

## Course Syllabus

### **Dynamic Simulation of Energy Systems 7.5 Credits\*, Second Cycle Level 2**

#### **Learning Outcomes**

After completing the course, the student shall be able to:

- Apply advanced dynamic simulation techniques for energy systems.
- Analyse the differences between different simulation tools and discuss their advantages and disadvantages, as well as be able to choose a suitable tool for a given problem.
- Use a simulation tool to simulate different types of systems and buildings.
- Plan and perform a simulation study.

#### **Course Content**

At the start of the course, the students study different simulation programmes and present them to one another at a seminar where the programmes are discussed. The basics of simulation techniques are then taught before the students start working on details in a specific simulation programme, TRNSYS, with a mix of lectures and exercises. Further, the students develop a research question to be answered by a simulation study and then discuss their plans for the project that is to be the assignment for the course. This should include choice of component models, design of control strategy and implementation of a complete system model that will be tested and used for parametric studies.

#### **Assessment**

Simulation tools and techniques (2.5 credits) (One compulsory seminar and two smaller assignments)

Simulation project (5 credits) (One written assignment based on a simulation study)

#### **Forms of Study**

Lectures, exercises, seminars, assignments. Course language English.

#### **Grades**

The Swedish grades U, 3, 4, 5.

Compulsory seminar and assignments, U/G.

The grade for the whole course will be based mainly on the grade for the written home assignment (simulation project).

**Prerequisites**

At least 30 credits Energy and Environmental Technology, second level  
B.A. in engineering (mechanical, electrical, energy) of at least 180 credits and English 6

**Other Information**

This course replaces MÖ4001.  
Number of examination attempts is limited to five.

**Subject:**

Energy Technology

**Group of Subjects:**

Energy Technology

**Disciplinary Domain:**

Technology, 100%

**This course can be included in the following main field(s) of study:**

1. Solar Energy Engineering

**Progression Indicator within (each) main field of study:**

1. A1F

**Approved:**

Approved 21 January 2016  
Valid from 15 April 2016