Learning Outcomes

The Master's Programme in Automation and Electrical Engineering is a broad multi-disciplinary study programme providing graduates with the ability to work in and between a wide variety of fields ranging from traditional electrical engineering and energy sector to biomedical engineering and robotics. Drawing from a strong mathematical and natural science basis, the curriculum is flexible, allowing each student to compile her/his own unique combination of courses according to her/his own interests.

The main fields of the programme are automation, biomedical engineering, and electrical power and energy engineering. Within these, the available focus areas include electrical grids, electric motor drives, lighting technology, control engineering, robotics, embedded systems, imaging and machine perception as well as microsystems, new hybrid carbon nanomaterials, and personalized health care.

To prepare the graduates for their future work with large and often complex systems, the programme includes several practical project works in groups which provide skills for solving multifaceted and ill-defined problems similar to those faced in the actual professional life. These projects typically include experimental and practical components as well as fundamental theoretical aspects. The programme also gives the student a comprehensive foundation for doctoral studies.

The programme features three Majors, all of which offer several study paths. The learning outcome of the Master’s programme and its Majors are as follows:

Upon completion of the program the student will be able to

- Apply acquired skills for industrial tasks as well as academic research
- Develop and manage complex and multidisciplinary problems
- Design and perform research in the respective fields of the programme
- Design real-time systems and their related information and communication operations
- Work individually and as a part of a project team
- Understand technology-based entrepreneurship

Course codes in the School of Electrical Engineering

Course codes in the School of Electrical Engineering are formed as follows:

ABBREVIATION - LETTER - NUMBER SEQUENCE

The different parts of the course code are determined in the following way:

**Abbreviation**

All course codes start with the abbreviation ELEC.

**Letter**

A = Bachelor-level basic studies (common basic studies of the bachelor's programme)
C = Bachelor-level major studies (studies towards the major)
D = Complementary studies for the master's degree (fall between bachelor's and master's studies)
E = Master-level studies (all master-level studies)
L = Post-graduate (licentiate and doctoral-level) studies

Some master-level courses can be included in the licentiate or doctoral degree. These courses have the letter "L" after the course name.

Letter V after the course name refers to course with varying content. It means the contents of the course varies and the students can do the course multiple times.

**Number sequence**

The first digit of the sequence indicates the department that offers the course:

0 = School's common studies
3 = Department of Micro and Nanosciences
4 = Department of Radio Science and Engineering
5 = Department of Signal Processing and Acoustics
7 = Department of Communications and Networking
8 = Department of Electrical Engineering and Automation

The three last digits of the sequence are decided by the Departments themselves.

**Example**

`ELEC-E8102` indicates a Master-level course offered by the Department of Electrical Engineering and Automation, for which the department has given the sequential number `031`.