IH2661 Power Semiconductor Devices 7.5 credits

Krafthalvledarkomponenter

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

Establishment

Course syllabus for IH2661 valid from Autumn 2008

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

Language of instruction

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

Intended learning outcomes

The objective is to understand the operation of power semiconductor devices, and advantages and disadvantages with various materials and device concepts, so that a suitable device can be selected for a particular application.

Course contents

The course deals with the operation of power semiconductor devices from basic physical models and transport properties, but the focus is on the understanding of different device concepts. The operation of bipolar power devices, as pin-diodes and various types of thyristors are described, but also the principles for unipolar rectifiers and switches such as power MOSFET is included. Modern devices often make use of a combination of unipolar control and bipolar power handling and the course also describes these devices, for instance the IGBT and MCT structures. Also devices made of semiconductors other than silicon, i.e., silicon carbide, will be addressed.

Course literature

Supplementary literature

Compendium

Examination

- ANN1 - Project Work, 7.5 credits, grading scale: A, B, C, D, E, FX, 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

No written examination will be given, but instead the students are required to fulfill a smaller project and present their results and hand in solutions to selected problems.

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.