HE101V PLC-Programming 7.5 credits

PLC-programmering

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

Establishment

Course syllabus for HE101V valid from Autumn 2013

Grading scale

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

Education cycle

First cycle

Main field of study

Electrical Engineering, Technology

Specific prerequisites

Completed upper secondary education including documented proficiency in Swedish corresponding to Swedish B and English corresponding to English A, and the specific requirements of mathematics, physics and chemistry corresponding to Mathematics D, Physics B and Chemistry A.

Language of instruction

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

Intended learning outcomes

The aim of the course is to familiarize problems in control systems technology, and how these can be solved by means of PLC (programmable logic controller). Participants should be able to communicate with people of trade concerning problems with implementing and programming PLCs.

After finishing the course, the students should

- Be able to analyse and solve control system problems which are presented verbally or with simple schematic sketches.
- Be able to use GRAFCET as tools to solve technical problems steering
- Be able to interpret a GRAFCET-diagram and, based on that, write a PLC-program.
- Be able to initiate an unfamiliar PLC using manuals and other available documentation.
- Be able to connect the necessary sensors and actuators for a control system to a PLC.
- Be able to give an account of the historical background of the international standard IEC 61131-3.
- Be able to program, using the various program languages included in IEC 61131-3.
- Be able to identify the different components of a profibus systems.
- Be able to explain the differences between PROFIBUS DP and PROFIBUS PA.
- Be able to indicate some common problems associated with PROFIBUS-systems and also how these can be prevented or resolved.

Course contents

- Description of control systems using timing diagrams, sequence charts, flow charts and Sequential Function Charts (GRAFCET).
- Sensors and actuators
- Background of the IEC 61131-3 standard
- Programming in instruction list, structured text, ladder diagram, FBD and SFC.
- Laboratory implementations on control systems (pneumatic cylinders) and control problems (PID and fuzzy).
- PROFIBUS

Disposition

Lectures, tutorials and practicals. Attendance at lectures is essential to follow the course and attendance at laboratory sessions is compulsary.That means you must come to KTH CampusTelge least once per week during the course.

Course literature

Kursbunt

Examination

- RED1 - Account, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 4.5 credits, grading scale: P, 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.

The presentation consists of a written examination

Other requirements for final grade

Passed written examination
Passed laboratory assignments

Final grade is based on written examination, grading A-F.

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.