



# MF2005 Innovative Design I

## 12.0 credits

### Innovativ konstruktion I

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 MF2005 valid from Autumn 2016

### Grading scale

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

### Education cycle

Second cycle

### Main field of study

### Specific prerequisites

Qualified for grade 1 at masterprogram TIPUM, TIPDM, TAEEM

### 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 be 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, 2

Lectures 24 h

Tutorials 96 h

One project assignment

Two hand in exercises

## 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 Handbook, Verlag Europa Lehrmittel

Rittektechnik, Lundkvist, Bo, Liber 2007

## Examination

- INL1 - Assignments, 3.0 credits, grading scale: P, F
- PRO1 - Project, 6.0 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.

## Other requirements for final grade

To pass this course requires an approved assignment (INL1; 3hp), an approved project (PRO1; 6hp) 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.