# Energy Engineering

Programme course

6 credits

Energiteknik

TMMI56

Valid from: 2017 Spring semester

**Determined by**
Board of Studies for Mechanical Engineering and Design

**Date determined**
2017-01-25

## Main field of study
Mechanical Engineering

## Course level
First cycle

## Advancement level
G2X

## Course offered for
- Mechanical Engineering, B 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.

## Prerequisites
Engineering Mechanics, Thermodynamics, Fluid Mechanics and Heat Transfer

## Intended learning outcomes
The course will provide deeper technical understanding of plants, devices and components for the conversion of energy, as well as the engineering contexts were they are used. After the course the student should be able to:

- Do calculations ef energy use
- Describe the function of and calculate energy conversions related to wind-, water-, steam- and gas turbines. Do calculations of energy use in a building, and describe technology for heating.
- Describe and do calculations of fans and pumps.
- Describe and calculate processes related to fuels and combustion.
- Describe and suggest equipment for assessment of energy quantities.
- Use scientific references

## Course content
Hydro power and hydro turbines. Wind power and wind turbines. Condensing power and co-generation of heat and power (condensing heat used for district heating). Heating of buildings, heat load, fans and pumps. Combustion, piston engines, gas turbines. Assessment of temperature, power, pressure, flow, moisture etc.

## Teaching and working methods
The course is organized in lectures, seminars and laboratory work.

## Examination

| | | | |
|---|---|---|---|
| LAB1 | Laboratory work | 1.5 credits | U, G |
| TEN1 | Written examination | 4.5 credits | U, 3, 4, 5 |

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

## Department
Institutionen för ekonomisk och industriell utveckling

## Director of Studies or equivalent
Johan Renner

## Examiner
Matts Karlsson

## Course website and other links
http://www.iei.liu.se/mvs/utbildning/grundkurser/tmmi56?l=sv

## Education components
Preliminary scheduled hours: 48 h
Recommended self-study hours: 112 h

# Course literature

## Additional literature

### Books

Alvarez H., (2006) *Energiteknik*

### 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://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.