

Workforce Development Catalog 2018

Creating a Plan to Fill Workforce Skill Gaps



LISTEN.
THINK.
SOLVE.®

Rockwell Software

 Allen-Bradley

**Rockwell
Automation**

Other Instructor-Led Courses

Training Products

Why Rockwell Automation Training?

The cost of unscheduled downtime, safety compliance, and new technology integration can significantly impact productivity. However, many of these issues can be minimized with proper workforce training and development.

The demands of your business are increasing and the supply of skilled employees is decreasing. Do you have a plan to address these issues and bring together all the necessary steps to create a comprehensive workforce development solution?

With well-thought out plans and a strategy, you can not only reap the benefits of a more satisfied and more productive workforce, but you will be able to measure it with key metrics to show your return on investment.

Rockwell Automation developed a lifecycle to show how the process of creating a highly-skilled workforce is a disciplined process, rather than just a one-time event. There are four key steps to the process that our team of experts will walk you through when deciding how to execute on your plan.

Training Lifecycle Steps

Click on the icons below to view more information.

Training Services Fast Facts

Explore the Global Footprint of Rockwell Automation Training Services:

- Over 100 Active Courses
- Delivery Locations throughout the U.S. and Canada
- 80 Dedicated Training Resources
- 10 Training Development Experts

See what Training Services can do for you. Explore our Training Lifecycle Steps and Offerings below.

The cost of unscheduled downtime, safety compliance, and new technology integration can significantly impact productivity. However, many of these issues can be minimized with proper workforce training and development.

The demands of your business are increasing and the supply of skilled employees is decreasing. Do you have a plan to address these issues and bring together all the necessary steps to create a comprehensive workforce development solution?

With well-thought out plans and a strategy, you can not only reap the benefits of a more satisfied and more productive workforce, but you will be able to measure it with key metrics to show your return on investment.

Rockwell Automation developed a lifecycle to show how the process of creating a highly-skilled workforce is a disciplined process, rather than just a one-time event. There are four key steps to the process that our team of experts will walk you through when deciding how to execute on your plan.

Training Lifecycle Steps

Click on the icons below to view more information.

Training Services Fast Facts

Explore the Global Footprint of Rockwell Automation Training Services:

- Over 100 Active Courses
- Delivery Locations throughout the U.S. and Canada
- 80 Dedicated Training Resources
- 10 Training Development Experts

See what Training Services can do for you. Explore our Training Lifecycle Steps and Offerings below.

Assess

This step enables you to gauge the current abilities of your employees and better create individualized development plans.

[Click to view Assess Offerings.](#)

Why Rockwell Automation Training?

The cost of unscheduled downtime, safety compliance, and new technology integration can significantly impact productivity. However, many of these issues can be minimized with proper workforce training and development.

The demands of your business are increasing and the supply of skilled employees is decreasing. Do you have a plan to address these issues and bring together all the necessary steps to create a comprehensive workforce development solution?

With well-thought out plans and a strategy, you can not only reap the benefits of a more satisfied and more productive workforce, but you will be able to measure it with key metrics to show your return on investment.

Rockwell Automation developed a lifecycle to show how the process of creating a highly-skilled workforce is a disciplined process, rather than just a one-time event. There are four key steps to the process that our team of experts will walk you through when deciding how to execute on your plan.

Training Lifecycle Steps

Click on the icons below to view more information.

Training Services Fast Facts

Explore the Global Footprint of Rockwell Automation Training Services:

- Over 100 Active Courses
- Delivery Locations throughout the U.S. and Canada
- 80 Dedicated Training Resources
- 10 Training Development Experts

See what Training Services can do for you. Explore our Training Lifecycle Steps and Offerings below.

Train

Using data from your assessment, you can leverage specific, flexible and customizable approaches to not only fit your employees' learning needs, but also fit your business' production goals.

[Click to view Train Offerings.](#)

Why Rockwell Automation Training?

The cost of unscheduled downtime, safety compliance, and new technology integration can significantly impact productivity. However, many of these issues can be minimized with proper workforce training and development.

The demands of your business are increasing and the supply of skilled employees is decreasing. Do you have a plan to address these issues and bring together all the necessary steps to create a comprehensive workforce development solution?

With well-thought out plans and a strategy, you can not only reap the benefits of a more satisfied and more productive workforce, but you will be able to measure it with key metrics to show your return on investment.

