

**SYLLABUS**

# **Electronic Design 7.5 credits E7009E**

**Elektronikkonstruktion**

**Course syllabus admitted: Autumn 2023 Sp 1 - Present**

**DECISION DATE  
2023-02-15**

# Electronic Design 7.5 credits E7009E

## Elektronikkonstruktion

### Second cycle, E7009E

**Education level**  
Second cycle

**Grade scale**  
U G#

**Subject**  
Elektroteknik

**Subject group (SCB)**  
Electrical Engineering

### Main field of study

Computer Science and Engineering

## Entry requirements

The course E7014E Electronics II, 7.5 credits or equivalent.

Good knowledge in English equivalent to English 6.

Alternative:

Corresponding knowledge obtained through work in the electronics industry which is supported by a certificate of professional experience.

## Selection

The selection is based on 30-285 credits

## Course Aim

The aim of this course is to teach the student a systematic way of designing, analyzing, building, and verifying advanced electronic circuits. This is done by exposing them to a variety of challenges related to an advanced electronic project.

The main learning outcome is to teach the student how to systematically create advanced electronic circuits from a given specification. More specifically, the student is expected to be able to successfully complete the following workflow:

- independently design and analyse advanced electronic circuits given a specification,
- simulate and optimize said circuits while making sure they adhere to the specification,
- realizing the circuits on a bread board and/or printed circuit board,
- measure the parameters given in the specification and be aware of the measurement accuracy,
- explain discrepancies between simulation results and measurement results from practical circuits as well as their causes, and
- present a final “product prototype” in front of an audience.

The workflow resembles the process by which a company would design a product from specification to working prototype, and is designed to prepare the students for a job in industry. Relating to the stairs of independence, this course aims to take to students onto the final floor on the stairs—“independent professional actor”.

## Contents

- Planning of an advanced electronic project
- Simulation of complex electronic circuits
- Realisation and verification of complex electronic circuits
  - Circuit board layout
  - Measurement and accuracy assessment
- Presentation of product prototype

## Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

The scheduled teaching consist of lectures as well as labs and project work in a electronic lab. The students are expected to put a large amount of non-scheduled time on carrying out the lab and project work. The students will also write a number of weekly reports where they continuously document their work.

## Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Completed laboratory work and completed and reported construction task. The design assignment is reported through a number of written weekly reports as well as an oral presentation of an advanced electronics project that must meet a given specification. The students work in pairs, but the assessment is made at individual level. It must therefore be clear in the weekly reports which student has done which part of the work.

## Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

## Course offered by

Department of Computer Science, Electrical and Space Engineering

## Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Project work	U G#	6	Mandatory	A07	
0002	Laboratory work	U G#	1.5	Mandatory	A07	

## Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

## **Last revised**

by Robert Brännström 2023-02-15

## **Syllabus established**

by the Department of Computer Science and Electrical Engineering 2007-02-28