



ML2302 Modelling, Simulation and Optimization of Sustainable Production 9.0 credits

Modellering, simulering och optimering av hållbar produktion

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

Course syllabus for ML2302 valid from Spring 2020

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Completed course SF1811 Optimization, 6 credits, or equivalent.

Completed course ML1018 Basic industrial statistics, 6 credits, or the equivalent.

Completed course ML1503 Industrial system 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:

- Describe the central elements in and main application fields for modelling, simulation and optimisation at development of sustainable production and logistic.
- Apply analytical heuristic and experimental methods and tools to analyse resource and flow efficiency of system for sustainable production and logistic.
- Create analyse and critically evaluate different production and logistics solutions by modelling, simulate optimise and evaluate developments also with limited information, as well as considering sustainable development and to the preconditions and needs of people.
- Reflect on difficulties with to model simulate and optimise during the different stages in a development process regarding production and logistic.
- Reflect on role of modelling simulation and optimisation in a future development towards a digitalized production and logistic.

Course contents

Course's major aim is to learn student link an understanding of analytical, heuristic and simuleringsbaserade methods for the analysis of production and logistics systems with industrial application fields and needs. Thereby prepare course student for tasks as developers of a sustainable production and logistics operations.

Work in the course is built around lectures laboratory sessions and project work concerning course's central fields. Through laboratory sessions students will get acquainted with a number of methods to analyse typical problems regarding resource and glow efficiency of system for production and logistic. Further give laboratory sessions and understanding of different softwares to simulate resource and flow efficiency of system for production and logistic. Through a project work obtain student an understanding of how a simulation model are designed, are verified and is validated and how this thereafter can be a basis for relevant experiments analysis and conclusions. Students are trained to reflect on difficulties experienced during the different stages of a simulation study and which requirements are requested for implementation. Course create also a basis for the analysis of environmental and social positions at modelling simulation and optimisation of production and logistic.

Examination

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

- LAB1 - Laboratory work, 2.0 credits, grading scale: P, F
- PRO1 - Project work, 4.0 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.

Course is assessed through a written assignment compulsory laboratory sessions concerning methods and tools as well as through project work where student should show his ability to analyse different solutions based on a broad evaluation

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.