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.

Establishment

Course syllabus for MG2128 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

Compulsory for CINEK3 IPI and TPRMM1

Students who have taken any of the courses MF1046, MJ1103 or MG1028 should take the course MG2028

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:

- create CAD models in Solid Edge in a structured manner: - parameterised solid models of 3D parts - assembly models containing part models - mechanism models and animations - simple drawings of parts with dimensioned orthographic, detail and section views - assembly drawings with parts lists and exploded views
- create robust CAD models, which could easily be understood and further developed by others
- as a member of a project group create and exchange information about a product and its manufacturing by:
- creating models of complex products and their features, using a modern CAD system
- performing a simple analysis of the strength features of a part model, by using a FEM program
- creating a simple production plan for a CAD part model, using a CAM system
- using common exchange formats for product data exchange between different information handling software systems
- understand and expressed in his/her own words a description of how product and production information is handled in a manufacturing company, and how they use IT tools in their product realization process
- give an account of the most common problems regarding information handling in a product realization process
- express in his/her own words the principal modules and the most important user functions in a PDM system
- create a simple configuration model in a product configuration system integrated with CAD

Course contents

Introductory CAD

Following that introductory part, CAD skills are further developed, and subsequently the course is divided into five different subtasks, each focusing on one type of IT tool used by mechanical engineers in manufacturing industry. Each of these tasks are dealt with during approximately one-two weeks, including at least one introductory lecture, one lecture dealing with industrial aspects and one supervised computer laboratory exercise. In addition to this basic computer exercise, the students can opt to take one further, more advanced, non-supervised exercise. Much of the work during the course is hands-on, working in our department's computer lab.

Task 1: Methodology and information handling in the product realization process including a computer exercise in PDM.

Task 2: FEM and other CAE systems. Computer exercise, using a FEM system.

Task 3: Production planning, CAM. Computer exercise in CAM.

Task 4: Standards for representing, sharing and exchanging product data. Computer exercise in product data exchange

Task 5: Other systems and activities which utilize the CAD model, e.g. Metrology and Product configuration

Course literature

Available through Bilda for students participating in the course

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
- LAB2 - Laboratory Exercises other, 1.5 credits, grading scale: P, F
- LAB1 - Laboratory Exercises Introductory CAD, 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.

Other requirements for final grade

LAB1 Laboratory exercises and individual assignment in introductory CAD, 1.5 cr

LAB2 Laboratory exercises, other, 1.5 cr

INL1 Homework assignments, robust CAD, 1.5 cr

INL2 Homework assignments,other, 3 cr

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.