Rockwell Automation developed a lifecycle to show how the process of creating a highly-skilled workforce is a disciplined process, rather than just a one-time event. There are four key steps to the process that our team of experts will walk you through when deciding how to execute on your plan.

Training Lifecycle Steps

Click on the icons below to view more information.

Training Services Fast Facts

Explore the Global Footprint of Rockwell Automation Training Services:

- Over 100 Active Courses
- Delivery Locations throughout the U.S. and Canada
- 80 Dedicated Training Resources
- 10 Training Development Experts

See what Training Services can do for you. Explore our Training Lifecycle Steps and Offerings below.

Apply

After your training is completed, Rockwell Automation has developed job aids and refresher tools so employees can improve their skills and practice in an offline environment.

[Click to view Apply Offerings.](#)

Why Rockwell Automation Training?

The cost of unscheduled downtime, safety compliance, and new technology integration can significantly impact productivity. However, many of these issues can be minimized with proper workforce training and development.

The demands of your business are increasing and the supply of skilled employees is decreasing. Do you have a plan to address these issues and bring together all the necessary steps to create a comprehensive workforce development solution?

With well-thought out plans and a strategy, you can not only reap the benefits of a more satisfied and more productive workforce, but you will be able to measure it with key metrics to show your return on investment.

Rockwell Automation developed a lifecycle to show how the process of creating a highly-skilled workforce is a disciplined process, rather than just a one-time event. There are four key steps to the process that our team of experts will walk you through when deciding how to execute on your plan.

Training Lifecycle Steps

Click on the icons below to view more information.

Training Services Fast Facts

Explore the Global Footprint of Rockwell Automation Training Services:

- Over 100 Active Courses
- Delivery Locations throughout the U.S. and Canada
- 80 Dedicated Training Resources
- 10 Training Development Experts

See what Training Services can do for you. Explore our Training Lifecycle Steps and Offerings below.

Measure

Using essential manufacturing metrics, you can leverage assessment data both pre and post training to ensure the effectiveness of your training plan.

[Click to view Measure Offerings.](#)

➤ Assess Offerings

The First Step to Developing Your Workforce

Explore our Training Services Assess Offerings:

Training Advisor

Training Advisor can help you determine a tailored training path for your workforce to obtain the knowledge required to successfully improve on-the-job performance. This tool can help you identify skill and knowledge gaps hindering production performance and helps develop a training strategy that maximizes job performance and effectiveness.

With Training Advisor, you can customize online assessments in the following areas based on job tasks that are performed specifically by your workforce:

- **Controllers**
- **Networks**
- **Motion Control**
- **Drives Control**
- **Safety**
- **Visualization**
- **Process Control**
- **OEM**
- **System Integrators**
- **Craft Skills (mechanical and electrical)**

Training Advisor compiles the assessment results, identifies areas for potential training, and creates a strategic training plan with a recommended list of specific courses to meet each employee's particular needs.

Training Advisor is included with Standard and Enterprise Tech Connect contracts and is valid through the life of your Tech Connect contract. If you do not have a Tech Connect contract, contact your local [Allen-Bradley Distributor](#) or [Rockwell Automation Sales Office](#) for monthly and annual subscription options.

Custom Workforce Assessments

Assessments offer a comprehensive analysis of employees' job skills and knowledge levels of automation and control equipment for specific jobs and tasks. These assessments include recommendations to improve your employees' performance.

For more information on either of these offerings, contact your local [Allen-Bradley Distributor](#) or [Rockwell Automation Sales Office](#).

➤ Train Offerings

Taking Action to Fill Your Workforce Knowledge Gaps

Explore our Training Services Train Offerings:

Open Enrollment

With over 100 standard Open Enrollment courses at your disposal, your employees will be equipped to realize the full capabilities of Rockwell Automation technologies. Courses are designed to align with specific job functions and focus on relevant job tasks. Courses are open to all students and conducted at Rockwell Automation and partner locations.

Virtual Classroom

Rockwell Automation Virtual Classrooms are live, instructor-led courses designed using web-delivered, interactive training through WebEx technology to provide students with all the benefits of classroom instruction, straight from your desktop. This is ideal for students who cannot leave for training for an extended period of time, those with limited training budgets, and those who want to refresh previous training.

