HÖGSKOLAN I GÄVLE

Energy Systems 7.5 cr

Energisystem 7,5 hp

Set by Faculty of Engineering and Sustainable Development

Version	**Set at**	**Valid from**
	5/9/22	**HT2023**

Level	A1N
Education level	Second cycle
Course identifier	ETA009
Credits	7.5 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. present important concepts and definitions in energy systems
2. describe fossil, bio and nuclear energy systems regarding technical functioning, environmental and economic aspects
3. describe elemental industrial energy demand and production

Competence and skills
4. assess system limits of different energy systems
5. assess different energy systems with respect to environmental, economic, and societal aspects
6. demonstrate ability to collect and assemble energy related facts, incl. scientific material

Judgement and approach
7. demonstrate awareness of risks and possibilities with different energy systems, incl. environmental, economic and societal viewpoints
8. critically evaluate popular science writing on the subject of energy systems.

Course content	Vocabulary and definitions in energy systems Assessment and control tools for energy systems: systems tools, economic tools and political tools Fossil fuel energy systems and resources Bio energy Nuclear energy Transportation energy Industrial energy systems District heating and cooling Carbon sequestration Energy storage Popular science writing in the field of Energy Systems
Teaching	Lectures and a project work
Prerequisites	Completion of Bachelor's degree in technology or natural sciences of at least 180 credits, or equivalent foreign degree with at least 12 credits of which in thermodynamics and fluid mechanics, or equivalent knowledge English language proficiency equivalent to (the Swedish upper secondary school) English course 6/B
Examination	Written examination and project work 0010 Written examination 5.5 credits, examines learning outcomes 1-5, 7, grades A-F 0020 Project work 2 credits, examines learning outcomes 5-8, grades Pass, Fail
Grade	A, B, C, D, E, Fx, F
Other regulations	Degree criteria for final grade will be handed out by the course responsible or examiner latest at the beginning of the course.
Sustainable environment	A minor part of the course content deals with sustainable development.

Module

0010	Written examination	5.5 cr	Grade: AF
0020	Project work	2 cr	Grade: UG