



HÖGSKOLAN I GÄVLE

Heat and Power Generation 6 cr

Värme- och kraftproduktionssystem 6 hp

Set by Faculty of Engineering and Sustainable Development

Version

Set at

Valid from

10/15/14

HT2015

Level	A1N
Education level	Second cycle
Course identifier	ETA001
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 and explain the principles of various conventional heat and power generation systems
2. present the main components of a power plant
3. describe and explain heat pumps and refrigeration machinery and their components
4. present the possibilities and limitations of heat and power generation systems, in particular with regard to sustainable environment

Competence and skills

5. analyse conventional methods for heat and power generation from a systems perspective
6. compare different power generation alternatives and select the most appropriate for given conditions
7. optimise heat and power generation from a thermodynamic perspective
8. plan and, using appropriate methods, undertake a project within predetermined time frames
9. in writing report and discuss their conclusions and the knowledge and arguments on which they are based

- Judgement and approach
- 10. make assessments informed by disciplinary issues related to the course content
- 11. make assessments informed by social issues related to the course content.

Course content	<p>Lean production systems</p> <p>Fundamental steam power principles</p> <p>Advanced steam power cycles</p> <p>Combined heat and power generation</p> <p>Boilers and combustion</p> <p>Basic gas turbine cycles</p> <p>Advanced gas turbine systems</p> <p>Combined cycles</p> <p>Combustion</p> <p>Compressor driven refrigeration and heat pump systems</p> <p>Absorption cooling systems</p> <p>Nuclear power plants</p> <p>Project work</p>								
Teaching	Lectures, project work, and lessons								
Prerequisites	<p>English language proficiency equivalent to (the Swedish upper secondary school) English course 6/B.</p> <p>Completion of Bachelor's degree in technology or natural sciences of at least 180 credits, or equivalent foreign degree, at least 12 credits of which in thermodynamics and fluid mechanics, or equivalent knowledge.</p>								
Examination	Written examination and 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	<table border="0" style="width: 100%;"> <tr> <td style="width: 100px;">0010</td> <td>Written examination</td> <td style="width: 100px;">5 cr</td> <td>Grade: AF</td> </tr> <tr> <td>0020</td> <td>Project Work</td> <td>1 cr</td> <td>Grade: UG</td> </tr> </table>	0010	Written examination	5 cr	Grade: AF	0020	Project Work	1 cr	Grade: UG
0010	Written examination	5 cr	Grade: AF						
0020	Project Work	1 cr	Grade: UG						