Utbildningsplan för Masterprogram i Elektroteknik med inriktning mot telekommunikationssystem (120 högskolepoäng)
Syllabus for Master of Science Programme in Electrical Engineering with emphasis on Telecommunication Systems (120 ECTS credits)

1. Decision

The degree programme was established by the Board of Education at Blekinge Institute of Technology 2009-06-03. The programme was revised on 2016-11-01 (BTH-4.1.2-0379-2016). The revision refers to the entry requirements. The new entry requirements apply as from admissions round 2017. The programme syllabus was adopted jointly by the Deputy Vice-Chancellor and the Deans on 2017-10-27.

The document applies to all students admitted to the autumn semester of 2018.
Programme code: ETATS

2. Entry requirements

Admission to the programme requires Bachelor's Degree (180 credit points) with one of the main areas of electrical engineering, computer science, software engineering, information system or computer engineering. Bachelor's degree must include 15 credit points in mathematics, 7.5 credit in data communications/tele communications, where basic layer 2 and 3 communication (TCP/IP) is included, object-oriented programming and English B/English 6.

3. Degree

The programme leads up to the following second-cycle degree:
Degree of Master of Science (120 credits)
Main field of study: Electrical Engineering
Specialization: Telecommunication Systems

3.1. Specific requirements for BTH

A Degree of Master (120 credits) requires at least 60 second cycle credits in the main field of study, of which the independent project (degree project) is to comprise at least 30 credits (level A2E). A maximum of 30 first cycle credits can be included in the degree.

4. Goals

In addition to the national goals for the degree, the following goals also apply to the programme:

4.1. Knowledge and understanding

Upon completion of the programme the student shall:

- demonstrate broad knowledge of the main field of study of Electrical Engineering including methods, tools, and languages
used to develop telecommunication systems.
• demonstrate significant in-depth knowledge of the field of telecommunication systems.
• demonstrate in-depth insights into current research- and development work in telecommunication systems.
• demonstrate in-depth methodology knowledge of the main field of study with particular emphasis on telecommunication systems.

4.2. Skills and Abilities

Upon completion of the programme the student shall:
• demonstrate skills in collecting, critically assessing and processing information in an independent way in order to learn both during future studies and in the working life.
• demonstrate skills in analyzing problems and developing new methods and techniques.
• demonstrate skills in identifying, formulating in writing, scientifically answering and presenting issues in telecommunication systems.
• demonstrate skills in independently leading an inquiry in the field in accordance with scientific methods.

4.3. Judgement and approach

Upon completion of the programme the student shall:
• demonstrate skills in critically and independently broadening her/his knowledge of new areas, methods, and problems regarding telecommunication systems
• demonstrate skills in handling problems using a scientific approach.
• demonstrate skills in reflecting and assessing ethical and social aspects related to telecommunication systems.

5. Content

The Master of Science Programme in Electrical Engineering with emphasis on Telecommunication Systems is a two-year programme in technological sciences, with the aim of preparing the student for qualified development work in the industry as well as creating a basis for research studies. The students meet and collaborate with researchers in the field of telecommunication systems and will obtain an in-depth understanding of this field.

Upon completed studies, the student will be able to apply the knowledge in various contexts to analyze problems and create solutions. The student will be able to select, design and apply the different complementary and connecting tools and concepts in the field.

During the course of the programme, the student will acquire an understanding of the basic definitions and concepts, construction principles and methods, and be able to apply these in the field of telecommunication systems and computer networks. The student will also acquire knowledge of important protocols, methods for systems evaluation, current trends and problems in connections with future communication networks.

5.1. Structure and courses of the degree programme

The courses are studied in the order presented below.

