ML1501 Industrial Systems I 7.5 credits

Industriella system I

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

Establishment

Course syllabus for ML1501 valid from Autumn 2018

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Introduction to industrial technology, ML1500 or the equivalent knowledge

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:

â€¢ Define and account for system theory and system structure, including central concepts and models

â€¢ Define and account for system dynamics, including central concepts and models

â€¢ apply systems thinking by applying a systems perspective on a production system, with regard to different aspects of sustainability (e.g. economy, work and environment)

â€¢ Account for the life-cycle of a system

â€¢ Carry out a simple life-cycle analysis (LCA) with regard to sustainability

â€¢ Model processes using IT tools

â€¢ Apply tools for simple analysis of work processes

â€¢ Apply different methods and tools for simulation and modelling of systems and processes

â€¢ Account for central processes in software engineering and design (systems engineering)

â€¢ Explain the importance of communication in software engineering

â€¢ Give example of engineering processes that promote communication, learning and systems view

Course contents

Lectures and seminars:

- Systems theory and system dynamics
- Simulation and modelling
- Life-cycle stages and life-cycle analysis
- Guest lectures and overview of cases from the industry on improvement work and software engineering
- Tools, methods and models for process modelling of work processes, workflows and socio-technical systems
- Project with system simulation with computer tools such as STELLA.

Course literature

INCOSE (2015): Systems Engineering Handbook, A Guide for System Life Cycle Processes and Activities (4:e upplagan), INCOSE-TP-2003-002-04. ISBN: 9781118999400

Meadows (2008): Thinking in Systems – A Primer, ISBN: 9781603580557, Chelsea Green Publishing (Chelsea, Vermont, USA).

Dahlin (2014): Hållbar utveckling - en introduktion för Ingenjörer, ISBN: 9789144092669, Studentlitteratur (Lund).

Examination

- INL1 - Assignments, 1.5 credits, grading scale: P, F
- PRO1 - Project, 2.5 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Exercises, 1.5 credits, grading scale: P, F
- TEN1 - Written examination, 2.0 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.