

# Engineering Thermodynamics

Programme course

6 credits

Termodynamik

TMMV04

Valid from: 2017 Spring semester

**Determined by**

Board of Studies for Mechanical  
Engineering and Design

**Date determined**

2017-01-25

## Main field of study

Energy and Environmental Engineering, Mechanical Engineering

## Course level

First cycle

## Advancement level

G1X

## Course offered for

- Mechanical Engineering, M Sc in Engineering
- Design and Product Development, M Sc in Engineering
- Energy-Environment-Management M Sc in Engineering
- Industrial Engineering and Management, M Sc in Engineering
- Industrial Engineering and Management - International, M Sc in Engineering

## Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

## Intended learning outcomes

- Understand the significance and consequence of properties and states of gases, liquids and steams.
- Model and calculate heat transfer and work for open and closed systems.
- Apply the first law of thermodynamics on classic thermodynamic systems.
- Describe the fundamentals of heat transfer.
- Apply temperature measurement in theory and practice and value measurement results.
- Carry out a project in which the above course aims are turned into practice.

## Course content

Introduction to engineering thermodynamics, basic thermodynamics, the first and second law of thermodynamics, control volumes and systems, important processes and thermodynamics machines, Constitutional diagrams for true media, basic heat transfer, introduction to measurement technology and temperature measurement.

## Teaching and working methods

Lectures and classes, one project and laboratory work  
The course is offered three times during 2016; Vt1, Ht1 and Ht2.

## Examination

LAB1	Laboratory work	3 credits	U, G
TEN1	Written examination	3 credits	U, 3, 4, 5

## Grades

Four-grade scale, LiU, U, 3, 4, 5

## Other information

Supplementary courses: Fluid Mechanics, Aerodynamics, Mechatronics, Models of Mechanics, Computational Heat Transfer, Computational of Fluid Mechanics, Hydraulic Servo System, Fluid Power Systems and Transmissions, Energy Resource, Energy System-Project Course, Industrial Energy Systems

## Department

Institutionen för ekonomisk och industriell utveckling

## Director of Studies or equivalent

Johan Renner

## Examiner

Joakim Wren

## Course website and other links

<http://www.iei.liu.se/mvs/utbildning/grundkurser/tmmv04?l=sv>

## Education components

Preliminary scheduled hours: 63 h  
Recommended self-study hours: 97 h

## Course literature

### **Additional literature**

#### **Books**

Cengel and Turner, *Fundamentals of Thermal-Fluid Sciences 4*

#### **Compendia**

## Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at [http://stydokument.liu.se/Regelsamling/Innehall/Utbildning\\_pa\\_grund-\\_och\\_avancerad\\_niva](http://stydokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva).