SYLLABUS

Industrial automation 7.5 credits R7008E

Industriell automation

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2022-02-14

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LULEÅ TEKNISKA UNIVERSITET

Industrial automation 7.5 credits R7008E

Industriell automation

Second cycle, R7008E

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	G U 3 4 5	Reglerteknik	Automation Technology

Entry requirements

Basic knowledge in the subjects of automatic control (corresponding to one of the courses R0001E Basic Automatic Control, R0002E Modelling and Control, R0004E Modelling and Control, or R0005E Measurement and feedback control), basic electronics (E0003E Circuit Theory or E0013E Fundamentals of Electrical Engineering), mathematics (M0018M Linear Analysis) and programming (D0009E Introduction to Programmming, D0010E Object - oriented Programming and Design) is presumed.

Good knowledge in English equivalent to English 6.

Selection

The selection is based on 30-285 credits

Course Aim

After the course, the student shall be able to:

- Select sensors and actuators for synthesizing solutions for Industrial Automation problems
- Analyze a real life problem from an industrial automation perspective, understand what is effective, what is not, judge based on an engineering and cost oriented thinking
- Identify and Select proper sensory and actuation equipments for synthesizing and integrating industrial automation tasks
- Integrate and Synthesize a classical relay based industrial automation
- Integrate, Synthesize and Program a PLC based industrial automation
- Design a PCB based Industrial Automation
- Analyze, Integrate and Combine Electro Pneumatic-Hydraulic Automation with relay or PLC based industrial automation
- Select and Utilize Industrial Networks for Industrial Automation Networks
- Tune PID controllers for the Process Control Industry

Contents

The course covers a number of central concepts of Industrial Automation such as: basic automation elements, hardware components for Automation and Process Control, the latch principle, Industrial Automation synthesis, logical design for automation, electro pneumatic automation, industrial networks, basic programming in PLC and the PID at the industry.

Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.
Lectures, problem demonstration sessions, and laboratory work (Industrial Automation Experimental Setups).

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Mandatory laboratory assignments (differentiated grades) with written reports and written exam with differentiated grades.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term “unauthorized aids” refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Course offered by

Department of Computer Science, Electrical and Space Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0003	Laboratory work	U G#	3	Mandatory	S18	
0004	Written exam	G U 3 4 5	4.5	Mandatory	S22	

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Jonny Johansson, HUL SRT 2022-02-14

Syllabus established

by Johan Carlson 2013-02-07