

Analysis and Modelling of Industrial Energy Systems

Programme course

6 credits

Analys och modellering av industriella energisystem

TMES43

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

Course level

Second cycle

Advancement level

A1X

Course offered for

- 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.

Prerequisites

Sustainable energy systems, Building energy systems, Industrial energy system, Engineering optimization

Intended learning outcomes

The overall aim of the course is to provide a systems perspective on energy supply and energy demand in different types of industrial systems with focus on analysis and modeling. After completion of the course the student is to be able to:

- describe, apply and critically reflect upon methods for energy systems analysis of industrial energy systems
- discuss and critically reflect upon systems perspectives regarding industrial energy systems
- discuss and critically reflect upon measures for more efficient industrial energy systems
- apply, discuss and critically reflect upon energy management and energy management systems

Course content

Global outlook on industrial energy use, industrial energy systems analysis tools, modeling of industries, connection between industry and society, system boundaries, system levels, uncertainty assessments, energy management

Teaching and working methods

The course is given in the form of tutorials, lectures, project work, seminars and computer labs. In connection to some learning moments there are also compulsory tasks.

Examination

ANN1	Seminars	2 credits	U, 3, 4, 5
PRA1	Project assignment with written report	2 credits	U, 3, 4, 5
LAB1	Laboratory work with written report	2 credits	U, G

Grades

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

Other information

Supplementary courses: Strategic planning and modeling of sustainable regions, Energy planning and modeling of districts, Policies within the energy systems area, International energy markets, Advanced project course - Energy

Department

Institutionen för ekonomisk och industriell utveckling

Director of Studies or equivalent

Shahnaz Amiri

Examiner

Magnus Karlsson

Course website and other links

Education components

Preliminary scheduled hours: 38 h

Recommended self-study hours: 122 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://stydokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.