

A man with dark hair and a beard is sitting at a desk in a factory, working on a laptop. He is looking at the camera with a slight smile. The background is a blurred factory floor with other workers and machinery. Overlaid on the image are various digital graphics, including a 3D wireframe model of a machine, a bar chart, and a network diagram. The overall color scheme is blue and teal.

SIEMENS

Ingenuity for life

Automation knowledge
that gets you ahead

SITRAIN – Digital Industry Academy

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Time for learning

SITRAIN – Digital Industry Academy

Today, the demands on your knowledge are as varied and dynamic as your profession. You're always learning over longer periods of time, both for your work and for your career.

The advance of digitalization is opening up new topics, and is also changing the way you absorb and process knowledge. With SITRAIN – Digital Industry Academy, we offer you the knowledge source you need.

Take advantage of our extensive continuing education courses for the Siemens range of industrial products – including for different industries.

The time for knowledge is now!

- **Directly from the manufacturer**
- **Tailored to your requirements**
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SITRAIN open bundles useful information, valuable data, and up-to-date expert knowledge on Siemens products for industry. Search at any time, find everything, and always the right thing.



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Our expectations for the course and its adaptability to our requirements were greatly exceeded. Plus it was a fantastic training environment and qualified, highly motivated trainers.



Michael Thal, Premium AEROTEC GmbH
Course location: Nuremberg, Germany



Take advantage of the exclusive learning platform with digital training courses to gain a knowledge edge over your competitors

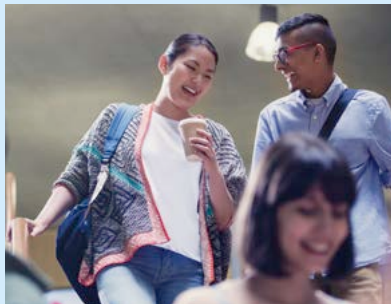


Expand your knowledge alone or in a discussion with others, e.g. via the SITRAIN online community, chats, or expert interviews



Apply what you learn digitally and deepen your knowledge, e.g. with extensive exercises or games, quizzes, and contests

SITRAIN personal



Knowledge you can experience; personal and practically based

SITRAIN personal brings you together with practically experienced, certified experts from Siemens – at your company or in our classrooms.



Benefit from the extensive expert knowledge of our more than 300 well-practiced and certified trainers worldwide



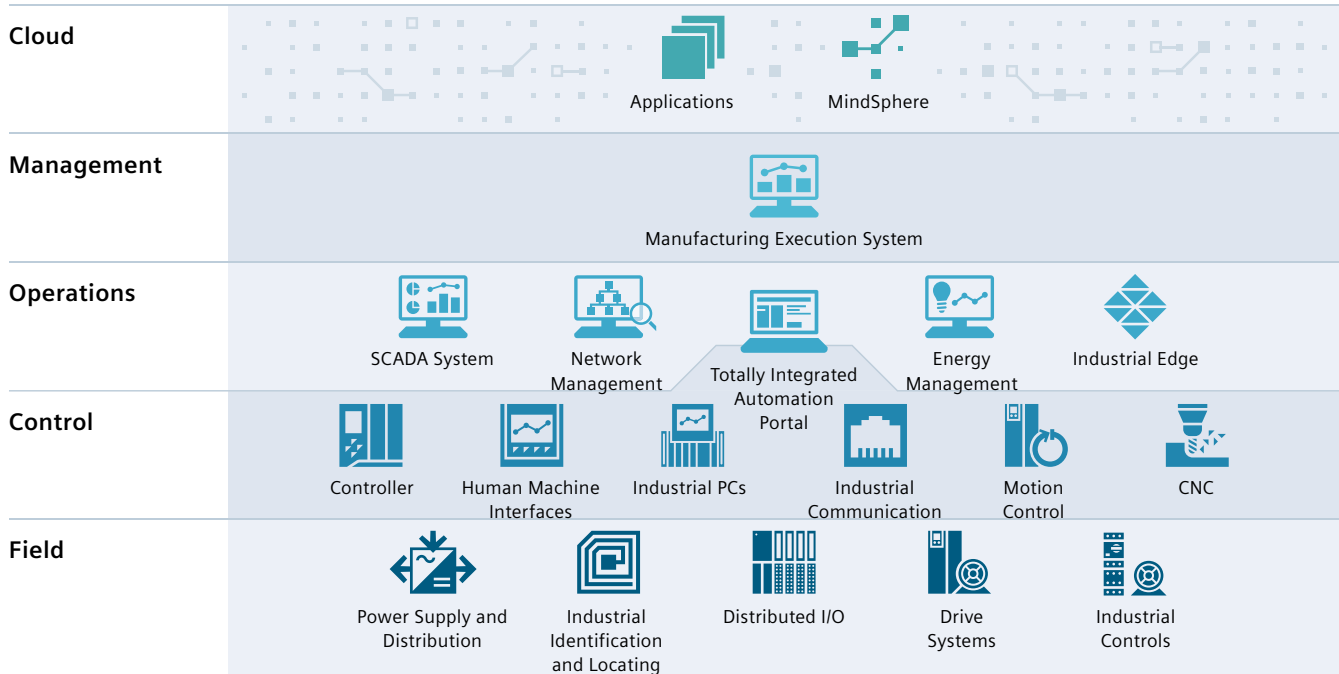
Decide for yourself whether your training should take place at your company or at one of our 200 training sites in 60 countries and should be specifically adapted to your needs



