



# FMJ3116 Engineering Thermodynamics 7.5 credits

## Termodynamik

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 FMJ3116 valid from Spring 2014

## Grading scale

undefined

## Education cycle

Third cycle

## Specific prerequisites

The undergraduate course in Applied thermodynamics MJ1112 or similar. Undergraduate courses in heat transfer and fluid mechanics.

## Language of instruction

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

## Intended learning outcomes

To broaden as well as deepening understanding in the field of thermodynamics and facilitate training in modeling and problem solving related to engineering thermodynamics.

## Course contents

The laws of thermodynamics, systems & general relationships, Classical thermodynamics with applications in energy technology, and Cycles. Control volumes and Units, Pure substance behavior, Energy transfers, Energy equation for a control mass, Energy equation for a control volume, Classical second law of thermodynamics, Entropy for a control mass, Entropy equation for a control volume, Exergy analysis, Power and refrigeration systems-with phase change, Power and refrigeration systems-gaseous working fluids, Ideal gas mixtures, Thermodynamic property relations, Combustion, Phase and chemical equilibrium, compressible flow.

## Disposition

Course is given in the form of 8 seminars. During these seminars students present thermodynamic theory and various concepts are discussed thoroughly.

Students can choose to be examined by developing a conference or a journal publication. Each topic project should be reviewed by another student. Presence during the seminar is compulsory.

## Course literature

**Fundamentals of thermodynamics**, Claus Borgnakke R.E Sonntag, Seventh Edition, John Wiley and Sons.

Other books may be considered.

## Examination

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.

Accepted journal or conference paper, approved lecture presentation, passed report and presentation at seminar 6-8 and active participation during all course activities.

## 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.