LUND UNIVERSITY

LTH
FACULTY OF ENGINEERING

Programme Syllabus

Master's Programme in Sustainable Energy Engineering

- Faculty: Faculty of Engineering, LTH
- Programme code: TAHET
- Credits: 120
- Admission level: Bachelor's degree
- Degree level: Second cycle
- Approved by: Programme Board M
- Approval date: 10 February 2026
- Validity: Academic year 2026/2027
- Entry into force: 10 February 2026

1 Aim and outcomes

1.1 Aim

This internationally oriented master’s programme aims to develop the students’ knowledge, skills and judgement in the area of sustainable energy. It is motivated by the dramatic changes taking place in terms of converting the energy system in a more sustainable direction. Indepth knowledge with a focus on various aspects of energy conversion and energy distribution, providing the students the necessary background to successfully contribute to future sustainable energy systems, will be provided. Unique contributions are the possibility to specialise in sustainable transportation as well as using computational fluid dynamics (CFD) to design/improve energy conversion processes. For a number of years, research at Lund University has focused on this problem. Experience gained from this research has been incorporated in the master's programme.

1.2 Outcomes for a Degree of Master of Science (120 credits)

(Higher Education Ordinance 1993:100)

Knowledge and understanding

For a Degree of Master of Science (120 credits) the student shall

- demonstrate knowledge and understanding in the main field of study including both broad knowledge of the field and a considerable degree of 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.

Competence and skills

For a Degree of Master of Science (120 credits) the student shall

- demonstrate the ability to critically and systematically 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 critically, autonomously and creatively as well as to plan and, using appropriate methods, undertake advanced tasks within predetermined time frames and so contribute to the formation of knowledge as well as the ability to evaluate this work,
- demonstrate the ability in speech and writing both nationally and internationally 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 autonomous employment in some other qualified capacity.

Judgement and approach

For a Degree of Master of Science (120 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.

1.3 Specific outcomes for a Degree of Master of Science (120 credits) in Sustainable Energy Engineering

Knowledge and understanding

For a Degree of Master of Science (120 credits) in Sustainable Energy Engineering students shall

- demonstrate specialised knowledge of sustainable energy systems, focusing on energy conversion and energy distribution and its coupling to environmental aspects,
- be able to analyse energy conversion systems as well as energy distribution systems, both from a holistic view and from a component perspective,
- understand how different power production units interact and its coupling to environmental aspects as well as its interaction with energy distribution systems, and

Competence and skills

For a Degree of Master of Science (120 credits) in Sustainable Energy Engineering students shall

- demonstrate the ability to identify, formulate and deal with complex issues in the field of sustainable energy conversion and distribution as well as its coupling to environmental aspects, both with holistic approaches as well as component approaches,
- analyse and critically evaluate different technical solutions,

- demonstrate the ability to participate in research and development projects,
- demonstrate the ability to critically and systematically acquire new knowledge in the field of sustainable energy and integrate this with previous knowledge,
- demonstrate the ability to design, simulate and evaluate energy conversion as well as distribution systems,
- demonstrate the ability to autonomously plan and complete advanced tasks,
- demonstrate the ability to develop and design sustainable energy conversion systems and their constituents while taking into account the circumstances and needs of individuals and the targets for sustainable development set by the community, and
- demonstrate the ability to report in speech and writing their knowledge and different types of project work, including background material, investigation and findings, to expert and non-expert audiences in international contexts.

Judgement and approach

For a Degree of Master of Science (120 credits) in Sustainable Energy Engineering students shall

- demonstrate the ability to make assessments informed by relevant disciplinary, social and ethical aspects,
- demonstrate the capacity for teamwork and collaboration with various constellations, and
- demonstrate the ability to identify their need for further knowledge in the field and to continuously upgrade and broaden their knowledge.

2 Programme structure

The programme includes a compulsory block of courses intended to provide an orientation on energy conversion, energy distribution and to some extent also energy use. The aim is to provide in-depth knowledge with a focus on various aspects of energy conversion and energy distribution, providing the students the necessary background

to successfully contribute to future sustainable energy systems. Students may be allowed to attend PhD courses that fit into the master's programme.

2.1 Courses

The courses included in the programme are indicated in the timetable. Students are entitled to accreditation of 7,5 credits of courses in Swedish (organised by Lund University for exchange students).

2.2 Further studies

On completion of the second-cycle degree, students have basic eligibility for third-cycle studies.

3 Admission requirements

A Bachelor's degree in mechanical engineering, chemical engineering, civil engineering, environmental engineering or equivalent. Completed courses in mathematics including calculus, multivariable analysis and linear algebra, as well as completed courses in classical thermodynamics, heat transfer (may be included in a comprehensive course in thermodynamics) and fluid mechanics. A course in electrical engineering, including circuit theory, three-phase AC and electrical machines. English 6.

4 Degree

4.1 Degree requirements

For a Degree of Master of Science (120 credits) students must successfully complete courses comprising 120 credits, including a degree project worth 30 credits. At least 90 credits must be second-cycle credits and at least 60 credits of those must be in the main field of study, including the degree project.

4.1.1 Degree project

For a Degree of Master of Science (120 credits) students must complete an independent project (degree project) of no less than 30

credits as part of the course requirements. The degree projects included in the programme are listed in the timetable.

4.1.2 Transitional provisions

The transitional provisions apply when it is no longer possible to complete discontinued compulsory courses. If the courses selected as replacement courses are worth fewer credits than the courses replaced students are to select optional courses for the remaining credits. The following transitional provisions apply to discontinued courses:

AEBF30 Photovoltaic Systems, Basic Course 7,5 credits

was offered for the last time 2024/2025 and is replaced by:

- AEBN35 Photovoltaic Systems Technology 7,5 credits

4.2 Degree and degree certificate

When students have completed all the degree requirements, they are entitled to apply for a Degree of Master of Science (120 credits). Main Field of Study: Sustainable Energy Engineering.