



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 |