Courses can include various learning activities and feature polls/surveys, group and private chat, white board, desktop sharing, passing control to students, break out rooms for small group discussion, and knowledge checks through testing.

To enroll in Open Enrollment courses, including Virtual Classroom courses, contact your local [Allen-Bradley Distributor](#), [Rockwell Automation Sales Office](#), or [enroll online now](#) (available in select regions).

Global Workforce Solutions

Global Workforce Solutions designs and implements future-proof, sustainable, flexible solutions that result in retained performance, while continuously measuring the value of each solution through ongoing alignment and investment analysis. Whether at a single plant site or enterprise wide, Rockwell Automation is focused on creating training programs that provide foundational, intermediate, and mastery-level skills to your newest employees and most skilled experts. Our comprehensive training solutions can help increase the consistency, experience, and competency of your employees to improve enterprise-wide productivity and profitability.

Elements of a successful workforce solution can include skills and knowledge assessments, embedded instructors, application-specific or custom curriculums, on-going refresher training, train-the-trainer programs, custom electronic learning and workstations, and craft skills, mechanical concepts and precision maintenance courses.

➤ Train Offerings

Taking Action to Fill Your Workforce Knowledge Gaps (Cont'd)

Private Delivery

Rockwell Automation provides private on-site training courses to meet your industry, application, and system-level training needs. This offering is available for companies who want to ensure their employees are highly skilled in certain applications or systems, or within certain industries. These classes include craft skills and mechanical concepts courses to develop core competencies, fundamentals, advanced fundamentals, and equipment specific skills.

Personal Trainer

Our Rockwell Automation instructor can help you create automation expertise with one-on-one training. The Personal Trainer is an experienced instructor and technical expert who develops and implements an individualized training plan for one to two individuals on-site at your facility. The Personal Trainer can provide in-depth technical experience or help mentor newly hired employees.

Tailored Training

If what your employees need to maximize performance is a unique training curriculum that meets your specific requirements, Tailored Training is the solution. Rockwell Automation Tailored Training lets you build a training curriculum that meets your specific requirements. You make the decisions based on your needs for training that's tailored to your manufacturing technologies, employees' skill and knowledge requirements, timetable, and budget. Choose from over 1200 lessons in the Tailored Training database to create multiple technology training, introductory or prerequisite courses, refresher courses, software proficiency classes, or focused learning.

Computer-Based Training

Self-paced, self-directed, computer-based training courses will help you acquire and retain new skills at an accelerated rate, giving you more time on the plant floor and less time in the classroom. Rockwell Automation's computer-based training courses provide engaging, interactive features that enhance your learning experience including interactive and integrated exercises, animated and descriptive technical explanations, interactive software simulations, knowledge post-tests, and online help.

Web-Based Training

Self-paced, self-directed, web-delivered training courses are available when and where you need them most. Taking advantage of the flexibility of the internet, Rockwell Automation University Online Training is host to a variety of fundamental and product specific training. We incorporate these essential courses into a powerful Learning Management System to deliver a world-class online training solution directly to your plant floor or wherever you need it most.

For more information on any of these offerings, contact your local [Allen-Bradley Distributor](#) or [Rockwell Automation Sales Office](#).

➤ Apply Offerings

Begin to see Results and Application of Knowledge from Learning Engagements

Explore our Training Services Apply Offerings:

Workstations

Training workstations are the ideal tool to reinforce and practice maintenance, troubleshooting and programming skills, train new employees on your technologies, and ease the transition from one technology to another.

Job Aids

Job Aids provide your employees with essential job task information, thereby minimizing errors that can occur at the most inopportune moments. Our job aids are written at a level of detail to ensure that you are consistently using the best practices.

For more information on these offerings, contact your local [Allen-Bradley Distributor](#) or [Rockwell Automation Sales Office](#).

➤ Measure Offerings

Understand the Value of Your Workforce Development Investment

Explore our Training Services Measure Offerings:

Pre and Post Testing

We can offer pre and post testing as stand alone offerings after private classes are executed to see if your employees filled their knowledge gaps or if there are additional opportunities needed for full development.

ROI Tool

The ROI Forecasting tool includes common manufacturing metrics related to production, quality, and service that are impacted by employee training. The Pre-Training ROI Forecasting Model presents the methodology used to create our ROI Forecasting Tool.

