

SYLLABUS

Automation 7.5 credits

T0023T

Automatisering

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2022-02-14

Automation 7.5 credits T0023T

Automatisering

First cycle, T0023T

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Produktionsteknik	Mechanical Engineering

Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and You are expected to have documented skills in English language and have basic knowledge of physics and mathematics, e.g. English 6/B, F0004T (Physics 1), F0006T (Physics 3), M0047M-M0049M (Linear Algebra and differential equations), and M0055M (Functions of several variables and computer tools).

Besides these, it is recommended to have knowledge of manufacturing methods, e.g. T0019T, but also have good computer skills and experience of computer logics.

Selection

The selection is based on 1-165 credits.

Course Aim

Divided into the three categories below, you will as a student successfully:

1. Knowledge and understanding

- describe and elaborate upon the foundations of automation, its functions and requirements in a production system
- describe automatic and integrated production systems, terminology, but also the components main functions, especially considering industrial robots

2. Skills and abilities

- implement programming of industrial robots to perform simple tasks,
- explain basic signal logic, robot modeling and simulation and based on this select suitable components for different applications,
- carry out design and critically assemble automatic production equipment, taking into account function, quality, efficiency and cost,
- orally present and explain production solutions to peers

3. Values and attitudes

- demonstrate the ability to collaborate with other people in a laboratory environment and group works, and reflect on one's own efforts and conclude how to improve for future collaborations,
- reflect on the technical and workplace consequences of implementing autonomous systems

Contents

The course deals with automated systems, their support components and how they work together to create added value. Value refers to both production, resource and quality improvements. Automation means to systems that work faster, with higher quality and at the same time with less resources.

Examples of automatic systems included in the course are mainly industrial robots, PLC systems and automatic transport systems.

Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

As a student, you are offered participation in lectures where important elements of the course are highlighted and explained. Guest lecturers and industry visits are not a permanent feature but occur. Laboratory work gives you the opportunity to see and understand for yourself how the components look and work (PLC programming, robot control and robot simulation).

Within the course, a project is carried out with normally 5-6 participants in each project group. The project work is carried out with the support of supervisors for the structure of the students' own acquisition of knowledge within each automation development project.

You will also be given the opportunity to develop your oral presentation technique by presenting projects and assignments to the class.

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. Examination in the course takes place continuously, where your knowledge and ability is assessed and determined based on your performance in the course. To pass the course, you must pass all laboratory work (compulsory), the internship case (the project), and a sufficiently good proven level of knowledge. Depending on the level of proven knowledge and ability, grades are set (U, 3, 4, 5).

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.

Overlap

The course T0023T is equal to T0014T

Course offered by

Department of Engineering Sciences and Mathematics

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Laboratory work	U G#	2	Mandatory	A16	
0002	Project Work	U G#	2	Mandatory	A16	
0003	Continous Examination	G U 3 4 5	3.5	Mandatory	A16	

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 Niklas Lehto, Programme Director 2022-02-14

Syllabus established

by Mats Näsström 2016-02-15