Take advantage of specially developed training equipment along with the latest methods and technologies and benefit from a high proportion of practical exercises

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The comprehensive offering for factory automation in the Digital Enterprise



Integrated Engineering

Totally Integrated Automation (TIA) enables end-to-end engineering, from mechanical design to electrical layout and automation. This reduces costs as well as time and effort.



Data Intelligence

TIA provides the platform for recording data across the entire value chain, converting it to information, and turning the information into knowledge.



Industrial Communication

TIA relies on end-to-end consistency with powerful communication networks. International, multi-vendor, and platform-independent standards permit horizontal and vertical communication through to the cloud.



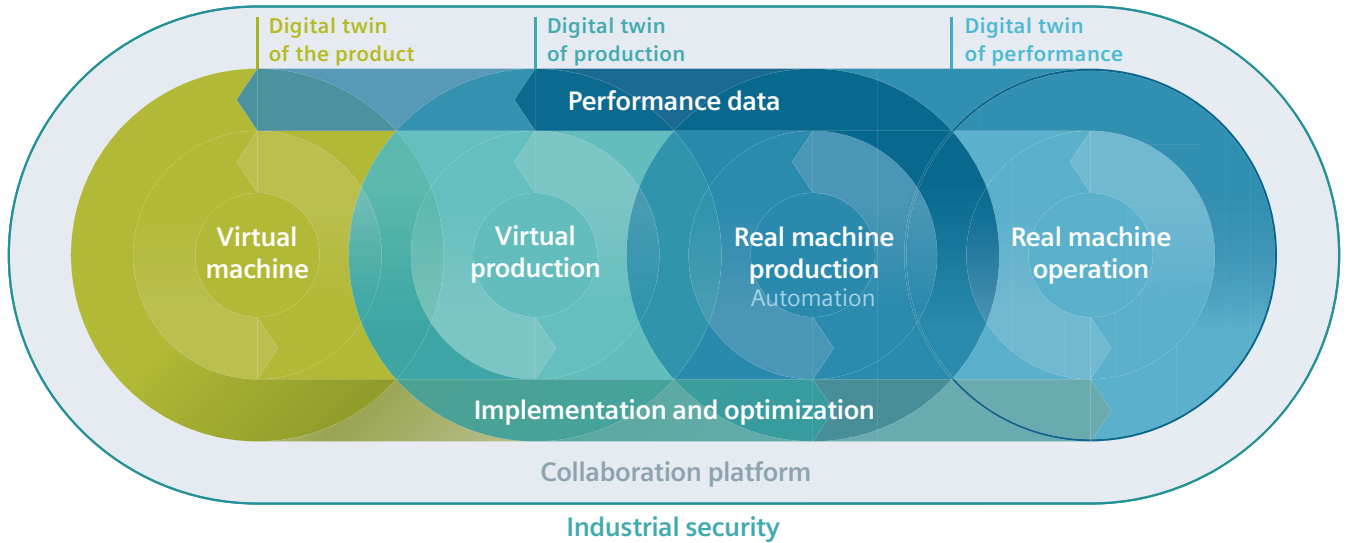
Industrial Security

At the same time, TIA consistently relies on integrated security and defense mechanisms, ensuring that machines and plants are as safe as possible despite increased connectivity and open standards – all to protect your productivity.



Digital Industry Services

Digital Industry Services are essential for implementing the Digital Enterprise. With our comprehensive approach extending from consulting and implementation to data analysis, you uncover hidden potential and reduce both downtime and energy consumption.