Rockwell Automation Certificate Programs

[Certificate programs](#) offer professional recognition and help your employees develop and apply technical skills and knowledge to your plant systems to improve quality, efficiency, and productivity.

Functional Safety (TÜV Rheinland) Certifications

The standards regarding functional safety and relevant laws and directives demand that employees and organizations performing responsible tasks during all relevant life cycle phases of a machine must achieve and prove the required competencies. Rockwell Automation provides [Functional Safety TUV Rheinland certifications](#) with Engineer and Technician paths.

Cisco Certifications

OT and IT convergence is raising questions within manufacturing and industrial organizations of who will develop and oversee new and complex network infrastructures. Rockwell Automation, in collaboration with Strategic Alliance partner Cisco®, now offers Industrial Networking Specialist and Cisco Certified Network Associate (CCNA) Industrial training and certification.

The Managing Industrial Networks with Cisco Networking Technologies (IMINS) and Managing Industrial Networks for Manufacturing with Cisco Technologies (IMINS2) classes are designed for IT and operations technology professionals who are responsible for the implementation, administration and support of networked industrial infrastructure.

Learn More about [The Connected Enterprise](#) and our popular [Industrial Internet of Things Curriculum](#).

For more information on any of these offerings, contact your local [Allen-Bradley Distributor](#) or [Rockwell Automation Sales Office](#).

➤ The Connected Enterprise

The Connected Enterprise Puts the Industrial Internet of Things to Work for You

Information is power. Helping customers harness it to bring our Connected Enterprise vision to life has been a priority for decades.

Accelerated by the emergence of the Industrial Internet of Things and advances in enabling technologies – including data analytics, remote monitoring and mobility – The Connected Enterprise opens new worlds of opportunity through greater connectivity and information sharing.

Guided by our industrial expertise and complemented by government and industry initiatives, including the Smart Manufacturing Leadership Coalition, Industry 4.0 and Smart Factories, it drives better decision making, exposes inefficiencies and sparks collaboration.

The Connected Enterprise helps operations managers profitably manage and improve manufacturing and industrial processes. It helps IT executives reduce network complexities and exposure to information security risks. It shares productivity-improving information to workers across the organization in a context that is meaningful for each role.

The information-enabled Connected Enterprise is a more competitive enterprise. It creates tremendous opportunities for those taking advantage and great risks for those not preparing a strategic response. Explore how Rockwell Automation is evolving its own global operations and helping its customers harness the Industrial Internet of Things by leveraging real-time decision making to drive profitability.

[Learn More about The Connected Enterprise](#)

[Learn More about the Industrial Internet of Things Curriculum](#)

➤ Industrial Internet of Things Curriculum

Increasing Demand for Network Convergence Skills

As organizations recognize the value of converging the industrial plant floor with their IT infrastructure, the gap in the skills that are required to manage such a convergence is becoming apparent. Before organizations can realize the significant benefits to be achieved in quality, safety, timeliness and customer satisfaction, their Information Technology (IT) and Operational Technology (OT) professionals need to understand the significant complexities of the converged environment.

Together Rockwell Automation and Cisco have developed a training and certificate portfolio that is optimized for each side of the equation, IT and OT, providing the skills that are required to securely converge the network architecture with maximum efficiency and return on investment, enabling organizations to transform their business and gain a competitive edge. The Industrial Networking Certification program provides practical, relevant and job-ready certification curricula that are aligned closely with the specific tasks expected of these in demand professionals. We provide a roadmap of training and certificates that complement, enable and increase your skills as your career progresses.

For more information on courses, see the Industrial Internet of Things Training Guide listed in the [Training Guides](#) section.

