



**LUND**  
UNIVERSITY

# MSc in Wireless Communication

LUND UNIVERSITY, SWEDEN

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

## 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.

The Shanghai ranking (ARWU) ranks Lund University as #18 in the world in the field of Electrical and Electronic Engineering for the year 2019. Lund University has excellent resources and can offer students the opportunity to learn from world-leading researchers in state-of-the-art laboratory facilities. The programme 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 Bitcraze (Sweden), Bombardier (Sweden), Ericsson (Sweden), FTW (Austria), Huawei Technologies (Sweden), Lite-on Mobile (Sweden), and Procera Networks (Sweden).

## 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 (7.5), Antenna Technology (7.5), Wireless Communication Channels (7.5), Network Architecture and Performance (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 (22.5 in total).

## Career prospects

The programme provides students with a solid base for a career in wireless communications – either in industry or academia. Our



“The teachers are researchers as well, so we are aware of what is going on with the latest research. This close relation between education and research provides first-hand knowledge about how things are right now within industry, what is being developed in terms of trends or technology, such as 5G. Lund University is one of the most important research players in this area right now.”

Andrés Felipe García Albarracín from Colombia





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.

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 in 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 (equivalent to IELTS 6.5, TOEFL 90). See [www.lunduniversity.lu.se](http://www.lunduniversity.lu.se) for details on English proficiency levels.

### HOW TO APPLY

**1. Apply online:** Go to [www.lunduniversity.lu.se/wireless](http://www.lunduniversity.lu.se/wireless). 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).

### 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. A world record in 5G technology, solar cell-driven 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.

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

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### CONTACT

Programme webpage

[www.lunduniversity.lu.se/wireless](http://www.lunduniversity.lu.se/wireless)

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