TIA creates added value in all automation tasks

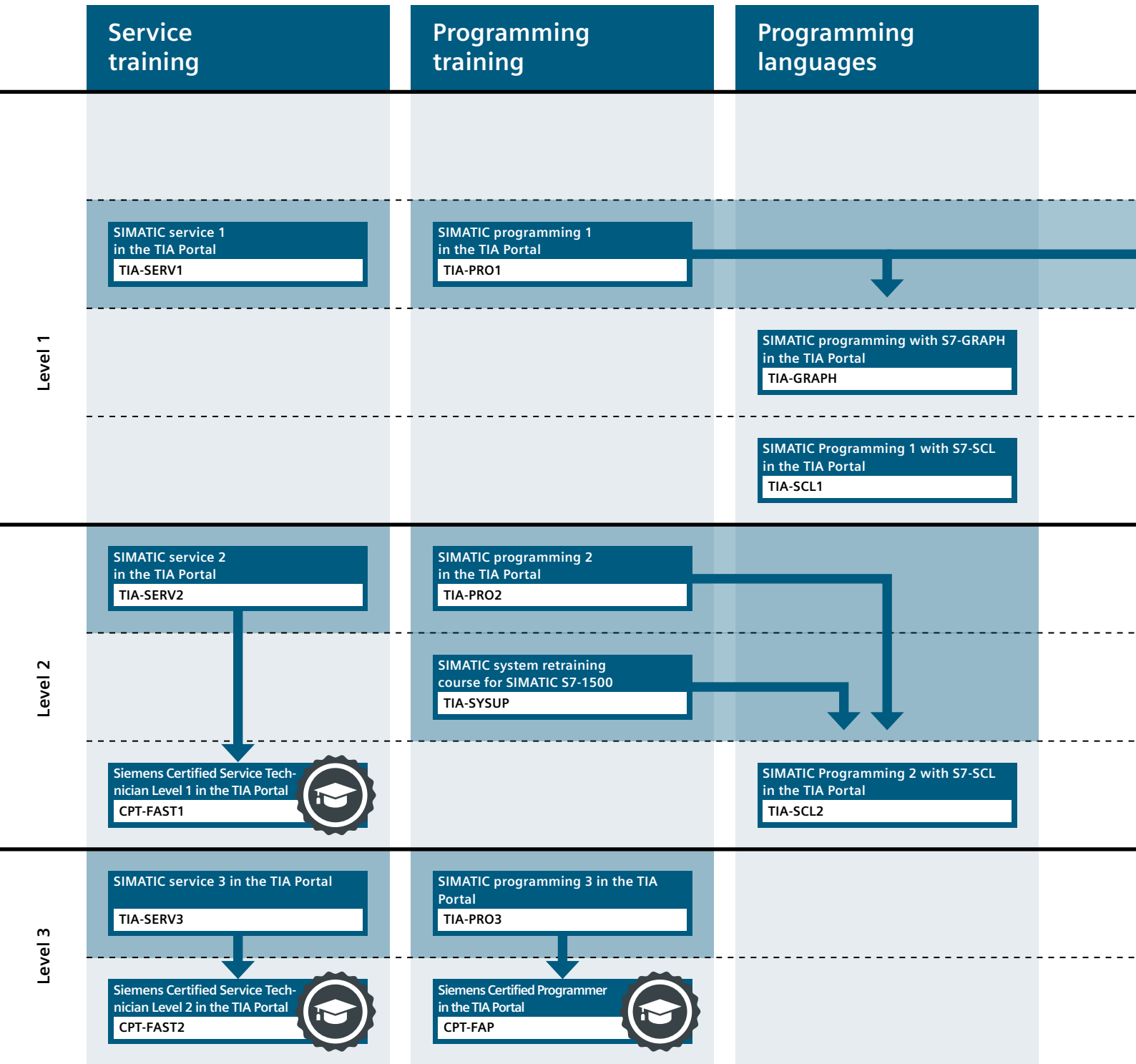
Totally Integrated Automation, the industrial automation platform from Siemens, stands for all automation components working efficiently together. Its open system architecture covers the entire production process and is based on the consistent presence of shared characteristics: consistent data management, global standards, and uniform hardware and software interfaces.

The heart of TIA's comprehensive offering is the digital twin. The digital twin is the precise virtual model of a machine (or product) or production plant.

It is fed in the real world with data from the virtual machine, from virtual production, and from production and machine performance so that it can be constantly optimized.

As a result, machine builders and plant operators can improve their efficiency, flexibility, and productivity while reducing costs as well as time and effort. Benefit from the relevant expertise you gain from professional SITRAIN training courses.

