



## Course syllabus

Faculty of Technology

Department of Physics and Electrical Engineering

2ED430 Kompletterande studier för kandidatexamen i elektroteknik, 60 högskolepoäng

2ED430 Complementary Studies for a Bachelor Degree in Electrical Engineering, 60 credits

**Main field of study**

Electrical Engineering

**Subject Group**

Electrical Engineering

**Level of classification**

First Level

**Progression**

G2E

**Date of Ratification**

Approved 2014-10-03

Revised 2021-11-17 by Faculty of Technology. Modules are revised.

The course syllabus is valid from autumn semester 2022

**Prerequisites**

120 credits, of which at least 45 credits are in electrical engineering or equivalent. At least 22,5 credits must be in mathematics, and at least 7,5 credits must be outside of the main field of study electrical engineering.

### Objectives

The objectives are described in the syllabus of each course included in this course.

### Content

The course consists of the following courses:

**Autumn semester:**

Radio engineering, G2F 7.5 credits

Automatic control, G2F 7.5 credits

Electric Power Systems, G1F 7.5 credits

Mobile radio systems, G2F 7.5 credits or Microwave Technology, G2F 7.5 credits

**Spring semester:**

Antenna technology, G2F 7.5 credits

Fourier Methods and Complex Analysis, G2F 7.5 credits

Electrical Engineering, Degree Project (Bachelor), G2F 15 credits

*Short description*

Radio engineering - The course covers transmission lines, resonant circuits, amplifiers and oscillators, Frequency Synthesis and phase locked loops.

Automatic control – The course teaches the basics of classical control theory. Systems are modeled, controllers are designed, and systems are analyzed.

Mobile radio communication – The course deals with wave propagation in the atmosphere, ionospheric reflection, the standard model of the mobile channel and digital modulation.

Microwave technology – The course deals with transmission line theory, the Smith chart, multiports and noise as well as waveguides and microstrip lines.

Electric Power Systems – The course deals with construction of systems for power transmission and the use of electric energy.

Antenna technology – The course introduces different types of antenna and antenna concepts. Wire dipoles and array antennas are treated.

Fourier Methods and Complex Analysis - The course gives an introduction to complex analysis, Fourier series, Laplace transform, Fourier transform and its applications. Theory is illustrated with examples from wave propagation and heat transfer.

Degree Project.

### **Type of Instruction**

See the syllabus for each course.

### **Examination**

The course is assessed with the grades A, B, C, D, E, Fx or F.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

Assessment methods: See the syllabus for each course included in this course.

### **Course Evaluation**

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

### **Credit Overlap**

The course cannot be included in a degree along with the following course/courses of which the content fully, or partly, corresponds to the content of this course: 2ED130 Complementary Studies for a Bachelor Degree in Electrical Engineering, 60 credits

### **Other**

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

## **Required Reading and Additional Study Material**

### **Compulsory literature:**

See the syllabus for each course.