The Learning Content Landscape

Education & Qualification I From the Fundamentals to Industry 4.0

Technological Progress

Technological progress in Industry 4.0 such as self-learning systems, artificial intelligence, big data, cyber security or predictive maintenance offers new possibilities in industrial production.

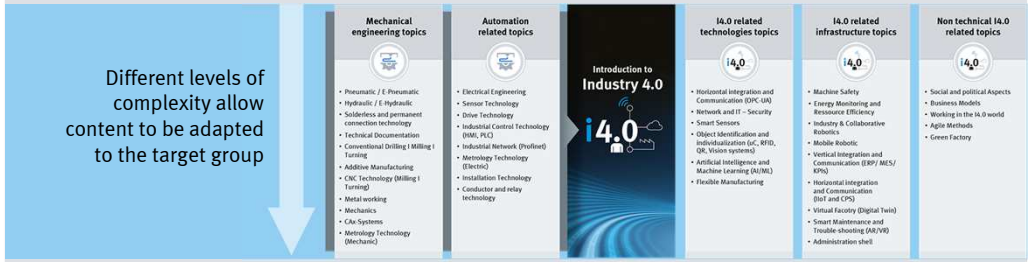
To make efficient use of them, learners need **technical education with a strong focus** on state-of-the-art Industry 4.0 topics.

The **development of curricula** at education and qualification institutes sometimes lags behind the technological progress.

Improvement of Curricula

The topics range from the fundamentals to Industry 4.0 topics

Different levels of complexity allow content to be adapted to the target group



Product Knowledge

A **shift from product knowledge to action competencies** is necessary, which are divided into professional, methodological, social and personal competences.

From the learning content landscape **Festo Didactic develops the specific curricula** for the different target groups, e.g. mechatronics or data scientists and analysts.

Festo Didactic adapts the **teaching and learning content** to **relevant technologies and topics.** For precisely trained future experts in Industry 4.0

Methodological, Social and Personal Competencies

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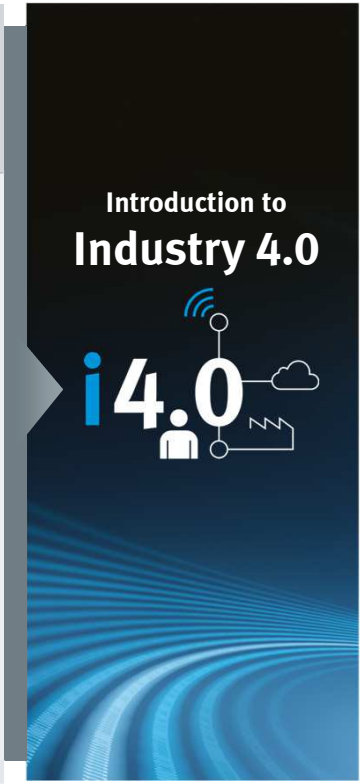
Mechanical Engineering topics

- Pneumatics / E-Pneumatics
- Hydraulics / E-Hydraulics
- Solderless and permanent connection technology
- Technical Documentation
- Conventional Drilling I Milling and Turning
- Additive Manufacturing
- CNC Technology (Milling and Turning)
- Metal working
- Mechanics
- CAx-Systems
- Metrology Technology (Mechanical)

Automation Related Topics

- Electrical Engineering
- Sensor Technology
- Drive Technology
- Industrial Control Technology (HMI, PLC)
- Industrial Network (PROFINET)
- Metrology Technology (Electrical)
- Installation Technology
- Conductor and Relay Technology



I4.0-Related Technologies Topics

- Horizontal Integration and Communication (OPC-UA)
- Network and IT– Security
- Smart Sensors (IO-link)
- Object Identification and Individualization (uC, RFID, QR, Vision Systems)
- Artificial Intelligence and Machine Learning (AI/ML)
- Flexible Manufacturing
- Smart Maintenance and Trouble Shooting (AR)

I4.0-Related Infrastructure Topics

- Machine Safety
- Energy Monitoring and Resource Efficiency
- Industry and Collaborative Robotics
- Mobile Robotics
- Vertical Integration and Communication (ERP/ MES/ KPIs)
- Horizontal Integration and Communication (IIoT and CPS)
- Virtual Factory (Digital Twin/AR)
- Asset Administration Shell

Non-technical I4.0-Related Topics

- Social and Political Aspects
- Business Models
- Working in the I4.0 World
- Agile Methods
- Green Factory (Decarbonization)
- Bionics and bionic thinking