Training courses for SIMATIC S7-1500 in the TIA Portal



To learn more, follow the direct link
[siemens.com/sitrain-simatic-s7-service-tia-portal](https://www.siemens.com/sitrain-simatic-s7-service-tia-portal)



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Industrial communication

Operator control and monitoring

Motion control

PROFINET with Industrial Ethernet in the TIA Portal

IK-TIAPN

SIMATIC WinCC SCADA in the TIA Portal

TIA-WCCS

SIMATIC - Motion Control 1 in the TIA Portal

TIA-MC1

OPC UA – Basics and Configuration

IK-OPCUA1

SIMATIC WinCC on the machine level in the TIA Portal

TIA-WCCM

SIMATIC WinCC on the machine level in the TIA Portal 2 (only in German)

TIA-WCCM2

SIMATIC - Motion Control 2 in the TIA Portal

TIA-MC2

Certified PROFINET Network Installer

IK-PNOCPNI



Certified PROFINET Network Engineer

IK-PNOCPNE



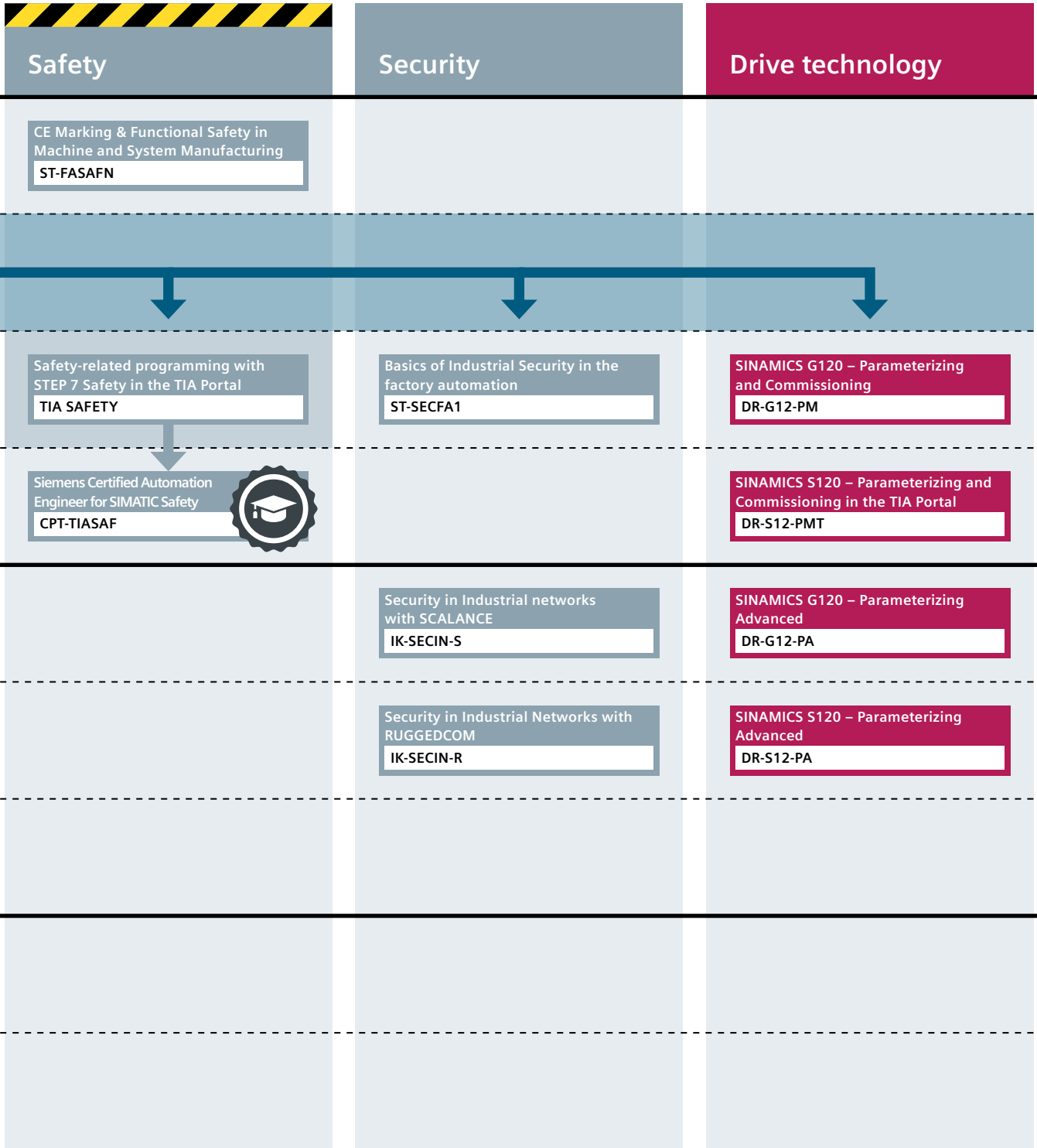
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Courses with certificate



The contents of a course highlighted in color are recommended prerequisites for attending the courses connected by arrows.