➤ The Right Training Makes All the Difference

TOP 20
Rockwell Automation Courses

Course Number	Course Title
1	CCP299 Studio 5000™ Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting
2	CCP146 Studio 5000™ Logix Designer Level 1: ControlLogix System Fundamentals
3	CCP151 Studio 5000™ Logix Designer Level 2: Basic Ladder Logic Programming
4	CCP143 Studio 5000™ Logix Designer Level 3: Project Development
5	CCV204-A FactoryTalk® View ME and PanelView™ Plus Programming
6	CCP153 Studio 5000™ Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting
7	CCA183 PowerFlex® 750-Series Maintenance and Troubleshooting
8	CCV207 FactoryTalk® View SE Programming
9	CCA182 PowerFlex® 750-Series Configuration and Startup
10	SAF-SFT10615 NFPA 70E® 2015 – Arc Flash Awareness
11	CCN130 Motion Control Fundamentals
12	IMINS Managing Industrial Networks with Cisco Networking Technologies
13	CCPS43 SLC™ 500 and RSLogix™ 500 Maintenance and Troubleshooting
14	SAF-SFT11215 NFPA 70E® 2015 – Electrical Safety and Arc Flash Compliance
15	CCCL21 Studio 5000™ Logix Designer Level 3: Basic Ladder Logic Interpretation
16	SAF-LOG101 GuardLogix® Application Development
17	SAF-TUV0T Functional Safety for Machinery Technician Certification (TÜV Rheinland)
18	CCP152 Studio 5000™ Logix Designer Level 4: Function Block Programming
19	CCN144 Studio 5000™ Logix Designer Level 4: Kinetix 6500 (CIP) Programming
20	FTVP FactoryTalk® VantagePoint Configuration and Reporting



➤ Training Details

- Training Schedules and Pricing

Refer to the Training Services website for current schedules and course tuition.

www.rockwellautomation.com/go/training

- Enrollment Policy

Rockwell Automation Training Services class registration will close exactly seven (7) calendar days prior to the class start time and date. No exceptions will be granted.

- Cancellation Policy

If registration in a Rockwell Automation Training Services course is cancelled more than 14 days before the scheduled start of the event, 100% of the tuition will be refunded. If cancelled 14 days or less before the scheduled start of the event, 50% of the full tuition amount will be billed for standard enrollments. If a student fails to appear for a scheduled course, full tuition will be charged.

Rockwell Automation strongly suggests that students only make refundable travel and lodging arrangements. Rockwell Automation reserves the right to alter course schedules, content, limit class size, reschedule, discontinue, or cancel courses.

- Continuing Education Units (CEUs)

Rockwell Automation awards Continuing Education Units (CEUs) for attendance in its courses. It demonstrates our commitment to quality standards and practices. Refer to the course description, which can be found in the training catalog or training schedule:

www.rockwellautomation.com/go/training

- Terms and Conditions

Printed materials provided in Rockwell Automation training courses are copyrighted and may not be reproduced. No audio or visual recording of Rockwell Automation training courses, or Rockwell Automation personnel teaching such courses, may be taken or reproduced electronically.



Phone: Call your local Allen-Bradley distributor or 440-646-3434 (option 7)



Web: www.rockwellautomation.com/go/training



Email: Send your questions to trainingservices@ra.rockwell.com



Scan this code to access the Training Services website and online enrollment

Rockwell Automation Training Offices

Rockwell Automation training is conducted in several cities across the United States and in Canada. Call 440-646-3434 (option 7) to be routed to the nearest Rockwell Automation Enrollment Specialist in one of these locations:

United States

Atlanta

Boston

Charlotte

Chicago

Cincinnati

Cleveland

Dallas

Davenport

Denver

Detroit

Houston

Indianapolis

Kalamazoo

Little Rock

Los Angeles

Milwaukee

Minneapolis

Nashville

New York City

Philadelphia

Richmond

Rochester

San Francisco

Seattle

St. Louis

Tampa

Canada

Brampton

Calgary

Cambridge

Dartmouth

Edmonton

Montreal

Vancouver

➤ Training Guide Details

Training Guides show a recommended path based on your job responsibilities within a technology area. For example, the courses in the maintenance section are designed for and instruct students on maintenance-related responsibilities.

1. Locate the start icon . This is the beginning of the “Understand” section. Courses with a “START” icon are required prerequisites. If there is no start icon, identify the recommended courses in the “Understand” section. Courses in the “Understand” section apply to all students and provide the prerequisite knowledge required to successfully complete courses in both the “Maintain or Troubleshoot” and “Program or Design” sections. It is highly recommended you complete the courses in the “Understand” track before progressing to the other tracks in the guide.
2. Select the course that best fits your job responsibilities in either the “Maintain or Troubleshoot” and “Program or Design.” Note that some Training Guides offer additional sections and courses related to “Safety Standards,” “Integrate or Design section,” and “Application-Specific Courses.” Courses with an arrow represent a progression in the content covered. Be sure to consult the course descriptions because some courses may require additional prerequisites.
Note: When presented with a choice of two courses, select the most appropriate one by reviewing the course description.
3. Review related products that are available for prerequisite, refresher, or supplemental courses in the “e-LEARNING” section of the Training Guide. e-Learning options include computer-based training, mobile app, and iBooks.
4. Use the legend in each map to identify and locate additional information.



