LUND UNIVERSITY

LTH
FACULTY OF ENGINEERING

Program Syllabus

Master's Programme in Wireless Communication

- Faculty: Faculty of Engineering, LTH
- Programme code: TAEMB
- Credits: 120
- Admission level: Bachelor's degree
- Degree level: Second cycle
- Approved by: Programme Board E
- Approval date: 3 February 2026
- Validity: Academic year 2026/2027
- Entry into force: 3 February 2026

1 Aim and outcomes

1.1 Aim

This internationally oriented Master's programme aims to develop the students' knowledge, skills and judgement in the area of wireless communication. The increasing importance of telecommunication as a field of technology has been accompanied by considerable and significant recent developments in wireless communication. Systems have become more complex and people working in this field must keep abreast of the latest developments. There is a current and continuing need for qualified people who can deal with both systems and applications.

The Master of Science in Wireless Communication aims to meet the needs for qualified engineers who

- can apply wireless communication technology to the development of new wireless systems;
- can profit by and contribute to research in this field; and

- can apply systems thinking in which theory and practice constitute a whole.
- The programme is characterised by the research into wireless communication carried out at the Faculty of Engineering and by the proximity of research-intensive telecommunications industry in the region.

1.2 Outcomes for a Degree of Master of Science (120 credits)

(Higher Education Ordinance 1993:100)

Knowledge and understanding

For a Degree of Master of Science (120 credits) the student shall

- demonstrate knowledge and understanding in the main field of study, including both broad knowledge of the field and a considerable degree of specialised knowledge in certain areas of the field as well as insight into current research and development work, and
- demonstrate specialised methodological knowledge in the main field of study.

Competence and skills

For a Degree of Master of Science (120 credits) the student shall

- demonstrate the ability to critically and systematically integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information,
- demonstrate the ability to identify and formulate issues critically, autonomously and creatively as well as to plan and, using appropriate methods, undertake advanced tasks within predetermined time frames and so contribute to the formation of knowledge as well as the ability to evaluate this work,
- demonstrate the ability in speech and writing both nationally and internationally to report clearly and discuss his or her conclusions and the knowledge and arguments on which they are based in dialogue with different audiences, and

- demonstrate the skills required for participation in research and development work or autonomous employment in some other qualified capacity.

Judgement and approach

For a Degree of Master of Science (120 credits) the student shall

- demonstrate the ability to make assessments in the main field of study informed by relevant disciplinary, social and ethical issues and also to demonstrate awareness of ethical aspects of research and development work,
- demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and
- demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

1.3 Specific outcomes for a Degree of Master of Science (120 credits) in Communication Systems

Knowledge and understanding

For a Degree of Master of Science (120 credits) students shall

- demonstrate in-depth knowledge of the disciplinary foundations of the relevant sub-fields to the field of wireless communication,
- be able to analyse entire systems as well as sub-systems in wireless communication,
- understand how different sub-systems are used and how they interact,
- demonstrate understanding of how research and development work in wireless communication is conducted.

Competence and skills

For a Degree of Master of Science (120 credits) shall be able to

- demonstrate the ability to identify, formulate and deal with complex issues in the field of wireless communication critically, autonomously and creatively and with a holistic approach,

- analyse and critically assess different technical solutions in the field of wireless communication,
- demonstrate the ability to participate in research and development projects in the field of wireless communication,
- demonstrate the ability to critically and systematically acquire new knowledge in the field of wireless communication and integrate this with previous knowledge,
- demonstrate the ability to model, simulate and evaluate systems or parts of systems for wireless communication,
- demonstrate the ability to autonomously plan and complete advanced tasks in the field of wireless communication,
- demonstrate the ability to develop and design radio systems and their constituent parts while taking into account the circumstances and needs of individuals and the targets for sustainable development set by the community, and
- demonstrate the ability in international contexts to report in speech and writing their knowledge and different types of project work, including background material, investigation and findings, to expert and non-expert audiences.

Judgement and approach

For a Degree of Master of Science (120 credits) students shall be able to

- demonstrate the ability to make assessments in the field of wireless communication informed by relevant disciplinary, social and ethical aspects,
- demonstrate the capacity for teamwork and collaboration with various constellations, and
- demonstrate the ability to identify their need for further knowledge and to continuously develop and broaden their knowledge and skills in the field of wireless communication.

2 Programme structure

The programme includes a compulsory block of courses intended to provide an orientation in modern wireless communication systems.

This block of courses begins with basic courses in digital communications and radio and then continues with systems-oriented courses in wireless communication and specialised courses in a number of sub-fields. The range of courses provides the deep and broad knowledge required for understanding how the sub-systems interact. The programme includes elective courses of no less than 22.5 credits to provide opportunities for specialisation. The programme is concluded by a degree project worth 30 credits.

2.1 Courses

The courses included in the programme are indicated in the timetable. Students may also be allowed to attend PhD courses that fit into the master's programme. In addition to these courses, students are entitled to accreditation of 7.5 credits of courses in Swedish (organised by Lund University for exchange students).

2.2 Further studies

On completion of the second-cycle degree, students have basic eligibility for third-cycle studies.

3 Admission 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 6.

4 Degree

4.1 Degree requirements

For a Degree of Master of Science (120 credits) students must successfully complete courses comprising 120 credits, including a degree project worth 30 credits. At least 90 credits must be second-

cycle credits and at least 60 credits of those must be in the main field of study, including the degree project.

4.2 Degree and degree certificate

When students have completed all the degree requirements, they are entitled to apply for a certificate for a Degree of Master of Science (120 credits). Main Field of Study: Communication Systems.