



# HM1013 Mechanical Design and Energy Technology 7.5 credits

Konstruktions- och energiteknik

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

## Establishment

Course syllabus for HM1013 valid from Autumn 2007

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Mechanical Engineering, Technology

## Specific prerequisites

Mathematics, strength of materials, mechanics, materials and production, corresponding to HN1901 Mathematics I, HM1001 Strength of Materials with Statics, HM1000 Materials and Production 1 and HM1003 Materials and Production 2.

## Language of instruction

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

# Intended learning outcomes

After the course, the student shall

- have some proficiency in fluid mechanics, hydromechanics and heat transfer
- understand how the energy of a system of bodies and masses can be transformed from one form to another
- be able to compute heat flows in various media
- be able to size devices such as pumps and fans
- know the operation and denominations for elementary and standard components in mechanical engineering, as well as simple functional analyses of these
- be able to select and size machine elements

The course forms the basis for solving problems within design and production.

## Course contents

Bearing reactions. Various forms of energy. Work and losses. Critical oscillations. Hydromechanics. Bernoulli's equations. Flow mechanics. Turbomachinery. Heat transfer.

Denominations of various machine elements, appearance, characteristics, employment and functions.

Sizing and selection employing catalogues and standards.

## Course literature

Energi. Faktabok. 7:e upplagan, G. Dahlvig, G Dahlvig Läromedel, 2004.

Maskinelement. Funktioner, A. Folkesson, J. Höcke, Institutionen för Maskinkonstruktion, KTH, 2001.

Maskinelement - Funktioner. Övningshäfte. Institutionen för Maskinkonstruktion, KTH, 1997

Formelsamling för teknologi och konstruktion M, 5:e upplagan. S. Lönnelid och R. Norberg, Stiftelsen kompendieutgivningen, Stockholm, 2006.

Supplementary course notes.

## Examination

- ÖVN1 - Exercises, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 4.5 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

Passed written exam.

Passed lab assignments and exercises.

## 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.