



HÖGSKOLAN I GÄVLE

Solid-State Electronics 7.5 cr

Fasta tillståndets elektronik 7,5 hp

Set by Board of Technology and Built Environment

Version

Set at

Valid from

5/30/07

HT2007

Level	A1F
Education level	Second cycle
Course identifier	EE422D
Credits	7.5 cr
Main field of study	Electronics
Subject group	Electronics
Disciplinary domain	Technology 100.0 %

Learning outcomes

The aim of the course is to give a systematic introduction to the principles in solid-state electronics, as well as to give in-depth knowledge of the most commonly occurring fundamental semiconductor devices. Further on the course is specialized towards devices useful in radio engineering.

After finished course the student is expected to:

- Understand and analyze the physics and electrical behavior of fundamental semiconductor devices
- Understand and analyze the electrical behavior of semiconductor devices useful in radio engineering
- Adequately describe the theory behind the devices in focus
- To some extent suggest theoretical improvement of devices in focus
- Be capable of benefiting from other literature than the course literature
- To some extent be capable of benefiting from scientific reports
- Be capable of finding relevant information on the Internet

Course content

Fundamental electron physics in semiconductors
The p-n junction
Field-effect transistors, emphasis on the MOST
The bipolar transistor

Microwave devices
Survey of manufacturing technology (contains elements of environment/sustainable development, e.g., choice of materials and manufacturing processes)

Teaching The education is performed as lectures, exercises, and laboratory work/assignments. The laboratory work/assignments is normally performed in groups of two students. Emphasis is put on the students capability of accomplishing and reporting the work.
The lectures and exercises are not mandatory for the student. However, participation in laboratory work and assignment tasks is mandatory.

Prerequisites B.Sc. degree in Electronics, Electrical Engineering or equivalent. Knowledge corresponding to Fields and Waves and Microwave Engineering I

Examination A written examination is offered at the end of the course. For each course two examination opportunities are offered: one at the end of the course and one extra.
In addition, approved results from assignments are required.

Grade A, B, C, D, E, Fx, F

Other regulations The grade Fx is not used.

Sustainable environment A minor part of the course content deals with sustainable development.

Module

0010	Written examination	6 cr	Grade: AF
0020	Assignments	1.5 cr	Grade: UG