



PHYSICS

FYD230 Microcontroller Networking I, 7.5 higher education credits

Mikrocontrollers i nätverk I, 7,5 högskolepoäng

First Cycle

Confirmation

This course syllabus was confirmed by Department of Physics on 2007-06-15 to be valid from 2007-07-01.

Field of education: Science 100%

Department: Physics

Position in the educational system

Advanced course in the main subject physics. The course is given as part of the programme Computer-aided physical measuring techniques and as a freestanding course at University of Gothenburg.

The course can be part of the following programme: 1) Computer Aided Measurements in Physics (N1DAF)

Main field of studies

Physics

Specialization

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

Entry requirements

Prior knowledge the equivalent course FYD212 Microcontrollers and C compilers.

Learning outcomes

After having gone through the course of Microcontrollers in networks I the student should:

- master the most common network topologies that occur intended for embedded systems.

- have both theoretical and practical knowledge for small and medium networks (I2C and CAN).
- be able to design own complete networks of microcontrollers and also design own nodes for connection to existing network.
- have general knowledge of large networks and wireless networks (Ethernet and Zigbee).
- understand the difference between asynchronous and synchronous network communication.
- understand the concept CSMA and understand the difference between CSMA/CD and CSMA/ABOUT.
- be familiar with the most common topology for network with embedded systems and the most common access methods.

Course content

The course consists of lectures and laboratory sessions.

The course treats microcontrollers in network of all sizes. They implies that we look first on much small networks i.e. network limited to a single circuit boards (or a few close circuit boards). Examples of such a network are I2C networks that occur in e g audio/video equipment.

The emphasis of the course will however lie on the medium networks intended for microcontrollers. "medium networks" refers to networks with a total length of approximately 10 meters and approximately 10 nodes. As example of such a network, CAN networks are treated in detail. CAN is the dominating network technology in the automotive industry.

We then also look on how microcontrollers can be connected to large networks such as Ethernet and how wireless networks can be built with microcontrollers.

Form of teaching

Examination takes place through compulsory laboratory sessions where presentation of assignments takes place running during the course.

Language of instruction: Swedish

Assessment

Passing the course requires that they in the course the included laboratory sessions been presented and approved. For students who have not passed at the regular test and presentation session, additional examination sessions are offered.

Student who has failed two times in test for course, or part of course, has the right to request another examiner. The application is sent to the relevant department. Final course grade is received then all compulsory components passed.

Grades

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

For the grade Pass, passed laboratory sessions as well as passed written assignments are required and for the grade Pass with distinction is required furthermore approved examination.

Course evaluation

Course evaluation is carried out by students and teachers during the course as well as at the end of the course.

Additional information

Lectures and laboratory sessions are conducted in ET laboratory, Physics Research building.