Semester 1

• Compulsory: ET2595, Network and System Security, 7.5 credits, Electrical Engineering, Advanced level, A1N
• Compulsory: ET2597, Advanced Networking, 7.5 credits, Electrical Engineering, Advanced level, A1N
• Compulsory: MS1411, Mathematical Statistics, 7.5 credits, the course does not form part of any main field of study at BTH, Basic level, G1F
• Compulsory: ET2596, Simulation, 7.5 credits, Electrical Engineering, Advanced level, A1N
Semester 2

- Compulsory: ET2598, Network and Service Operations, 7.5 credits, Electrical Engineering, Advanced level, A1N
- Compulsory: ET2594, Capacity Analysis, 7.5 credits, Electrical Engineering, Advanced level, A1N
- Compulsory: ET2599, Software-based Networks, 7.5 credits, Electrical Engineering, Advanced level, A1F
- Compulsory: ET2601, Experienced Quality in Network-based Services, 7.5 credits, Electrical Engineering, Advanced level, A1N

Semester 3

- Compulsory: ET2602, Network Service Development, 7.5 credits, Electrical Engineering, second cycle, A1F
- Compulsory: ET2603, Research Methodology in Electrical Engineering with emphasis on Telecommunication Systems, 7.5 credits, Electrical Engineering, Advanced level, A1F
- Compulsory: ET2604, Advanced Course in Telecommunication Systems, 7.5 credits, Electrical Engineering, Advanced level, A1F

Semester 4

- Compulsory: ET2606, Master's Thesis in Electrical Engineering with emphasis on Telecommunication Systems, 30 credits, Electrical Engineering, Advanced level, A2E

5.2. Learning and teaching

The programme consists mainly of second-cycle courses in telecommunication systems. The goal is for the student to develop necessary knowledge for a continuation of third-cycle studies, or work in the industry in telecommunication systems. The programme comprises both theory and practical applications, which will be carried out both independently and in teams. The programme will be concluded by a degree project (30 credits), normally taking place in close connection with the industry and/or a research project.

The programme is offered in English

6. Transition between the academic years

Each academic year comprises studies of a total of 60 higher education credits. The student who has earned less than 45 credits during the first year will be requested to contact the programme managers to discuss requirements and a possible plan for a continuation of the studies.

In addition to these transitional regulations between the academic years there might also be entry requirements on the course level; these requirements are stated in the course syllabi.

7. Quality assurance

The education program is followed up annually regarding content, design, implementation and results. This is done through two follow-up meetings, spring and autumn, where program managers, faculty programme director, deans and deputy vice-chancellor discuss aspects and statistics of the program.

The program is continuously evaluated through the course evaluations of the separate courses conducted after completion of the course, and partly by program evaluation performed every two years. Course evaluations are reported and discussed by course managers and head of department, followed by head of department, deputy vice-chancellor and deans, and feedback gives to the students. Program evaluation is reported and discussed by program manager, faculty programme director, deans and deputy vice-chancellor, and is returned to students. The result of course and program evaluations leads to the development of the program.

The programme is connected to a Programme Board that deals with quality and development issues. The Programme Board and the different committees of the Board, have external members, student representatives and alumni, who discuss the program's development, quality and relevance to the labor market.
8. Student participation

The students are represented in the Board of Education and committees, the Programme Board of the degree programme, and they are also represented in connection with the decisions taken by the departments regarding the course syllabi. There is a programme coordinator for the programme who is the students’ principal contact person for overall matters regarding the programme.

9. Research foundation

The degree program rests on scientific grounds and proven experience. The degree programme is primarily/in substance connected to the research profile within telecommunication systems. The degree programme are linked to relevant research areas within telecommunication systems. Also other identified courses of the programme such as Research Methodology with emphasis on Telecommunication Systems, Advanced Course in Telecommunication Systems, and the Master’s Thesis in Electrical Engineering with emphasis on Telecommunication Systems build on both the latest research results and recognized approaches in research methodology.

10. Third stream activities and labor market links

BTH works actively to make its programmes lead to applicability and employability on the labor market. The students have good possibilities to collaboration with the industry through projects and the degree project. It is common for the Master’s theses to include a connection to the industry based on the students’ initiatives or the supervisors’ contacts. As mentioned before, several teachers on the programme are also researchers at BTH, and in several cases these persons have a connection to the industry through various research projects. Through this connection, the industry link is woven into the courses through concrete examples and problems.

11. Internationalization

The degree programme is carried out in accordance with the BTH internationalization policy. As the programme attracts a great number of international students, the study environment in the programme is international with the coming together of various cultures and traditions.

12. Equality and gender equality

In accordance with the BTH equal treatment plan for students, the programme shall:

- Foster a study environment where you take advantage of the resources that students with different backgrounds, gender, life situation, and competence bring to the University.
- Be free from discrimination during admission- and recruitment processes.
- Be free from discrimination, harassment and other offensive discrimination.