



**HÖGSKOLAN  
I GÄVLE**

**Energy Resources 6 cr**  
*Energiresurser 6 hp*

Set by Faculty of Engineering and Sustainable Development

**Version**

**Set at**

**Valid from**

10/15/14

**HT2015**

<b>Level</b>	A1N
<b>Education level</b>	Second cycle
<b>Course identifier</b>	ETA002
<b>Credits</b>	6 cr
<b>Main field of study</b>	Energy Systems
<b>Subject group</b>	Energy Technology
<b>Disciplinary domain</b>	Technology 100.0 %

**Learning outcomes**

After completion of the course the student shall be able to  
Knowledge and understanding

1. explain how conversion of energy commodities into electrical energy and heat is made
2. describe renewable energies, their possibilities, and problems
3. present current research and development work related to the course content
4. present the fundamental challenges of sustainable environment with a special focus on the challenges faced by future energy systems
5. present the construction of a district heating network, its theory, technique, and function as well as municipal power systems

Competence and skills

6. analyse technical solutions and system integration of sustainable and renewable energy
7. define and formulate a project work autonomously as well as plan and, using appropriate methods, undertake the same 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. demonstrate awareness of ethical aspects of research and development work

	10. make assessments informed by disciplinary issues related to the course content 11. make assessments informed by social issues related to the course content.
<b>Course content</b>	Different forms of energy with a focus on renewable energy such as hydropower, wind energy, solar energy, wave energy, biogas, biofuels, and fuel cells System and climate aspects of different kinds of energies District heating systems, distribution, different heating media and piping, and subscriber facilities The concepts of exergy and resources Electricity market Instruments Project work Field trips
<b>Teaching</b>	Lectures, projects, lessons, seminars, and field trips
<b>Prerequisites</b>	English language proficiency equivalent to (the Swedish upper secondary school) English course 6/B. 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.
<b>Examination</b>	Written examination and project work
<b>Grade</b>	A, B, C, D, E, Fx, F
<b>Other regulations</b>	Criteria for final grades are announced by the co-ordinator or examiner at the start of the course.
<b>Sustainable environment</b>	The majority of the course content deals with sustainable development..
<b>Module</b>	
	0010 Written examination 4.5 cr Grade: AF
	0020 Project work 1.5 cr Grade: UG