Energy Resources

Programme course

6 credits

Energiresurser

TMES25

Valid from: 2017 Spring semester

Determined by
Board of Studies for Mechanical Engineering and Design

Date determined
2017-01-25

Offered for the last time
Autumn semester 2022

Main field of study
Energy and Environmental Engineering, Mechanical Engineering

Course level
Second cycle

Advancement level
A1X

Course offered for
- Mechanical Engineering, 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.

Prerequisites
Fluid mechanics and Heat transfer

Intended learning outcomes
The aim of this course is to give the students wider knowledge of Energy Systems Analysis. When passed the students will know how different energy systems are designed, how crude oil, coal and such resources are used for power and heat generation. They also know about renewable and sustainable energy resources such as bio-fuel and solar energy generation. Further, they can describe how electricity is distributed and economic terms for this. Students will also be familiar with district heating grids and other forms of systems normally utilized by a municipality.

Course content
Power generation in the form of condenser heating plants, combined heat and power generation, heat production plants, gas turbine plants. The diesel process, nuclear power plants, different heat pumps and absorption cooling. District heating facilities such as the network, pipes and distribution within a building. Renewable energy sources and their environmental impact. External costs, exergy and policy instruments.

Teaching and working methods
The course is given in the form of lectures, project work and a visit at a real-world production plant.

Examination

UPG1	Project	1.5 credits	U, G
TEN1	Written examination	4.5 credits	U, 3, 4, 5

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

Other information
Supplementary courses: Energy systems project course

Department
Institutionen för ekonomisk och industriell utveckling

Director of Studies or equivalent
Shahnaz Amiri

Examiner
Bahram Moshfegh

Course website and other links
http://www.ikp.liu.se/energi/utbildning.asp

Education components
Preliminary scheduled hours: 26 h
Recommended self-study hours: 134 h

Course literature
Skrifter från energisystem, IKP Svend Frederiksen och Sven Werner: Fjärrvärme, teori, teknik och funktion

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.