



# HÖGSKOLAN I GÄVLE

## Energy Resources 7.5 cr

*Energiresurser 7,5 hp*

Set by Faculty of Engineering and Sustainable Development

**Version**

**Set at**

**Valid from**

2/26/18

**HT2018**

<b>Level</b>	A1N
<b>Education level</b>	Second cycle
<b>Course identifier</b>	ETA004
<b>Credits</b>	7.5 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

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
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 writing report their project work and discuss their conclusions and the knowledge and arguments on which they are based
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.

**Course content**

Different forms of energy with a focus on renewable energy such as hydropower, wind energy, solar energy, biogas and biofuels  
System and climate aspects of different kinds of energies

	District heating systems The concepts of resources Electricity market Instruments Project work
<b>Teaching</b>	Lectures, projects and lessons
<b>Prerequisites</b>	English language proficiency equivalent to (the Swedish upper secondary school) English course 6/B. 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
	0010 Written examination 4,5 credits examines Learning outcomes 1, 2, 4, 5, 6, grades A-F 0030 Project Work 3 credits examines Learning outcomes 3, 6, 7, 8, 9, 10, 11, grades Pass, Fail
<b>Grade</b>	A, B, C, D, E, Fx, F
<b>Other regulations</b>	Degree Criteria for final grade will be given by course responsible or examiner latest at the beginning 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
	0030 Project work 3 cr Grade: UG