



HÖGSKOLAN I GÄVLE

Energy System Simulation and Optimisation 7.5 cr

Simulering och optimering av energisystem 7,5 hp

Set by Faculty of Engineering and Sustainable Development

Version

Set at

Valid from

1/16/13

VT2013

Level	A1F
Education level	Second cycle
Course identifier	ME599D
Credits	7.5 cr
Main field of study	Energy Technology
Subject group	Energy Technology
Disciplinary domain	Technology 100.0 %

Learning outcomes

The aim of this course is to present different computerized tools for analysing industrial energy systems, building energy systems, municipal energy system, national energy systems and district heating systems will be analyzed from a system perspective. Environmental and economical impacts of the analysed energy systems will be covered. After the course the students be able to use simulation and optimization tools for analysing energy systems. The most important intellectual development a student will undertake is:

1. Use a general proposed simulation and optimisation programme and models for energy systems analysis.
2. The principal details in the computer programs
3. Find the limitations and prerequisites when using the program.
4. Analyse the result from the programs results and sensitivity analyses

Course content

The course includes lectures of simulation and optimization programs for energy system analysis. With the help of the optimization and simulation programs areas of buildings, industries and local / regional energy systems will be studied and designed. The work may include energy supply, energy use and opportunities for energy efficiency, new investment, load management and change of energy carriers (e.g. from electricity to biofuels). The study may include an energy analysis, identification of possible changes in the energy system, calculation of the appropriate measures and suggestions for what should be implemented

Teaching	The course is given in the form of lectures, tutorials and laboratory work		
Prerequisites	Sustainable Energy Systems, 7.5 credits, Heat and Power Generation, 7.5 credits, Building Energy Systems, 7.5 credits, Industrial Energy Systems, 7.5 credits or equivalent.		
Examination	Projects		
Grade	A, B, C, D, E, Fx, F		
Sustainable environment	The majority of the course content deals with sustainable development..		
Module			
	0040 Project Building Simulation	2.5 cr	Grade: UG
	0050 Project Optimization of industrial energy	2.5 cr	Grade: UG
	0060 Project Optimization of municipal and regional energy system	2.5 cr	Grade: UG