MG2128 CAD and Other IT Tools in Industrial Processes, Extended Course 7.5 credits

Inte bara CAD - IT-verktyg i industriell produktframtagning, större kurs

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 MG2128 valid from Autumn 2019

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

MF1061 Design and Product Realization, Introduction
or MJ1103 Introduction to Mechanical Engineering/MF1001 Mechanical Engineering, Introductory Course

or the equivalent

Swedish B and English A 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 student will be able to:

- create a CAD model in Solid Edge or any similar CAD system as:
  - a parameterized part model
  - an assembly of part models
  - an animated mechanism model
  - a fully dimensioned detail drawing of a part
  - an assembly drawing with an exploded view and a parts list
- in a modern CAD system, create robust models, that could easily be understood and further developed by others
- use CAD models:
  - in a CAM system for creating a simple process plan for a part model, and build and use a machine tool model for simulation of the manufacturing process
  - in a product configuration system integrated with a CAD system build and use a configuration model
  - in a FEM program carry out a simple finite element analysis and simulation of the manufacturing of a part
- adapt a CAD model for additive manufacturing and use it in preparation for manufacturing in a given additive manufacturing machine
- create and exchange information about a product and its manufacturing by:
  - using CAD system functionality in a structured manner, to communicate CAD related data
  - using common exchange formats for product data exchange between different information handling
    software systems
- indepeendently and in own words reason about:
  - how product and production information is handled in manufacturing companies, and how they use IT tools in their product realization processes
  - opportunities and problems regarding information handling in an industrial product realization process

Course contents

- Introductory CAD
- Guidelines for creating robust CAD models

- IT tools (software) for:
  - manufacturing preparation, CAM
  - product configuration
  - compter aided calculations, FEM and CAE
- Other IT tools that utilise the CAD model, e.g. for metrology or preparation for additive manufacturing
- Standards for structuring and exchanging product data
- Work methods and information handling in IT systems for industrial product realization

Examination

- INL1 - Homework Assignments CAD, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- INL2 - Homework Assignments other, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Exercises Introductory CAD, 1.5 credits, grading scale: P, F
- LAB2 - Laboratory Exercises other, 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.

The first intended learning outcome (ILO) is assessed in the module LAB1.

The second ILO is assessed in the modules LAB1, LAB2 and INL1.

The other ILOs are assessed in the modules LAB2 and INL2.

To get a higher grade a number of voluntary assignments have to b completed and approved.

The assessment for higher grades are part of the module INL2.

Other requirements for final grade

CAD exercises must be presented in person in one of our computer labs.

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.