SITRAIN training courses for the Totally Integrated Automation (TIA) product portfolio

The extensive TIA product range offers machine builders and plant operators many possibilities for optimizing production. But how can you effectively benefit from this offering? With extensive and comprehensive training opportunities from SITRAIN – Digital Industry Academy.

The 3-stage SIMATIC S7 service and programming training with the topics of SIMATIC S7-1500 in the TIA Portal and SIMATIC S7-300 based on SIMATIC STEP 7 V5.x forms the core of SIMATIC product training. Depending on the level, the course content also includes programming languages, operator control and monitoring systems, drive technology, industrial communication, and safety technology. At the end of the courses, participants will be able to optimally

commission and service their own plant and effectively exploit its full potential.

The SITRAIN Certification Program provides proof of the knowledge gained.

More detailed expertise can be gained in the advanced training courses, including TIA courses in the Digital Enterprise. And for those already familiar with the SIMATIC Manager, the retraining course simplifies the change to the TIA Portal.

SIMATIC S7 service and programming training

Content:

SIMATIC S7-1500 in the TIA Portal
SIMATIC S7-300 based on SIMATIC STEP 7 V5.x

Objectives:

Plan, implement, and operate solutions safely and efficiently right from the start

Advanced training

Content:

TIA topics such as SIMATIC, programming languages, operation and monitoring, motion control, industrial communication, security, safety technology, drive technology, and the Digital Enterprise

Objectives:

Implement optimal and efficient solutions

Migration training

Content:

Hardware and software features as well as migration options based on knowledge of the SIMATIC Manager

Objectives:


Fast and efficient migration from the conventional SIMATIC world to SIMATIC S7-1500 in the TIA Portal

SIMATIC training courses for factory automation with SIMATIC S7-1500 in the TIA Portal

	Course title	Order code
SIMATIC S7 Service training	SIMATIC service 1 in the TIA Portal	TIA-SERV1 (5 days)
	SIMATIC service 2 in the TIA Portal	TIA-SERV2 (5 days)
	SIMATIC service 3 in the TIA Portal	TIA-SERV3 (5 days)
SIMATIC S7 Programming training	SIMATIC programming 1 in the TIA Portal	TIA-PRO1 (5 days)
	SIMATIC programming 2 in the TIA Portal	TIA-PRO2 (5 days)
	SIMATIC programming 3 in the TIA Portal	TIA-PRO3 (5 days)
Migration training	SIMATIC system retraining course for SIMATIC S7-1500 in the TIA Portal	TIA-SYSUP (5 days)
Programming languages	SIMATIC Programming 1 with S7-SCL in the TIA Portal	TIA-SCL1 (3 days)
	SIMATIC Programming 2 with S7-SCL in the TIA Portal	TIA-SCL2 (2 days)
	SIMATIC programming with S7-GRAPH in the TIA Portal	TIA-GRAPH (2 days)
Industrial communication	OPC UA – Basics and Configuration	IK-OPCUA1 (4 days)
	PROFINET with Industrial Ethernet in TIA Portal	IK-TIAPN (5 days)
Operator control and monitoring	SIMATIC WinCC on the machine level in the TIA Portal	TIA-WCCM (3 days)
	SIMATIC WinCC on the machine level in the TIA Portal system course (only in German)	TIA-WCCM2 (2 days)
	SIMATIC WinCC SCADA in the TIA Portal	TIA-WCCS (5 days)
Motion control	SIMATIC – Motion Control 1 in the TIA Portal	TIA-MC1 (3 days)
	SIMATIC – Motion Control 2 in the TIA Portal	TIA-MC2 (2 days)

