



PHYSICS

FYD150 Digital electronic design with VHDL, 7.5 higher education credits

Digital elektronikkonstruktion med VHDL, 7,5 högskolepoäng

First Cycle

Confirmation

This course syllabus was confirmed by Department of Physics on 2015-03-27 to be valid from 2015-03-27, autumn semester of 2015.

Field of education: Science 100%

Department: Physics

Position in the educational system

The course is given at first cycle level in the programme Computer-aided Physical Measurements and as a freestanding course at University of Gothenburg.

Main field of studies

Physics with Specialization in Computer-Aided Physical Measurement Technology

Specialization

G1F, First Cycle, has less than 60 credits in first-cycle course/s as entry requirements

Entry requirements

FYD100 and FYD110 or FYD101 and FYD102 and FYD111.

Learning outcomes

On successful completion of the course the student will be able to:

Knowledge and understanding

- the basics of VHDL
- account for what be meant with parallel or sequential programme code
- explain the words "concurrent", "sequential", and "data flow"
- design digital electronic systems based on structural VHDL
- explain the difference between a microcomputer design and an FPGA design

Skills and abilities

- the basics of VHDL
- program a FPGA in VHDL
- create a digital solution in VHDL for a given problem
- simulate a digital design for verification
- troubleshoot a digital FPGA system

Judgement and approach

- be able to decide when an FPGA solution is to prefer in front of a micro computer solution
- have acquired a structured way to troubleshoot digital systems
- understand the value of verification and validation of digital systems
- be able to plan the implementation of a digital design
- have acquired a structured design technique for complex digital electronic problems

Course content

The course treats design of digital systems by means of VHDL programming.

The course consists of a number of lectures and laboratory sessions. No components.

Form of teaching

The course has a number of lectures and laboratory sessions.

Language of instruction: Swedish

Assessment

The examination consists of a number of presented laboratory exercises.

To pass the course, the laboratory exercises should be presented before the date that is specified in course essay.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

For grade Pass, it is required that all lab exercises have been presented before exposed deadline. To pass with distinction, additional lab exercises should be presented before exposed deadline.

Course evaluation

At the end of the course, a course questionnaire is opened in on the GUL web page of the course. The result of the questionnaire is published on the course homepage and a compilation of course evaluation and any changes in the set-up of the course be communicated the students who start the course next time it be given.

The results of and possible changes to the course will be shared with students who participated in the evaluation and students who are starting the course.

Additional information

The course is given in Swedish. The hardware in the course come from Terasic/Altera and the software from Altera. The software can be downloaded free from Internet.