



LUND
UNIVERSITY

MSc in Wireless Communications

LUND UNIVERSITY | SWEDEN

- Master of Science in Communication Systems
- 2 years, full-time, 120 ECTS credits
- Faculty of Engineering
- Lund Campus
- Application deadline: January 2024
- Programme start: August 2024

PROGRAMME OVERVIEW

Can you imagine spending a week without your mobile phone? Or using your laptop or tablet without an internet connection? Wireless devices have become an essential part of our daily life. Over the last decades we have witnessed a revolutionary development of mobile wireless networks, giving us high-speed access to the internet wherever we are. But even with the latest 5G standard in place, a number of challenges will remain to be solved by advanced engineers. With the predicted large-scale expansions of internet-of-things (IoT) and massive machine-type communications (MTC / M2M), the number of connected devices will continue to increase. In addition, future applications such as the real-time wireless control of autonomous vehicles (intelligent transportation/traffic safety) or collaborating machines (Industry 4.0) will lead to entirely new requirements in terms of reliability and on-time delivery of information. Sustainable smart cities and the digitalisation of society heavily rely on connected systems, leading to a broad range of job opportunities for our graduates. The programme will prepare you for an exciting career as expert in the field of wireless communications and related areas.

Wireless Communications has a long tradition in Lund, including the invention of Bluetooth. Lund University has excellent resources in this field and can offer students the opportunity to learn from world-leading researchers in state-of-the-art laboratory facilities. Our Master's is demanding and uniquely tailored, a perfect preparation for your future career in wireless communications. With a focus on the physical and lower layers, the aim is to give our students an in-depth system

knowledge, which in turn requires insights into the various components in a wireless system. All courses included in the programme hold a high international standard.

All of our students undertake a research project for their Master's thesis. The project can be academic in nature, or developed within the industry. These projects can lead to patent registrations and successful entrepreneurial initiatives. Examples of companies where students have performed their thesis include Axis Communications, Bitcraze, Bombardier, Ericsson, FTW, Huawei Technologies, Lite-on Mobile, Procera Networks, Sony Mobile Communications and u-blox.

Full list of courses: <https://www.lth.se/english/master-programme-structure/mwir/>

Special features of the programme:

- The programme features both theoretical and practical learning, plenty of group assignments and presentations, allowing students to develop supplementary skills that increase their attractiveness in the job market.
- Education is closely linked to research at the department. All teachers are themselves educated to PhD level or higher and actively engaged in research.
- Courses are taught by world-leading researchers in the field. Our department is recognized for designing the first fully digital massive MIMO testbed in the world, a technology that has now found its way into 5G. Recently, a first channel sounder for millimeter-wave massive MIMO has been developed.
- A well-designed composition of compulsory courses gives our students a solid foundation for working as a wireless communications engineer. Three elective courses can be chosen from variety of different topics.

PROGRAMME MODULES/COURSES

COMPULSORY COURSES AND NUMBER OF CREDITS:

Digital Communications (7.5), An Introduction to Wireless Systems (7.5), Digital Communications – Advanced Course

”The department has a very strong research team and lots of connections with both the industry and academia all over the world. Because of this, the programme offers a great opportunity to elevate yourself by learning more skills and expanding your horizons. In addition, Lund is a very international city and citizens in Lund generally have a very high English level, which makes it easy to make new friends.”

Guoda from China





(7.5), Antenna Technology (7.5), Wireless Communication Channels (7.5), Wireless System Design Principles (7.5), Multiple Antenna Systems (7.5), Project in Wireless Communications (7.5), Master's degree project (30), electives (30 in total).

CAREER PROSPECTS

The programme provides students with a solid base for a career in wireless communications – either in industry or academia. Our graduates have the necessary skills for both research and development, e.g. understanding and developing future wireless systems, developing wireless networks for special applications and understanding and enhancing existing solutions.

The surrounding area is home to a number of global brands in the field such as Ericsson, Huawei, and Sony. Other companies with operations close to Lund University include Axis, ARM Sweden and Volvo. Many students start working with these companies directly after graduation. The European Spallation Source (ESS) and MAX IV large-scale research facilities, both located in Lund, also offer students many exciting career opportunities. According to our recent alumni survey from Autumn 2022, 85% of the respondents have found a job in Wireless Communications, or a related field, within six months after graduation.

For some students, the most interesting career option is to continue towards a PhD. The thesis offers students the opportunity to work alongside our PhD students 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 or other universities in Sweden, Europe or worldwide.

ENTRY REQUIREMENTS AND HOW TO APPLY

Entry requirements

A Bachelor's degree in electrical engineering, computer engineering, information technology or equivalent. Completed courses in mathematics (including calculus, linear algebra and probability theory) of at least 30 credits/ECTS. The applicant must also have knowledge of signals and systems (including

linear systems and transforms), basic programming, electromagnetic field theory and circuit theory, corresponding to at least 30 credits/ECTS. English Level 6.

How to apply

1. Apply online: Go to www.lunduniversity.lu.se/wireless.

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 170 000 per year for non-EU/EEA citizens. No fee for EU/EEA citizens. See www.lunduniversity.lu.se for details on tuition fees.

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

Programme webpage:

www.lunduniversity.lu.se/wireless

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Lund University was founded in 1666 and is repeatedly ranked among the world's top universities. The University has around 45 000 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.

Learn more at www.lunduniversity.lu.se



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