Linnæus University

Jnr: 2017/6567-3.1.2.2

Course syllabus

Faculty of Technology
Department of Computer Science and Media Technology

1DT201 Datorstödd elektronikkonstruktion, 7,5 högskolepoäng
Computer Assisted Electronic Design, 7.5 credits

Main field of study
Computer Engineering

Subject Group
Computer Science

Level of classification
First Level

Progression
G1F

Date of Ratification
Approved 2013-09-11
Revised 2017-11-13 by Faculty of Technology. Removal of ECTS-grading scale.
The course syllabus is valid from spring semester 2018

Prerequisites
60 credits in the field of Electrical and Computer Engineering including Electronics 7.5 credits (1ED041) and Logic Circuit Design 7.5 credits (1ED021) or the equivalent.

Objectives

Upon completion of the course the student should have:

- general knowledge about modern computer assisted tools for electronic design
- good ability to handle these tools
- good knowledge about how to use hardware description language for electronic design
- good knowledge about the the language VHDL (Very High Speed Integrated Circuit Harware Description Language)
- sufficient knowledge in electronic design to make design, layout, test, construction and production of a printed circuit board from a schematic in laboratory environment.

Content

Electronic design:

- methods
- CAD system for electronic design
- schematic entry
- simulation
- PCB layout
- design task
- simulation with Pspice
- EMC, Electromagnetic Compatibility
- ESD, Electrostatic Discharge

Hardware description language VHDL:

- description of digital designs in VHDL
- simulation of the structure described in VHDL
- from VHDL description to functioning PLD
- design tasks

Project:

- alone or in groups of two students make an electronics design in which design and manufacture of a printed circuit board is included

Type of Instruction

Lectures, seminars, practicals and project work. Practicals are carried out individually or in groups. Participation in practicals and project work is mandatory.

Examination

The course is assessed with the grades U, 3, 4 or 5.
Assessment of student performance is made through written test and/or oral examinations and/or presentation of mandatory assignments. The assessment method is decided at the start of the course.

Students who do not pass the regular examination will be offered retrials close to the regular examination.

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.

Required Reading and Additional Study Material

Required reading

Hans Danielsson, BYGGSÄTT FÖR ELEKTRONIK : från ytmontering till 3-dimensionell byggteknik. Pages 300 (386).

Recommended reading

Esbjörn Johansson, Mönsterkort : från CAD till kort. Pages 200 (286).
Birgitta Andersson, Dag Stranneby, Esd - elektrostatiska urladdningar : risker och skydd vid elektronikhantering. Pages 160 (160).
Sjöholm S, Lindh, L, *VHDL En introduktion*, Studentlitteratur, 2003. Pages 121 (121).
Sjöholm S, Lindh, L, *VHDL för konstruktion*, Studentlitteratur, 2003. Pages 453 (453).