Energy Engineering - System

Programme course

6 credits

Energiteknik - systembetraktelser

TMMI51

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
Energy Engineering

Intended learning outcomes
The purpose of the course is to provide knowledge about systems and system related approaches. After completing the course the student should be able to:

- understand the importance of the concept of energy system,
- understand the basics of a system-based approach.
- show knowledge of the factors controlling the energy system's direction.
- show knowledge of energy resources
- describe the system conceptual approaches to combustion technologies, nuclear and renewable energy technologies
- desvribe the different development paths for future energy system

Course content

The course consists of five modules:
Module 1 - Background to the analysis of energy systems, system approach to energy supply and energy use, tools to analyze energy systems and economic tools for evaluating energy systems.
Module 2 - Climate change and the availability of fossil fuels. Module 2 also deals with systems perspectives on energy supply and energy use: System view and System boundaries and its influence on climate.
Module 3 - Energy Supply Systems for electricity, heat and cooling production / distribution. It also includes different types of renewable energy, non-renewable energy.
Module 4 - Energy for transportation, and system perspectives on transport energy. Module 4 also deals with the building sectors' energy system.
Module 5 - Design of future energy system.

Teaching and working methods

The course is given in the form of lectures, seminars and company visit.

Examination

LAB1	Computer exercise with written report	1.5 credits	U, G
UPG2	Study visit and seminars	1.5 credits	U, G
TEN2	Written examination	3 credits	U, 3, 4, 5

Grades

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

Other information

Supplementary courses: Project Course - Energy Engineering

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: 34 h
Recommended self-study hours: 126 h

Course literature

Utdelat material

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.