Content

- Basic knowledge of the structure, configuration, and parameterization of the SIMATIC S7 automation system
 - Operation of the TIA Portal components SIMATIC STEP 7, SIMATIC WinCC, and SIMATIC NET
 - Familiarization with service options for SIMATIC S7
- Hardware and software diagnostic functions of the TIA Portal in the SIMATIC S7 automation system
 - Commissioning of distributed I/O on PROFINET IO
 - Integration of drives
- Commissioning of a TIA plant with software troubleshooting and fault correction
 - Diagnostics, error handling/evaluation with SIMATIC STEP 7
 - Error diagnostics in a PROFINET IO system with an HMI device
- Overview and essential features of the SIMATIC S7 family
 - Handling of the TIA Portal components SIMATIC STEP 7, SIMATIC WinCC, and SIMATIC NET
 - Introduction to programming options for SIMATIC S7
- Expanded programming options for SIMATIC STEP 7
 - Classic software error handling/evaluation using error organization blocks (OBs)
 - Introduction to the Structured Control Language (SCL) and S7-GRAPH
- Functions, function blocks, and multi-instances
 - Complex programming options with SIMATIC STEP 7
 - Administration of a recipe database in the operator control and monitoring system (HMI)
- TIA Portal components: SIMATIC STEP 7 and SIMATIC WinCC
 - Configuration of devices and networks of the SIMATIC S7 system family
 - Migration of a SIMATIC STEP 7 V5.x project and a SIMATIC WinCC flexible project to SIMATIC STEP 7 or SIMATIC WinCC in the TIA Portal
- The complete language and performance scope of the Structured Control Language (SCL) development environment
 - Creation, commissioning, and testing of own SCL program
 - Formulation of functions and function blocks in SCL, including working with tags and symbolic block names
- Creation, commissioning, and testing of complex programs in SCL
 - Use of different data types
 - Creation of SCL blocks for optimized performance
- Creation, commissioning, and testing of own step sequences
 - How to program interlocking and monitoring
 - Use of event-driven actions, including properties of simultaneous and alternative branches
- Basics, terminology, and data models of OPC UA
 - Configuration of the most important OPC UA servers and clients in the SIMATIC product range
 - OPC UA component diagnostics and troubleshooting
- Basics of Industrial Ethernet, PROFINET IO, RT&IRT, and media redundancy
 - PROFINET IO with configuration and programming with diagnostics in the TIA Portal
 - Utilization and configuration of Shared Device, I-Device, and controller/controller data communication
- Simple configuration of machine- and plant-specific operation and monitoring tasks using SIMATIC WinCC based on the TIA Portal
 - Design and dynamization of graphic displays
 - Archiving messages and values, and conception and implementation of the corresponding archives
- Triggering of control tasks in the operator unit; efficient access to PLC variables
 - Configuration of complex process pictures with animation from process states, development of own, user-defined scripts
 - Configuration of distributed workstations and exchange of data between operator units
- Design and dynamization of a SIMATIC WinCC project in the SCADA area based on the TIA Portal engineering program
 - Configuring the connection to the SIMATIC S7 automation system
 - Trend plotting and message representation, including logging of data in the database
- Basics of motion control, SpeedAxis technology object, PositioningAxis technology object, SynchronousAxis technology object
 - Programming with PLCopen, homing and traversing movements, error messages and diagnostics
 - Output cam and measuring input, closed-loop control and optimization
- Overview of S7-1500T Technology CPU, absolute and relative gearing, strategies for synchronization and desynchronization
 - Cam disc creation using the graphical cam editor and configuration and control of kinematic functions
 - Interplay between motion control and Safety Integrated

	Course title	Order code
Safety	CE Marking & Functional Safety in Machine and System Manufacturing	ST-FASAFN (3 days)
	Safety-related programming with STEP 7 Safety in the TIA Portal	TIA-SAFETY (3 days)
Security	Basics of Industrial Security in the factory automation	ST-SECFA1 (2 days)
	Security in Industrial Networks with RUGGEDCOM	IK-SECIN-R (3 days)
	Security in Industrial Networks with SCALANCE	IK-SECIN-S (3 days)
Drive technology	SINAMICS G120 – Parameterizing and Commissioning	DR-G12-PM (2 days)
	SINAMICS G120 – Parameterizing Advanced	DR-G12-PA (3 days)
	SINAMICS S120 – Parameterizing and Commissioning in the TIA Portal	DR-S12-PMT (5 days)
	SINAMICS S120 – Parameterizing Advanced	DR-S12-PA (5 days)
 Certifications	Siemens Certified Service Technician Level 1 in the TIA Portal	CPT-FAST1 (3 days)
	Siemens Certified Service Technician Level 2 in the TIA Portal	CPT-FAST2 (3 days)
	Siemens Certified Programmer in TIA Portal	CPT-FAP (3 days)
	Certified PROFINET Network Installer	IK-PNOCPI (2 days)
	Certified PROFINET Network Engineer	IK-PNOCPE (2 days)
	Siemens Certified Automation Engineer for SIMATIC Safety – Configuration and Programming	CPT-TIASAF (1 day)

