JÖNKÖPING UNIVERSITY
School of Engineering

COURSE SYLLABUS

Applied Industrial Automation, 7.5 credits

Tillämpad Industriell Automation, 7.5 högskolepoäng

Course Code:	T2TIAN	Education Cycle:	Second-cycle level
Confirmed:	Sep 01, 2025	Disciplinary domain:	Technology
Valid From:	Jan 18, 2027	Subject group:	Mechanical Engineering
		Specialised in:	A1F Second cycle, has second-cycle course/s as entry requirements
		Main field of study:	Production Systems

Intended Learning Outcomes (ILO)

On completion of the course the student shall:

Knowledge and understanding

- demonstrate comprehension of programming principles for industrial automation systems
- show familiarity with programming hardware equipment for automation systems
- demonstrate comprehension of robot programming concepts and safety standards

Skills and abilities

- demonstrate the ability to develop and implement automation programs for industrial applications
- demonstrate skills in simulation software for automation system design and analysis
- demonstrate the ability to program and configure automation hardware for production processes
- demonstrate the ability to program industrial robots for production and assembly tasks

Judgement and approach

- demonstrate the ability to evaluate appropriate automation solutions for specific production requirements
- demonstrate an understanding of safety considerations in automation programming
- demonstrate the ability to assess performance and efficiency of automated production systems

Content

This course provides hands-on experience in programming and simulation of automation hardware and software for industrial production. Building on theoretical foundations from prerequisite courses, students will develop practical skills in implementing automation solutions using selected industry-standard as well as open-source tools and programming languages. The course emphasizes real-world applications and prepares students for professional work in automation engineering.

The course includes the following elements:

- Industrial control system programming and interface development
- Industrial robot programming and trajectory planning
- Simulation and modelling of robotic production line
- System integration and communication protocols
- Safety programming and risk assessment
- Project-based automation system development

Type of instruction

The course combines laboratory work, programming exercises, simulation project, and seminars. Students work individually and in teams on practical automation challenges using industry-standard and open-source software and hardware. Seminars include case study discussions, technology presentations, and project demonstrations. Guest lectures from industry professionals provide insights into current automation practices.

Language of instruction is English.

Entry requirements

Passed courses of at least 150 credits in the program Industrial Product Realisation, or a bachelor's degree (i.e the equivalent of 180 ECTS credits at an accredited university) with at least 90 credits in Mechanical Engineering, Product Development, Materials Engineering, Manufacturing Engineering, Production Engineering, Industrial Engineering, Civil or Construction Engineering, Industrial Organization and Economics or equivalent. The bachelor's degree should comprise a minimum of 15 credits in Mathematics. Taken course in Automation and Production Technology, 7.5 credits, and Production System Development, 7,5 credits, or the equivalent. Proof of English proficiency is required.

Examination and grades

The course is graded 5, 4, 3 or U.

The final grade for the course is based upon a balanced set of assessments. The final grade will only be issued after satisfactory completion of all assessments.

Registration of examination:

Name of the Test	Value	Grading
Examination	2.5 credits	5/4/3/U
Project	2.5 credits	5/4/3/U
Assignment	2.5 credits	5/4/3/U

Other information

Exemption from entry requirement allowed according to the selection groups of the program, where the course is included.

Course literature

Please note that changes may be made to the reading list up until eight weeks before the start of the course.