Modelling of Energy Systems

Programme course

6 credits

Modellering av energisystem

TMES27

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
Second cycle

Advancement level
A1X

Course offered for
- Design and Product Development
- Energy-Environment-Management
- Industrial Engineering and Management - International, M Sc in Engineering
- Industrial Engineering and Management, M Sc in Engineering
- 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.

Intended learning outcomes
The overall aim is to provide understanding of the modeling of technical energy systems with a focus on local and regional energy systems. MODEST optimization program is used as tool in the course. After completing the course the student should be able to:
- Modeling a municipal energy system.
- Reflect on the input data used for modeling of energy systems.
- Understand and use MODEST.
- Understand how the energy systems affected by changes in key parameters.
- Analyze and evaluate results from the modeling of energy systems.

Course content
Computer-based laboratory work. How to satisfy the municipality's district heating demand with the least possible system cost? Need for investment in various types of energy plants and the design of these from an energy system perspective? Impact of energy prices, sensitivity analysis, economic profitability and environmental impact.

Teaching and working methods
The course is given in the form of lectures, tutorials and laboratory work.

Examination

LAB1	Laboratory work	6 credits	U, G

Grades are given as ’Fail’ or ’Pass’.

Grades
Two-grade scale, U, G

Other information
Supplementary courses: Energy Conversion, International Energy Market, Global Energy Perspectives, Energy Policy Instruments.

Department
Institutionen för ekonomisk och industriell utveckling

Director of Studies or equivalent
Shahnaz Amiri

Examiner
Shahnaz Amiri

Course website and other links

Education components
Preliminary scheduled hours: 16 h
Recommended self-study hours: 144 h

Course literature
Skrifter från energisystem, IEI

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.