MG2038 Digital Factories 6.0 credits

Digitala fabriker

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

Establishment

Course syllabus for MG2038 valid from Autumn 2011

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Students of a master programme at KTH who have taken the courses:

MG2028/MG2128 CAD and other IT Tools in Industrial Processes
MG2029 Production Engineering - Planning and Control
MG2030 Production Engineering - Simulation of Factory, Flow and Processes/MG2130 Modelling and Simulation of Industrial Processes

or equivalent

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

Upon completion of the course requirements, the student should be able to:

- Explain the principles of digital factories and their relation to real factories, e.g. by giving examples of digital verification and industrial relevance.
- Explain the virtue of neutral model formats by giving examples of how these can be used for exchange of product and production data between different software systems.
- Use IT system support for:
  - Designing layouts of complete factories or manufacturing andassembly cells
  - Developing manufacturing methods and achieving balanced machine groups
- Creating a basic information model of a product and its relations to production processes and resources
- Describe how a digital factory can be developed in modelling and simulation software for manufacturing concepts, factory layouts, production planning and manufacturing flow
- Describe preferred features of system neutral model formats and compare different standard formats regarding these features
- Compare and evaluate simulation software and other IT tools, based on criteria for the development and use of a digital factory

Course contents

- Introduction to digital factories - What is a digital factory and why is it needed? The relation between digital and real factories.
- Digital modelling and visualization of manufacturing concepts
- Digital modelling and visualization of factory layouts
- Guest lectures by company employees on use and value of digital factories
- Information modelling, databases and standadised model formats
- Computer laborations on a case study of a digital factory including communication and coordination of various purpose models

Course literature

pdf documents that will be available for students registered on the course through Bilda

Examination

- SEM1 - Seminar, 0.0 credits, grading scale: P, F
- PRO1 - Project, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory, 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.

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.