



## Master Programme in Energy Engineering, Energy Online 60 cr

*Master Programme in Energy Engineering, Energy Online 60 hp*

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### Version

Set at	Valid from
11/30/06	ST07
11/11/15	HT15
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<b>Education level</b>	Second cycle
<b>Programme code</b>	TAETM
<b>Credits</b>	60 cr
<b>Diary number</b>	2006-11-30

### Programmespecific objectives

The study programme results in a master's degree in energy engineering, and the purpose is to provide advanced skills in one of the fields of renewable energy sources, primary energy transformation, energy use and energy systems, based on a bachelor of science in engineering.

Strong emphasis is placed on the students' ability to apply advanced theories, mathematical models and modern measuring techniques for efficiency improvement, development and renewal of energy systems. The previously mentioned general expected learning outcomes are supplemented below with the following programme-specific learning outcomes.

#### Knowledge and Understanding

For a master's degree, the student should

- deeper understanding of renewable and sustainable energy technology, and how it may be used to modernise the energy systems of today
- acquired advanced knowledge that makes it possible for the student to actively take part and participate in the development in one of the profiling areas, after completed higher education qualification, and be familiar with the research in the field

#### Skills and Abilities

For a master's degree, the student should

- the ability to locate, identify and formulate problems and be able to quickly acquire the additional knowledge required to solve these
- the ability to understand both technical and non-technical consequences of the introduction of new energy engineering solutions
- the ability to plan, complete and evaluate different development projects, both individually and in collaboration with others

#### Judgement and Approach

For a master's degree, the student should

- be able to understand alternative perspectives, value systems and expressions, to be able to interact and communicate both with technicians and with non-technicians, in the best possible way

#### Target

A Degree of Master (60 credits) is awarded after the student has completed the courses required to gain 60 credits with a defined specialisation determined by each higher education institution itself, of which at least 30 credits are for specialised study in the principal field (main field of study) of the study programme. In addition the prior award of a Degree of Bachelor, a Degree of Bachelor of Fine Arts, a professional or vocational qualification of at least 180 credits or a corresponding qualification from abroad is required.

#### Knowledge and understanding

For a Degree of Master (60 credits) the student shall

- demonstrate knowledge and understanding in the main field of study, including both an overview of the field and specialised knowledge in certain areas of the field as well as insight into current research and development work, and
- demonstrate specialised methodological knowledge in the main field of study.

#### Skills and abilities

For a Degree of Master (60 credits) the student shall

- demonstrate the ability to integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information,
- demonstrate the ability to identify and formulate issues autonomously as well as to plan and, using appropriate methods, undertake advanced tasks within predetermined time frames,
- demonstrate the ability in speech and writing to report clearly and discuss his or her conclusions and the knowledge and arguments on which they are based in dialogue with different audiences, and
- demonstrate the skills required for participation in research and development work or employment in some other qualified capacity.

#### Judgement and attitudes

For a Degree of Master (60 credits) the student shall

- demonstrate the ability to make assessments in the main field of study informed by relevant disciplinary, social and ethical issues and also to demonstrate awareness of ethical aspects of research and development work,
- demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and
- demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

#### Content and structure

##### General Arrangement

The education, which is a web-based distance education, is given in English. The programme turns to those with a Bachelor of Science in Engineering and who want to specialise in energy engineering. The program offers the opportunity to specialise in the following areas: renewable energy sources, primary energy transformation, energy use, energy economics and systems, and in energy-related fluid mechanics.

The labour market for a master's degree in energy engineering exists, for example, at the energy companies, the processing industry, and within the consultant and contract business. Expected tasks are, for example, research and development, project management and efficiency improvement in the field of energy engineering. The master programme Energy Online includes 60 HE credits and requires that the student has a higher education qualification of at least 180 HE credits in a relevant subject area.

<b>Other degree</b>	A requirement for the award of a Degree of Master (60 credits) is completion by the student of an independent project (degree project) for at least 15 credits in the main field of study.
<b>Degree title</b>	Master of Science (60 Credits)
<b>Prerequisites</b>	<p>A completed Bachelor's degree, corresponding to a Swedish Bachelor's degree (180 ECTS), or equivalent academic qualifications from an internationally recognised university.</p> <p>The degree must be within the area of energy, mechanics, building or another adequate subject area. Also required is a minimum of 12 ects in Thermodynamics and Fluid mechanics.</p> <p>English language proficiency equivalent to (the Swedish upper secondary school) English course B/6.</p>
<b>Other</b>	<p>Interim Regulations.</p> <p>For students who have had approved leave from studies, a specific study plan is established by the programme coordinator in consultation with study advisers.</p>

### Year 1

Period	Identifier	Title	Level	Credits	Field
1:1	ETA009	<i>Energy Systems</i>	A1N	7.5 cr	Energy Systems
1:1	ETA013	<i>Building Energy Systems</i>	A1N	7.5 cr	Energy Systems
1:2	ETA011	<i>Energy Management</i>	A1N	7.5 cr	Energy Systems
1:2	ETA010	<i>Renewable Energy Resources</i>	A1N	7.5 cr	Energy Systems
1:3	ETA327	<i>Industrial Energy Systems</i>	A1F	6 cr	Energy Systems
1:3	ETA332	<i>Scientific Methods and Writing in Energy Engineering</i>	A1F	3 cr	Energy Technology
1:3	ETA326	<i>Energy Systems Optimisation and Simulation</i>	A1F	6 cr	Energy Technology
1:4	ETA701	<i>Degree Project for a Master of Science (One Year) with a major in Energy Systems</i>	A1E	15 cr	Energy Systems