Course is taught virtually with a live-instructor. Refer to the Virtual Classroom section of the catalog for more information.



Core Requirement for Certificate Program for the specific technology. Refer to the Certificate Program section of the catalog for more information.



Optional exam can be completed to receive certification.



Course is delivered on-site at the customer’s facility.



Combination Understand and Maintain or Troubleshoot Level Course.



Combination Program or Design and Maintain or Troubleshoot Level Course.



Hardware is included with the purchase of the course.



Offered as Open Enrollment Course in US



Offered as Open Enrollment Course in Canada

➤ Training Guides Menu

Please click on any of the Training Guides listed to view more information.

Hardware Training Guides

Software Training Guides

Specialty Offerings Training Guides

Note: Consult course description for prerequisites.

UNDERSTAND

PROGRAM OR DESIGN

e-LEARNING



MAINTAIN OR TROUBLESHOOT



Introduction to Automation
iBook Available on iTunes

RSLogix 5000
Software-Bundle
Online Monitoring
Offline Programming
Project Configuration

RSTrainer licensing options:

- Single license (node-locked)
- 5 concurrent licenses (Enterprise Edition)

Combination of CCP146 and
CCP153 Courses

Combination of CCP146 and
CCP153 Courses

➤ PowerFlex 750-Series Configuration For an Integrated Architecture System (Private Delivery Only)

CCA184

1 Day

CEUs 0.7

Course Purpose

Upon completion of this course, given a PowerFlex 750-Series drive (PowerFlex 753 or PowerFlex 755) that has been successfully started up, students will be able to integrate their drive into a system that includes Logix5000 controllers and PanelView™ Plus terminals running FactoryTalk View ME software. Throughout the course, students will have the chance to use a variety of hardware and software tools, including the A6 LCD HIM, Logix Designer software, and FactoryTalk® View ME software. After each demonstration, students will be given exercises that offer extensive hands-on practice using a PowerFlex 753 or PowerFlex 755 drive.

Objectives

After completing this course, students should be able to perform the following tasks:

- Add a PowerFlex 750-Series drive to a Logix Designer project
- Locate and modify PowerFlex 750-Series data using Logix Designer software
- Integrate a PowerFlex 750-Series drive with a Logix5000 controller
- Add PowerFlex 750-Series faceplates to a FactoryTalk View ME application
- Operate a PowerFlex 750-Series drive in an Integrated Architecture system

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide ABT-1756-TSJ50

Who Should Attend?

Individuals who need to add PowerFlex 750-Series drives to an Integrated Architecture system

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and knowledge of electrical/industrial safety (including PPE requirements and safe practices)
- Completion of the PowerFlex 750-Series Startup & Configuration course (CCA182)
- Knowledge of Logix5000 system fundamentals and basic programming skills through one or more of the following methods:
 - Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146)
 - Logix 5000 software computer-based training
 - Equivalent experience programming Logix5000 control systems
- Previous experience with FactoryTalk View ME software is suggested, but not required

➤ Studio 5000 Logix Designer Level 3: Basic Ladder Logic Interpretation

CCCL21

2 Days

CEUs 1.4

Course Purpose

This course is a skill-building course that provides maintainers with a more detailed understanding of Studio 5000 Logix Designer ladder logic instructions and terminology. It also provides the resources and hands-on practice required to interpret ladder logic instructions for any Logix5000 controller. Students will have the opportunity to use the Logix Designer application to perform basic software tasks to meet the requirements of a given functional specification. In addition to using ladder logic, students will be introduced to ladder logic techniques, established standards, and common rules for interpreting ladder logic.

Objectives

After completing this course, students should be able to perform the following tasks:

- Review basic ladder logic
- Document and search ladder logic
- Interpret timer and counter instructions
- Interpret program control instructions
- Interpret compare instructions
- Interpret move instructions
- Interpret math instructions
- Interpret expression handling instructions
- Interpret copy and file fill instructions

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide ABT-1756-TSJ50

Who Should Attend?

