LINKÖPINGS UNIVERSITET 2016-11-30
Department of Management and Industrial Engineering

Course Plan – PhD course

Name

Tools for energy systems analysis II

Goal

After successful completion of the course the PhD student shall be able to:

- Describe the system implications of energy supply and user measures.
- Using appropriate simulation and optimisation tool, undertake a project within predetermined time frames
- Assess and analyse results of project and perform sensitivity analyses
- Describe and assess how energy system tools presented and discussed in the course may be used in his/her own research project
- Present and use simulation and optimisation tools for the analysis of energy systems
- Describe the principles behind the simulation and optimisation tools that are provided in the course.
- Describe limitations and prerequisites when the simulation and optimisation tools are used
- Describe and reflect upon simulation and optimisation tools for energy systems analysis

Content

The course is an introduction to different optimisation and simulation programs which are used in energy systems research. These are:

- MODEST
- ReMind
- Opera
- IDA

By means of simulation and optimisation programs, the design and possible changes of energy systems in the areas of building energy systems, industrial energy systems, and municipal/regional energy systems are studied and analysed with focus on:

- Energy supply
- Energy use
- Energy efficiency
- New investment
- Load management
- Change of energy carriers

Prerequisites

Master's degree or equivalent.

Target group

The course is primarily open for PhD students at the division of Energy Systems and the division of Environmental Technology and Management at Linköping University.

Organisation

The course is constructed as a combination of lectures, tutorials, computer-based laboratory exercises and project work using case-studies. PhD-students have the option to choose energy related projects in-depth level via energy system tools offered in the course. Detailed information about the course can be found in the Course tutorial.

Literature

Documents from the Division of Energy Systems, IEI, LiU, available on the course platform.

Examination / Examiner

Implementation of exercises and projects

Examiner: Shahnaz Amiri

Credits and grading

Exercises and project work 4 HEC (ECTS)

Grades are given as ’Pass’ or ’Fail’

Other information

Doctoral students at the division of Energy Systems and the division of Environmental Technology and Management, Linköping University will be given preference and other participants will be chosen depending on their academic background and when their application to the course arrives.

The course pays regard to equal opportunities. Its goal is to make active use of the resources that students with different backgrounds, life situations and competences bring to the education.