ML1306 Electrical and Control Engineering 10.5 credits

El- och styrteknik

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

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for ML1306 valid from Autumn 2013

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Language of instruction

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

Intended learning outcomes

After passing the course, the student should:

- be able to account for current issues within the electrical engineering application fields in the society
- calculate and measure electric units in circuits
- account for how inductive and capacitive circuits influence effect
- account for the most important rules and the components for electricity safeity
- explain, connect and verify amplifier and logic circuits.
- account for hold circuits and flip-flops
- choose sensors for different applications
- account for different pneumatic components and their function and application
- program a simple PLC and document its function
- based on a given assignment in groups suggest a solution to an electrical and/or control-based problem
- be able to seek knowledge outside the reading list and to evaluate the found sources
- where appropriate be able to dimension and choose components for the suggested solution
- be able to write a group report be able to carry out an oral presentation
- be able to reflect on his/her own action in the group
- be able to reflect on the cooperation of the group
- be able to reflect on how the two points above influenced the results of the group

Course contents

- DC-voltage - Direct current
- Alternating current - Alternating current
- Three-phase
- Analog circuits
- Digital circuits
- Electrical machines
- Hydraulics and pneumatics
- Sensors
- Simple control systems
- Current electrotechnical applications
- group dynamics

Disposition

Lectures
Laboratory exercises
Project

Specific prerequisites

Course literature

Bengt Haag: ”Industriell systemteknik", Studentlitteratur, ISBN: 9789144008196.

Examination

- LAB1 - Laboratory Work, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Project, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, 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.

Other requirements for final grade

A Pass grade in the entire course requires at least grade E on TEN1, at least grade E on LAB1 and P on PRO1. The course grade is given as the weighted mean of TEN1 and LAB1 according to formula: ((TEN1*3) + (LAB1*4.5))/7.5, where grades correspond to numbers according to the following: E = 1; D = 2; C = 3; B = 4 and A = 5.

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.