HÖGSKOLAN I GÄVLE

Industrial Energy Systems 6 cr

Industriella energisystem 6 hp

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	ETA320
Credits	6 cr
Main field of study	Energy Systems
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. describe the structure and development of energy use
2. present audit methodologies and energy management measures
3. present methods for energy system analysis
4. describe the system implications of energy management and supply measures

Competence and skills
5. use tools for optimising industrial energy systems
6. undertake an industrial energy audit and analyse energy use for both support and production processes
7. plan and, using appropriate methods, undertake a project within predetermined time frames
8. in speech and writing report their project work and discuss their conclusions and the knowledge and arguments on which they are based

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

Course content	Industrial energy use and its structure, development, and environmental implications Industrial energy use in Sweden and in the world Industry and the deregulated energy markets Correlation between industrial production and energy use Energy audit and forecasting Industrial economics and energy use Energy use in various production processes and support processes Production planning, load management, energy storage, and energy efficiency Energy management, driving forces, and obstacles for energy measures Systems analysis and modelling Optimisation tools, for example Pro_pi and reMIND used for industrial energy efficiency Industrial project
Teaching	Lectures, projects, lessons, seminars, and computer labs.
Prerequisites	Energy resources 6 credits, Sustainable cities 6 credits, and Building Energy systems 6 credits, or equivalent.
Examination	Written examination, project work, and laboratory 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	Written examination	3 cr	Grade: AF
0020	Project work	1.5 cr	Grade: AF
0030	Laboratory work	1.5 cr	Grade: AF