

- Master of Science in Electronic Design
- 2 years, full-time, 120 ECTS credits
- Faculty of Engineering
- Lund Campus
- Application deadline: January 2023
- Programme start: August 2023

PROGRAMME OVERVIEW

Embedded Electronics Engineering offers a wide perspective, where digital and analogue integrated circuits and systems design is regarded as one unit in which different domains interact. The focus is on silicon-based semiconductor technology, e.g., CMOS, where billions of devices are used to build a system on a single chip. As evident from the on-going semiconductor shortage and from European Union initiatives, such as the EU Chips Act, the skill set developed in this programme is in high, international demand.

Integrated circuits are a strategic asset and key enabling technology for digital transformation, automated cars, cloud, Internet of Things, 5G/6G, and supercomputers. This has resulted in a shortage of skilled professionals in integrated circuits and systems design. This programme is both demanding and unique in its offering, a perfect preparation for your future career. The programme spans areas from radio frequency (RF) circuits through to data conversion and digital, processors, circuits and systems. Another distinguishing feature is that circuit design is linked to many emerging application areas, including AI, machine learning, big science facilities (e.g., European Spallation Source), and in particular wireless communication, where RF front-ends are co-designed with digital baseband, which provides the opportunity to build complete transceivers.

Based on the tight relations between the university and the extensive local industry, the programme is closely linked with a variety of world-leading companies, which ensures that our courses maintain high industrial relevance. In some cases, our students' degree projects result in patent registrations and the opportunity to publish work at international conferences and journals.

Examples of companies where students have performed their degree projects include Ericsson (Sweden), Sony (Sweden), Axis Communications (Sweden), ARM (Sweden), Volvo Cars (Sweden), Oticon A/S (Denmark), and NXP (Netherlands).

Special features of the programme:

- Focus on applied studies in digital IC design, analogue RF IC design and mixed signal/data conversion IC design, including soft skills such as how to identify and protect inventions are also included.
- Hands-on laboratory work using the most modern CAD tools, IC technologies, and hardware platforms (e.g. FPGA).
- Taught by world-leading researchers and with very strong links to research in the field.
- After the initial taught courses, students undertake a large project, where the student starts from a digital or analogue design and carries it through to completion and, in some cases, silicon realisation and system demonstration.
- Tight connection to and strong support from local industry (leading international companies).

PROGRAMME MODULES/COURSES

COURSES AND NUMBER OF CREDITS: Design of Embedded Systems (7.5), Introduction to Structured VLSI Design (7.5), Analogue IC Design (7.5), Digital IC Design (7.5), Integrated A/D and D/A Converters (7.5), Patent and Intellectual Property Rights (IPR) (7.5), IC Project I (7.5), IC Project II (7.5) Master's degree project (30), electives at the Faculty of Engineering (in total 30).

CAREER PROSPECTS

After completing this programme, you will be ready for a career, or further research studies, in circuits and systems with a focus on VLSI design. Designers in this area are very attractive on the global job market.



“The programme involves such good lab experience. I like the fact that we have elective courses as well, so you can explore different fields. I really enjoyed taking a class in semiconductor physics, which was in a different department but still related to my field when it comes to electronics. This programme is definitely a kickstart if you want to go into circuit chips, hardware, or programming. You learn how to learn. You learn how to research, to use the tools and the basic concepts. The programme provides good preparation for work in this field.”

Lais Rau from Brazil



The Lund area itself is a part of one of the fastest growing regions in Europe, with a large concentration of interesting companies in the field, large and small, such as Sony, Ericsson, Axis Communications, ARM, Volvo Cars, Mellanox, Oticon and GN Resound. The European Spallation Source (ESS) and MAX IV, both located in Lund, will also offer students many exciting career opportunities. Many graduates are now employed by companies in Lund, such as Ericsson, Axis Communications, Sony, and ARM Sweden, while others have moved on to other international companies like Borg Warner, Mellanox and Huawei.

An intriguing and challenging career option is to continue towards a PhD. The project courses and the final semester degree project offers students the opportunity to work alongside our current PhD students and senior researchers to get a taste of what a career in research is like. This route is very popular with our Master's students, and a large number of graduates have chosen to continue their studies at Lund University. Other students have also moved on to PhDs at Chalmers University of Technology, and Twente University in the Netherlands, to name a few.

ENTRY REQUIREMENTS AND HOW TO APPLY

Entry requirements

A Bachelor's degree in electrical engineering, computer science or equivalent. Completed courses in mathematics (calculus, differential equation, transform theory and linear algebra) of at least 30 credits/ECTS, as well as completed courses in basic circuit theory, electronics, analogue electronics and digital electronics corresponding to at least 30 credits/ECTS in total. The applicant must have basic programming skills (at least one course) and knowledge of electronic description languages, such as VHDL/Verilog. English Level 6.

How to apply

1. Apply online: Go to www.lunduniversity.lu.se/embeddedee. Click on "Apply" and follow the instructions for the online application at www.universityadmissions.se, the Swedish national application website. 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.
- **Programme-specific supporting documents:** For information on programme-specific documentation, please check the programme webpage.

3. Pay the application fee (when applicable)

Tuition fees

Tuition fee SEK 155 000 per year for non-EU/EEA citizens. No fee for EU/EEA citizens.

Selection criteria/additional information

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

ABOUT THE FACULTY OF ENGINEERING

The Faculty of Engineering LTH, is 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 nearly 10 000 students. Over 1 000 researchers at LTH work hard to improve the quality of life for people and promote more careful use of the Earth's resources.

CONTACT

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Lund University was founded in 1666 and is repeatedly ranked among the world's top 100 universities. The University has around 46 000 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.

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