ML1611 Automation Technology 7.5 credits

Automatiseringsteknik

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 ML1611 valid from Spring 2024

Grading scale

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

Education cycle

First cycle

Main field of study

Electrical Engineering,Technology

Specific prerequisites

Completed courses ML1309 and ML1607

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:

1.   Use correct terminology, define concepts, describe the functions and properties of components within automation.

2.   Explain general principles, methods, and equipment for control and automation - how they work, how they are used and programmed, including industrial robots.

3.   Systematically describe the sequence of events in a manufacturing equipment, develop logical solutions and control charts, and develop appropriate PLC programs in codeSys.

4.   Choose suitable components for the current application, such as actuators, sensors, control systems, and industrial communication equipment.

5.   Design, program, and commission simpler automated systems where processing, material handling, assembly, coordination, and monitoring are included in the control tasks.

6.   Explain the transformation in the industry towards digitalization and higher levels of automation.

7.   Identify problems in automated systems from a maintenance perspective and suggest solutions.

8.   Reason about safety and environmental aspects related to automation and argue for or against different positions in a nuanced way.

9.   Describe the environmental, human, and economic conditions for the design and use of automated systems.

Course contents

- Basics of automation technology

- Description of sequence of events

- PLC technology

- Use of sensors and actuators in the manufacturing industry

- Introduction to assembly techniques - feeders, joining, DFA

- Use of robots

- Material handling

- Environmental, human, and economic conditions for the design and use of automated systems

- Automation challenges from a maintenance perspective.

Examination

- INL1 - Assignment, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 3.0 credits, grading scale: P, F
- TEN1 - Written 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.

Transitional regulations

Since the course has previously been taught in conjunction with MG1002, which these changes create harmonization towards, there is already an established interface between the old and the new syllabus.

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.