Module Description, available in: EN

Industrial Control

General Information

Number of ECTS Credits

3

Module code

TSM_IndContr

Valid for academic year

2026-27

Last modification

2025-09-28

Coordinator of the module

Emanuele Carpanzano (SUPSI, emanuele.carpanzano@supsi.ch)

Explanations regarding the language definitions for each location:

- Instruction is given in the language specified for each location and module execution.
- Documentation is available in the language(s) listed for each location and module execution. If the documentation is in multiple languages, the percentage distributed is indicated (100% = all documentation provided).
- The examination, including both questions and answers, is provided entirely (100%) in the language(s) specified for each location and module execution. The exams are on-site.

	Lausanne			Lugano	Zurich		
Instruction				**X** E 100%			
Documentation				**X** E 100%			
Examination				**X** E 100%			

Module Category

TSM Technical scientific module

Lessons

2 lecture periods and 1 tutorial period per week

Entry level competences

Prerequisites, previous knowledge

n/a

Brief course description of module objectives and content

The Machine and Production Operations Control is the core of the module, with focus on continuous time, motion and discrete event control of industrial systems. Laboratory activities are developed for Continuous Time Control modelling and simulation, as well as CNC (Computer Numerical Control) and PLC (Programmable Logic Control) programming and testing.

Aims, content, methods

Learning objectives and competencies to be acquired

- to understand tasks and generic architecture of a machine and production operations control system
- to learn which are the functions of a generic driver, CNC and PLC necessary to control manufacturing plants
- to learn modelling and simulating continous time control systems, i.e. PID closed loop controllers
- to learn configuring and programming PLC and CNC systems through standard IEC and ISO languages
- to develop practical exercises on industrial drivers, PLC and CNC targets

Module content with weighting of different components

The PLC, CNC and drivers roles and functions in production systems. Modelling, design and simulation of continuous time control systems (PID controllers). The architecture of a PLC and a CNC. Configuration and programming of PLC and CNC systems. Exercises on part program (CNC) and logic control (PLC) solutions development and testing.

Teaching and learning methods

Frontal theoretical lessons, exercises and practical lab activities.

Literature

Course notes provided by the lecturer.

Assessment

Additional performance assessment during the semester

The module does not contain an additional performance assessment during the semester

Basic principle for exams

As a rule, all standard final exams are conducted in written form. For resit exams, lecturers will communicate the exam format (written/oral) together with the exam schedule.

Standard final exam for a module and written resit exam

Kind of exam

Written exam

Duration of exam

120 minutes

Permissible aids

Aids permitted as specified below:

Permissible electronic aids

No electronic aids permitted

Other permissible aids

You can use a double-sided A4 form that summarises the essential contents of the course.

Exception: In case of an electronic Moodle exam, adjustments to the permissible aids may occur. Lecturers will announce the final permissible aids prior to the exam session.

Special case: Resit exam as oral exam

Kind of exam

Oral exam

Duration of exam

30 minutes

Permissible aids

Aids permitted as specified below:

Permissible electronic aids

No electronic aids permitted

Other permissible aids

You can use a double-sided A4 form that summarises the essential contents of the course.