Content

- Legal Situation
 - Risk assessment and reduction
 - Applying the standards of the functional safety and verification and validation
- SIMATIC S7-1500F (principle, system configuration and I/O), configuration of failsafe I/O with STEP 7 Safety Advanced
 - Programming of a safety-related user program with PROFIsafe failsafe communication (CPU–CPU communication)
 - Diagnostics facilities (CPU diagnostics, I/O diagnostics, advanced diagnostics)
- Overview of the defense-in-depth protection concept for plants
 - Dangers for plants with factory automation, analysis of potential vulnerabilities, and risk assessment
 - Development of countermeasures
- Understanding of threats to Industrial Ethernet networks
 - Security measures and guidelines, defense-in-depth concept
 - Comprehensive exercises using the SIMATIC NET product portfolio
- Current trends and security risks
 - Defense-in-depth – a comprehensive security concept, potential threats and security measures in a network
 - Comprehensive exercises using the SIMATIC NET product portfolio
- Step-by-step procedure for commissioning the SINAMICS G120 frequency converter
 - Safe and efficient commissioning of the SINAMICS G120 frequency converter
 - Adaptation of closed-loop control parameter settings and the use of diagnostics facilities in the event of an error
- Drive-based safety functions and communication via PROFINET
 - Use of the basic positioner of the CU250-2 control unit for single-axis motion control applications
 - Commissioning of functions for complex applications and using the diverse capabilities of SINAMICS G120
- Step-by-step procedure for commissioning the SINAMICS G120 frequency converter
 - Safe and efficient commissioning of the SINAMICS G120 frequency converter
 - Adaptation of closed-loop control parameter settings and the use of diagnostics facilities in the event of an error
- Use of integrated position control for positioning and synchronization
 - Creation of flexible function extensions with Drive Control Chart DCC
 - Commissioning of drive for demanding and complex applications and exploiting the possibilities for the Startdrive PC program in the TIA Portal for efficient work
- Review of skills and knowledge from TIA-SERV1 and TIA-SERV2
 - Practical test
 - Qualification: Siemens-certified SIMATIC technician
- Review of skills and knowledge from TIA-SERV1 to TIA-SERV3
 - Practical test
 - Qualification: Automation Technician Service according to ZVEI
- Review of skills and knowledge from TIA-PRO1 to TIA-PRO3
 - Practical test
 - Qualification: Automation Technician Configuration according to ZVEI
- Overview and introduction to PROFINET technology
 - PROFINET IO device types: IO controller, IO device, IO supervisor
 - Tests to become Certified PROFINET Network Installer
- PROFINET telegram concept
 - Real-time RT and isochronous real-time IRT
 - Qualification: Certified PROFINET Network Engineer
- Safety concept of Safety Integrated
 - Mechanisms of the safety program
 - Programming of safety functions



Thinking ahead to the future of industry

Totally Integrated Automation in the Digital Enterprise



Speed up machine commissioning



Minimize costs and risks



Avoid unplanned machine behavior



Detect mechanical problems and software errors early on

Digitalization is changing our world. Challenges facing industry today include being faster in the market and reacting more flexibly to changes.

At the same time, the convergence of the real and digital worlds is creating countless opportunities. But knowing how to seize these opportunities and build a bridge between the two worlds requires specialized skills and knowledge.

SITRAIN has the technical, specialized, and digital expertise to help you become a Digital Enterprise. This will enable future-proof product and production development – quickly, efficiently, and comprehensively. Benefit from our experts' knowledge and start digitalizing your company, step by step.

»» *The course "Totally Integrated Automation in the Digital Enterprise – Virtual Commissioning with Machines" made the future of automation more accessible to me than ever before!* ««

Gerhard S.,
Course participant, DI-VIRTCOM in Nuremberg

Training courses for Totally Integrated Automation in the Digital Enterprise (TIA in DE)

Basics	Programming	Programming/ commissioning	
<p>TIA in the DE – Introduction to Standardization DI-STAND</p>			Level 1
<p>Basics of Industrial Security in the factory automation ST-SECFA1</p>	<p>SIMATIC programming 1 in the TIA Portal TIA-PRO1</p>		
<p>OPC UA – Basics and Configuration IK-OPCUA1</p>	<p>TIA Portal Openness Programming 1 DI-OPEN1</p>		
	<p>SIMATIC programming 2 in the TIA Portal TIA-PRO2</p>		Level 2
	<p>TIA in the DE – Automatic execution of engineering tasks DI-AUTOEN</p>	<p>TIA in the DE – Virtual Commissioning for Machines DI-VIRTCOM</p>	
	<p>TIA Portal Openness Programming 2 DI-OPEN2</p>	<p>SIMIT in Discrete Automation Technology for Beginners DI-SIMITFA</p>	
			Level 3

