HÖGSKOLAN I GÄVLE

Energy Systems Optimisation and Simulation 6cr

Optimering och simulering av energisystem 6hp

Set by Faculty of Engineering and Sustainable Development

Version	**Set at**	**Valid from**
	10/15/14	**HT2015**

Level	A1F
Education level	Second cycle
Course identifier	ETA321
Credits	6cr
Main field of study	Energy Technology
Subject group	Energy Technology
Disciplinary domain	Technology 100.0%

Learning outcomes

After completion of the course the student shall be able to
Knowledge and understanding
1. present methods for energy system analysis
2. present the principles of the programs that are provided in the exercises
3. describe the system implications of energy management measures
4. describe the system implications of supply measures

Competence and skills
5. use simulation and optimisation tools for the analysis of energy systems
6. find limitations and prerequisites when the program is used
7. assess and analyse the results from the program and perform sensitivity analyses
8. plan and, using appropriate methods, undertake a project within predetermined time frames
9. in writing report their project work and discuss their conclusions and the knowledge and arguments on which they are based

Judgement and approach
10. demonstrate awareness of ethical aspects of research and development work
11. make assessments informed by disciplinary issues related to the course content
12. make assessments informed by social issues related to the course content

Course content	By means of optimisation and simulation programs, the design and possible changes of energy systems in the areas of buildings, industries, and municipal/regional energy systems are studied and analysed in respect of: Energy supply Energy use Energy efficiency New investment Load management Change of energy carriers
Teaching	Lectures and project work/computer labs
Prerequisites	Energy Resources 6 credits, Sustainable Cities 6 credits, and Building Energy Systems 6 credits, or equivalent.
Examination	Project work
Grade	A, B, C, D, E, Fx, F
Other regulations	Criteria for final grades are announced by the co-ordinator or examiner at the start of the course.
Sustainable environment	The majority of the course content deals with sustainable development..

Module

0010 Building SImulation, project	2cr	Grade: AF
0020 Optimisation of industrial energy systems, project	2cr	Grade: AF
0030 Optimisation of municipal and regional energy systems, proj.	2cr	Grade: AF