Maintainers who need to interpret ladder logic using the Logix Designer application

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or equivalent experience
- Completion of the Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting course (CCP153) or equivalent experience

This course is intended for maintainers. Some topics may be similar to topics covered in course CCP151.

➤ Studio 5000 Logix Designer Level 4: Kinetix 6500 (CIP) Programming

CCN144

4 Days

CEUs 2.8

Course Purpose

After completing this course, students should be able to configure, test, tune, and program CIP motion axes in the Studio 5000 Logix Designer programming environment. Building upon the skills gained in the Studio 5000 Logix Designer Level 3: Project Development course (CCP143), students will learn how to apply the Logix5000 architecture to a multi-axis CIP motion control system. Students will practice project planning and efficient programming skills necessary for translating a machine specification into reliable ladder logic code. Because all Logix5000 products share common features and a common operating system, students will be able to apply the configuring and programming motion control skills they learn in this course to any of the Logix5000 controllers that are capable of motion control.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a Studio 5000 Logix Designer project for a CIP motion application
 - Axis-level waiting routine
- Add drives and configure CIP motion axes
 - Aborting, clearing, stopping, resetting, and starting routine
- Test CIP motion hardware
- Autotune CIP motion axes
- Plan a motion project
- Create user-defined data types, axis-level program shell, and axis-level tags
- Program the:
 - Axis-level dispatch and power up routines
 - Axis-level command routine
- Replicate the axis program
- Replicate an application-level program and the execute routines
- Add a virtual axis
- Program electronic gearing and camming

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Motion Procedures Guide ABT-1756-TSJ52

Who Should Attend?

Individuals who need to configure and program Logix5000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Motion Control Fundamentals course (CCN130) or equivalent knowledge of general motion control, drives, feedback devices, and servo motion systems
- Completion of the Studio 5000 Logix Designer Level 3: Project Development course (CCP143) or equivalent experience

➤ Studio 5000 Logix Designer Level 4: Kinetix 6000 (SERCOS) Programming

CCN145

4 Days

CEUs 2.8

Course Purpose

After completing this course, students should be able to configure, test, tune, and program SERCOS motion axes in the Studio 5000 Logix Designer programming environment. Building upon the skills gained in the Studio 5000 Logix Designer Level 3: Project Development course (CCP143), students will learn how to apply the Logix5000 architecture to a multi-axis SERCOS motion control system. Students will also practice project planning and efficient programming skills necessary for translating a machine specification into reliable ladder logic code. Because all Logix5000 products share common features and a common operating system, students will be able to apply the configuring and programming motion control skills they learn in this course to any of the Logix5000 controllers that are capable of motion control.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a Studio 5000 Logix Designer project for a SERCOS motion application
 - Axis-level waiting routine
- Add drives and configure SERCOS axes
 - Aborting, clearing, stopping, resetting, and starting routine
- Test SERCOS hardware
- Autotune SERCOS axes
- Plan a motion project
- Create user-defined data types, an axis-level program shell, and axis-level tags
- Program the:
 - Axis-level dispatch and power up routines
 - Axis-level command routine
- Replicate the axis program
- Replicate an application-level program and the execute routines
- Add a virtual axis
- Program electronic gearing and camming
- Replicate the axis program and application-level program
- Add a virtual axis

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Motion Procedures Guide ABT-1756-TSJ52

Who Should Attend?

Individuals who need to configure and program Logix5000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Motion Control Fundamentals course (CCN130) or equivalent knowledge of general motion control, drives, feedback devices, and servo motion systems
- Completion of the Studio 5000 Logix Designer Level 3: Project Development course (CCP143) or equivalent experience

➤ Studio 5000 Logix Designer Level 5: Advanced Motion Programming

CCN190-LD

2 Days

CEUs 1.4

Course Purpose

This course is intended to provide students with the skills to configure and program Logix5000 applications specifically for integrated motion control functionality using ladder logic including SERCOS motion control technology. Students will learn how to apply advanced programming skills including tuning with motion analyzer software, advanced camming techniques, coordinated motion, and add-on instructions for motion applications.

