

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 where they are used. After the course the student should be able to:

- Do calculations of 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/tmimi56?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://stydokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.