IE1332 Electronic Product Development 7.5 credits

Utveckling av elektronikprodukter

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for IE1332 valid from Spring 2019

Grading scale

A, B, C, D, E, FX, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Completed upper secondary education including documented proficiency in Swedish corresponding to Swedish B and English corresponding to English A. For students who received/will receive their final school grades after 31 December 2009, there is an additional entry requirement for mathematics as follows: documented proficiency in mathematics corresponding to Mathematics A. And the specific requirements of mathematics, physics and chemistry corresponding to Mathematics D, Physics B and Chemistry A.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After the course the student shall be able to:

- describe how emitted noise from electronic equipment can couple to other devices and how it can be measured
- describe the kind of noise electronic equipment can be exposed to and how immunity can be measured
- explain the ways of interference coupling mechanisms for conducted and radiated disturbances
- calculate the order of magnitude for interference noise in an electronic system
- measure interference noise using oscilloscope and spectral analyzer
- plan the design of printed circuit board layout and grounding in an electronic system
- judge if there is potential problems in the interface of signals and to consider filtering and ground in electronic systems
- use programs to design printed circuit boards
- be able to design printed circuit boards to fulfill the demands for emission and immunity
- to search and collect information of a technical area emphasizing the use of electronic systems in a sustainable society. Examples of areas to evaluate is choice of material, building techniques, reuse, supply of electricity, batteries, energy saving and energy harvesting. The gathered information is to be presented orally and in a written report.
- reflect onthe use ofan electronic system with respect tohuman conditions and needsand-society's objectivesforeconomically, sociallyand ecologically sustainable development.

Course contents

Electromagnetic compatibility - emission and immunity

Measurements of emission and immunity

Coupling mechanisms

Layout and grounding in electronic systems

Interface, filtering and shielding

Desing of printed circuit boards

Electronic design in a sustainable society

Power supply

Course literature

Williams, EMC for Product Designers

Examination

- LIT1 - Literature task, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 3.0 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Other requirements for final grade

Completed exams.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.