MF2006 Innovative Design II 6.0 credits

Innovativ konstruktion II

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

Establishment

Course syllabus for MF2006 valid from Autumn 2015

Grading scale

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

Education cycle

Second cycle

Main field of study

Specific prerequisites

Qualified for grade 3 and MF120X/MF121X/MF1025/MF1026

**Compulsory for
**CDEPR4MKN, CMAST4MKN, CFATE4MKN, CDEPR4IDE, TIPUM track Machine Design

Recommended for
CDEPR4IPU, CMAST4IPU, CFATE4IPU, TIPDM track IPDB

Language of instruction

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

Intended learning outcomes

After completed course the student should be able to:

- Design and detail simple mechanical products based on engineering reasoning and considerations
- Apply earlier acquired knowledge within e.g. mechanics, solid mechanics, electrical engineering and product development.
- Develop and estimate loads as a basis for dimensioning of structure elements as well as selection of machine elements
- Dimensioning of simple machine elements such as flanged bearings; shrink fits belt- and chain transmissions
- Apply basic criteria for designing products considering e.g. load lines, load distribution, adaptation for manufacturing.
- Select material and components from sub supplier's catalogs for design of simple products.
- Produce detailed drawings including manufacturing tolerances for simpler system products.
- Describe what characterizes an innovation
- Explain what demands that need to fulfilled to obtain a patent

Course contents

This course deals with an applied subject where earlier acquired knowledge is applied and integrated with new theory being presented. The curriculum can be divided into four main parts:

1. Innovations, entrepreneurship, patent

2. Design structures

- Embodiment design, and detailing
- Load carrying structures, applying loads
- Load lines, stress concentrations
- Material selection, available profiles of suppliers
- Manufacturing adaptation

3. Documentation and communication

- Technical drawings
- Dimensioning, tolerances

4. Systems design

- Prime movers
- Transmissions
- Joints, couplings

The theoretical content is presented at the lectures and is applied at exercises and in assignments.

Disposition

Period 1
Lectures 24h
Tutorials 48h

Course literature

Course literature

Maskinelement, Olsson, Karl-Olof, Liber Förlag 2006. or

Machine Elements in Mechanical Design, Robert L Mott, ISBN 0-13-197644-3

Reference literature

Mechanical and Metal Trades Hanbook, Verlag Europa Lehrmittel

Ritteknik, Lundkvist, Bo, Liber 2007

Examination

- INL1 - Assignments, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 3.0 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.

Other requirements for final grade

To pass this course requires an approved assignment (INL1; 3hp), and an approved written examination (TEN1; 3hp)

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.