MSc in Embedded Electronics Engineering

LUND UNIVERSITY, SWEDEN

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

Programme overview

Embedded Electronics Engineering offers a wide perspective, where digital and analogue circuits and systems design is regarded as one unit in which different domains interact. The focus is on CMOS, where billions of devices are used to build a system on a single silicon die.

The Shanghai ranking (ARWU) ranks Lund University as #18 in the world in the field Electrical and Electronic Engineering for the year 2019. This programme is 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 circuits and systems. Another distinguishing feature is that circuit design is linked to many emerging application areas, including AI, machine learning, and in particular wireless communication, where RF front-ends are co-designed with digital baseband, which provides the opportunity to build complete transceivers.

Due to the extensive local industry, the programme is closely linked with a variety of private companies, which ensures that our courses maintain high market relevance. In some cases, our students' degree projects result in patent registrations and the opportunity to publish their 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), Oticon A/S (Denmark), and NXP (Netherlands).

Special features of the programme:

- The focus is on applied studies in digital IC design, analogue RF IC design and mixed signal/data conversion IC design.
- All taught study involves 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.

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 & Verification I (7.5), IC Project & Verification 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 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 Sweden, 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. Graduates have received jobs at 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.

For some students, perhaps the most interesting 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

"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

of graduates have chosen to continue their studies at Lund University. Other students have also moved on to PhDs at Chalmers 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 (equivalent to IELTS 6.5, TOEFL 90). For details on English proficiency levels, see www.lunduniversity.lu.se

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 the Swedish national application website **www.universityadmissions.se**. Rank the chosen programmes in order of preference.
2. **Submit your supporting documents:**
• **General supporting documents: C**heck 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).

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 for details on tuition fees.

CONTACT
Programme webpage
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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. A world record in 5G technology, solar celldriven water purification, early cancer diagnosis, nanotechnology for more efficient solar panels, and a health-promoting oat drink are some of the innovations developed at LTH.

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.

Lund University has an annual turnover of more than EUR 830 million, of which two-thirds go to research in our nine faculties, enabling us to offer one of the strongest and broadest ranges of research in Scandinavia.

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