



## HÖGSKOLAN I GÄVLE

### Introduction to Energy Systems 7.5 cr

*Introduktion till energisystem 7,5 hp*

Set by Faculty of Engineering and Sustainable Development

**Version**

**Set at**

**Valid from**

12/15/21

**HT2022**

<b>Level</b>	G1N
<b>Education level</b>	First cycle
<b>Course identifier</b>	ETG006
<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

Knowledge and understanding

1. present important concepts and definitions in energy systems
2. present different types of energy systems such as industrial energy systems, building energy systems, and transport from a sustainability point of view
3. present the design of power-heating systems
4. present the policy instruments in the energy systems field
5. describe renewable energies, their possibilities, and problems

Competence and skills

6. assess different energy systems with respect to climate and environmental considerations
7. define and formulate a project work autonomously as well as plan and, using appropriate methods, undertake the same within predetermined time frames
8. demonstrate the ability for teamwork and collaboration with different groups within a project work that focus on energy systems
9. in speech and writing a report for a project work and discuss information, problems and solutions in dialogue with others in the group

	Judgement and approach 10. evaluate the importance of energy system's impact on the climate and the environment.
<b>Course content</b>	Introduction to energy systems Energy systems definitions Energy systems in the world and Sweden Different forms of energy with a focus on renewable energy such as hydropower, wind energy and solar energy Energy use and energy supply District heating, combined heat and power (CHP) and district heating plants Instruments in the energy system area Industrial energy systems Building energy systems Transports: energy, resources, and environment
<b>Teaching</b>	Lectures, seminars, project work, and field trip
<b>Prerequisites</b>	General entry requirements for higher education in Sweden and courses corresponding to the following Swedish Upper Secondary School courses: - Physics 2 - Mathematics 3c or Mathematics D
<b>Examination</b>	Written examination, assignments and project work 0010 Written examination 4.5 credits examines Learning outcomes 1-6, 10, grades A-F 0020 Project Work 1.5 credits examines Learning outcomes 6-10, grades Pass, Fail 0030 Assignments 1.5 credits examines Learning outcomes 1, 5, 6, 10, grades Pass, Fail
<b>Grade</b>	A, B, C, D, E, Fx, F
<b>Other regulations</b>	Grading criteria are provided by the course coordinator or examiner in connection with the course introduction.
<b>Sustainable environment</b>	A minor part 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
	0030 Assignments 1.5 cr Grade: UG