för hållbar produktion

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

Establishment

The head of ITM school determined on 12/04/2022 to establish this official course syllabus to apply from spring term 2023 (registration number M-2022-0412).

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Completed course ML1503 Industrial systems II, 6 credits or the equivalent.

Completed course Bachelor thesis, 15 credits or the equivalent.

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. Describe the foundation of and components in cyber-physical systems for application in production and logistics, including industrial IoT, autonomous systems, connections and big data solutions
2. Analyse preconditions and maturity for digitalisation in production
3. Review for applications in advanced data analysis, machine learning, AI, visualisation and interfaces to stakeholders, based on digitalisation in production and logistics
4. Connect the opportunities of digitalisation to practical applications within the development and operation of production, such as its relation to lean production, management systems and digital support for development in production
5. Link the opportunities of digitalisation to developed business models and servitisation for sustainable production
6. Critically analyse the application of digitalised production, considering ethics, personal integrity, computer security and integrity

Course contents

The main object of the course is to teach students to link understanding of the increasing digitalisation in industrial production with stakeholders' needs, roles, practice and future development of operations. Thus, the course prepares students for work tasks as providers or purchasers of solutions in the fast growing field of Industry 4.0.

Throughout the course, students will have the possibility to learn about a number of important technologies and tools to collect, store, analyse and visualise data for applications in production and logistics. The course will also give an understanding of how an increased digitalisation can be realised, and its possibilities to contribute to a more sustainable production as well as an increased servitisation and business development. Further, the course will form a basis for critical analysis of ethical, safety and integrity challenges with an increased digitalisation of production.

Examination

- TEN1 - Oral examination, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- PROA - Project, 5.0 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.

The examiner decides, in consultation with KTH's coordinator for disabilities (Funka), about possible adapted examination for students with documented, permanent disabilities. The examiner may permit other examination format for re-examination of 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.