

- Master of Science in Sustainable Energy Engineering
- 2 years, full-time, 120 ECTS credits
- Faculty of Engineering
- Lund campus
- Application deadline: January 2021
- Programme start: August 2021

## Programme overview

The landscape of the energy industry is drastically changing throughout the world due to concern over global warming, push for using carbon neutral energy sources, geo-political problems connected to the fossil fuel sources and increasing demand for electricity. Strict regulations over the emissions from energy industry and new roadmaps for a fossil fuel free future are in place in many countries. Worldwide, companies, universities and research institutes are exploring new technologies and improving existing technologies to meet new demands and regulations.

The programme relates mainly to energy conversion and energy distribution, which concerns technical equipment such as power plants, fuel cells, engines, batteries or heat pumps and are usually based on the more basic sciences thermo- and fluid dynamics, but also other parts of physics as well as parts of chemistry. The programme is a cooperation between the Departments of Energy Sciences, Architecture and the Built Environment, Biomedical Engineering and Technology and Society at LTH – the faculty of Engineering at Lund University. The research at the participating departments are multifaceted and the goals range from increased energy efficiency and reduced environmental impact to more efficient energy supply in sustainable urban construction. This expertise should now be implemented in the education of future students to fill the gap between the graduate's knowledge and a fast-changing energy industry. The proposed master's programme is aimed to address this gap.

You will have some freedom to choose courses fitting your personal interest and can choose between four tracks, i.e., automotive, computational, electric power systems and space

heating and cooling. The programme features both theoretical and practical learning, as well as group assignments and presentations. In addition to courses, all of our students undertake a research project for their Master's thesis. The project can be done either in cooperation with industry or be of an academic nature and can be carried out either locally or abroad.

## Programme modules/courses

The **mandatory block** consists of six courses emphasising energy conversion and environmental aspects. The aim is to provide a foundation for the more specialised tracks and project courses later in the programme.

The mandatory block is followed by three **elective mandatory** courses (choose two out of the three). These complement the mandatory courses and serves as an entry to the tracks.

Four **elective tracks** are available:

- The automotive track provides in depth knowledge on powertrain technology for land and sea transportation. The courses in this track further develop knowledge from the mandatory and elective mandatory courses.
- The computational track provides methods applicable to many energy engineering problems.
- Electric power systems i.e., at the intersection between classical mechanical and electric engineering. It provides the broad understanding of both production and distribution of electricity, addressing the difficulties of introducing renewable electricity sources, into the grid.
- Space heating and cooling deals with energy requirements and technologies for good indoor climate, primarily using energy that would otherwise not be used.

## Career prospects

Currently, there are very big changes in the world's energy supply.

The programme aims to develop future energy technology professionals by providing them with deep theoretical knowledge in combination with hands-on practical experience. The programme will prepare students and develop the necessary





professional knowledge for a career in energy companies, authorities or consulting firms.

The energy industry is large. For example, more than half of the world's 20 largest companies (in revenue) are oil or energy companies. Planned investments in infrastructure (transformation and transfer) are huge. The consequences for the labour market should be that the demand for people educated in energy technology will continue to increase. As an example, the site recruiter.com predicts a 5% annual increase in demand for "Energy Engineers" for the US market, and we expect an even bigger demand in the BRICS countries.

## Entry requirements and how to apply

### ENTRY 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 Level 6 (equivalent to IELTS 6.5, TOEFL 90). For details on English proficiency levels, see [www.lunduniversity.lu.se](http://www.lunduniversity.lu.se)

### HOW TO APPLY

- 1. Apply online:** Go to [www.lunduniversity.lu.se/sustainable-energy](http://www.lunduniversity.lu.se/sustainable-energy). Click on "Apply" and follow the instructions for the online application at the Swedish national application website [www.universityadmissions.se](http://www.universityadmissions.se). Rank the chosen programmes in order of preference.
- 2. Submit your supporting documents:**
  - **General supporting documents:** Check what documents you need to submit (i.e. official transcripts, degree diploma/proof of expected graduation, translations, proof of English, passport) and *how* you need to submit them at [www.universityadmissions.se](http://www.universityadmissions.se)
  - **Programme-specific supporting documents:** For information on programme-specific documentation, please check the programme webpage.
- 3. Pay the application fee** (when applicable).

### CONTACT

#### Programme webpage

[www.lunduniversity.lu.se/sustainable-energy](http://www.lunduniversity.lu.se/sustainable-energy)

#### Programme Director

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### SELECTION CRITERIA/ADDITIONAL INFO

The selection is based on academic qualifications and on a statement of purpose.

### TUITION FEES

There are no tuition fees for EU/EEA citizens. For non- EU/ EEA citizens, the tuition fee for this programme is SEK 145 000 per year. See [www.lunduniversity.lu.se](http://www.lunduniversity.lu.se) for details.

## About the Faculty of Engineering

The Faculty of Engineering, LTH, is as a place for dreams and discoveries. We inspire creative development of technology, architecture and design and teach some of Sweden's most attractive Master's programmes, all built on a broad research base. LTH is among the leading engineering faculties in Europe with close to 10 000 undergraduate students. Over 1 000 researchers at LTH work hard to improve the quality of life for people and promote a more careful use of the Earth's resources. Our vision is: Together we explore and create – for the benefit of the world.

## About Lund University

Lund University was founded in 1666 and is repeatedly ranked among the world's top 100 universities. The University has 40 000 students and more than 8 000 staff based in Lund, Helsingborg and Malmö. We are united in our efforts to understand, explain and improve our world and the human condition.

Lund is the most popular study location in Sweden. The University offers one of the broadest ranges of degree programmes and courses in Scandinavia, based on cross-disciplinary and cutting-edge research. Because of its wide disciplinary range, interdisciplinary collaborations and engagement with wider society, Lund University is particularly well equipped to meet complex societal challenges. With partner universities in around 70 countries, the University's profile is distinctly international.

Learn more at [www.lunduniversity.lu.se](http://www.lunduniversity.lu.se)

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