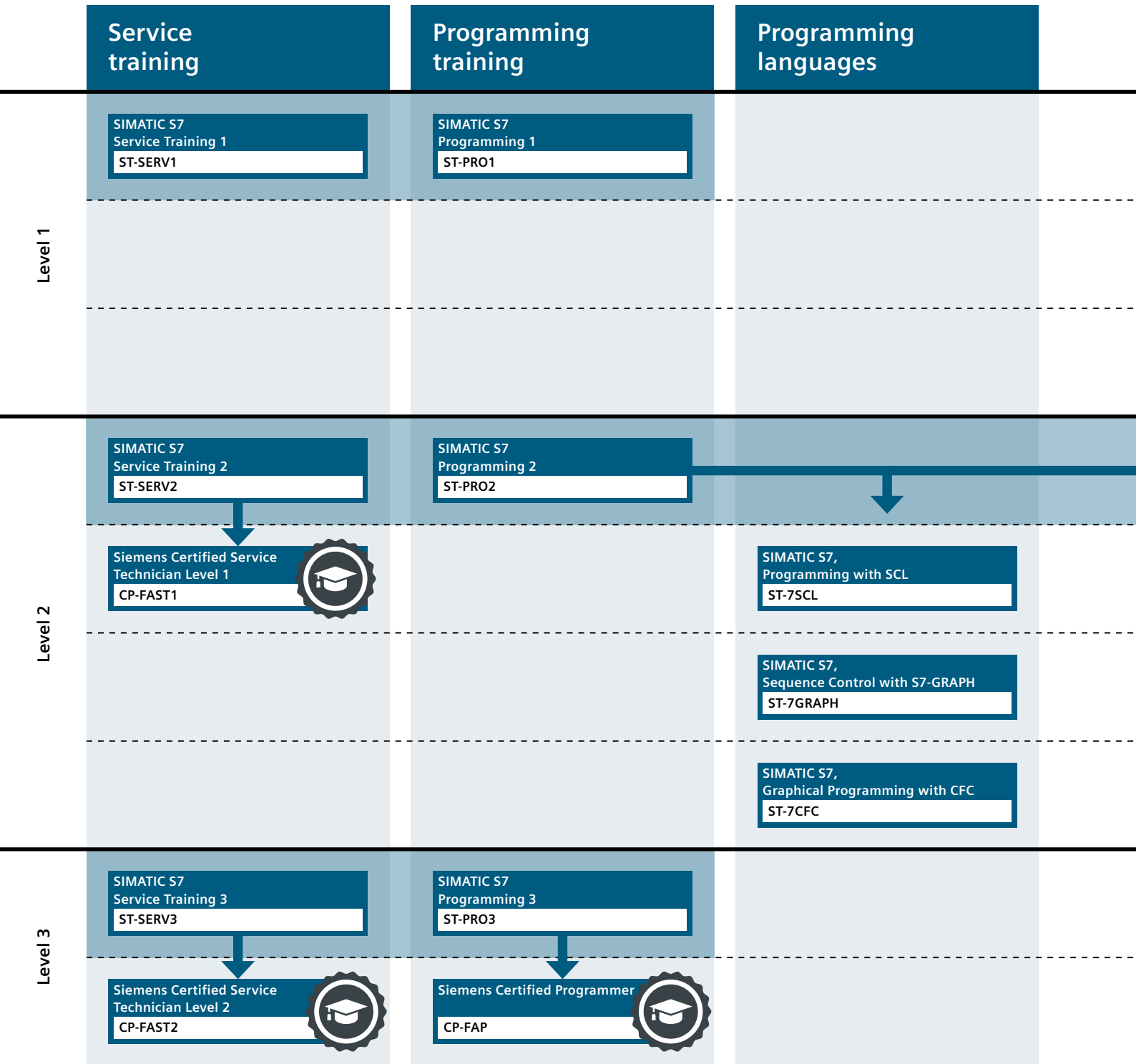


To learn more, follow the direct link
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Training courses for SIMATIC S7-300/-400 STEP 7 V5.x



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Industrial Communication	Operator control and monitoring	Safety	
	<p>SIMATIC WinCC flexible, system course 1 ST-WCCFSYS</p>	<p>CE Marking & Functional Safety in Machine and System Manufacturing ST-FASAFN</p>	Level 1
	<p>SIMATIC WinCC, system course ST-BWINCCS</p>		
			
<p>PROFINET System Course IK-PNSYS</p>	<p>SIMATIC WinCC flexible, system course 2 ST-WCCFSYS2</p>	<p>Program. of safety related SIMATIC S7 controller via Distributed Safety ST-PPDS</p>	Level 2
<p>PROFIBUS System Course IK-PBSYS</p>	<p>SIMATIC WinCC, advanced course ST-BWINOND</p>		
<p>Understanding the OPC Interface – System Course IK-OPCSYS</p>			
<p>Industrial communication – for certification siemens.com/sitrain-ik</p> 			Level 3



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To learn more, follow the direct link
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