Objectives

After completing this course, students should be able to perform the following tasks:

- Tune a servo axis with motion analyzer software
- Program event driven tasks
- Program output cam instructions
- Calculate a cam profile
- Program coordinate and motion add-on instructions
- Develop a motion control project using the power programming state model
- Program coordinated move transform instructions in a pick and place application

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Motion ABT-1756-TSJ52
Procedures Guide

Who Should Attend?

Individuals who need to configure and program Logix5000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 3: Project Development course (CCP143) or equivalent experience with basic ladder logic programming
- Completion of the Studio 5000 Logix Designer Level 4: Kinetix 6000 (SERCOS) Programming course (CCN145) or equivalent experience

➤ Kinetix 6000 Troubleshooting and Project Interpretation

CCN200

2 Days

CEUs 1.4

Course Purpose

This course provides students with skills required to diagnose common problems on a Kinetix 6000 system. Students will practice operating and troubleshooting the system through hands-on exercises using the Studio 5000 Logix Designer application. Students will learn how to maintain and troubleshoot a multi-axis motion control system. Students will practice identifying faults related to hardware and software by employing methods such as fault code tables, system LEDs, and other status indicators. Upon completion of this course, students will be able to apply maintenance and troubleshooting techniques to diagnose and correct common problems on a Kinetix 6000 system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Locate Kinetix 6000 system components
- Check Kinetix 6000 connections
- Interpret Kinetix 6000 indicators
- Analyze fault codes in a Kinetix 6000 system
- Interpret motion state and move instructions in a Logix Designer project
- Test and tune axes in a Logix Designer project
- Replace a Kinetix 6000 drive

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Motion Control Procedures Guide ABT-1756-TSJ52

Who Should Attend?

Individuals who need to maintain and troubleshoot Kinetix 6000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Motion Control Fundamentals course (CCN130) or equivalent experience with drives, feedback devices, and velocity and position loop systems
- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or equivalent experience with the ControlLogix platform and basic ladder logic

➤ Kinetix 6500 Troubleshooting and Project Interpretation

CCN201

3 Days

CEUs 2.1

Course Purpose

This course is intended to provide students with the skills required to diagnose common problems on a Kinetix 6500 servo drive system. During class, students will practice operating and troubleshooting the system through hands-on exercises using the Studio 5000 Logix Designer application. Building upon the skills developed in the Fundamentals of Motion Control course (CCN130), students will learn how to maintain and troubleshoot a multi-axis motion control system. Students will practice identifying faults related to hardware, software, and motion networks by leveraging tools such as web pages, system LEDs, and Logix Designer status indicators. Upon completion of this course, students will be able to apply maintenance and troubleshooting techniques to diagnose and correct common problems on a Kinetix 6500 servo drive system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify the physical components and wiring of a Kinetix 6500 servo drive
 - Verify a Kinetix 6500 servo drive and drive axis configuration
- Interpret Kinetix 6500 servo drive status indicators
 - Interpret motion state instructions for a Kinetix 6500 servo drive axis
- Using the Studio 5000 Logix Designer application:
 - Determine the status of a drive and its associated axis
 - Interpret motion move instructions for a Kinetix 6500 servo drive axis
 - Test wiring and signals for a Kinetix 6500 servo drive axis
 - Troubleshoot ladder logic for a Kinetix 6500 servo drive axis
 - Trend status information for a Kinetix 6500 servo drive axis
 - Tune a Kinetix 6500 servo drive axis
- In a Studio 5000 Logix Designer project:
 - Troubleshoot failed communications for a Kinetix 6500 servo drive control module
 - Access a Kinetix 6500 servo drive web page
 - Remove and replace a Kinetix 6500 servo drive

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Motion Control Procedures Guide

ABT-1756-TSJ52

Who Should Attend?

Individuals who need to maintain and troubleshoot Kinetix 6500 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Motion Control Fundamentals course (CCN130) or equivalent experience with drives, feedback devices, and velocity and position loop systems
- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or equivalent experience with the ControlLogix platform and basic ladder logic

➤ Studio 5000 Logix Designer Level 3: Project Development

CCP143

4 Days

CEUs 2.8

Course Purpose

Given a functional specification for a Logix5000 application, students will be able to develop a project during the course to meet the specification requirements. This course covers tasks common to all controllers that use the Logix5000 control engine or operating system, including ControlLogix, CompactLogix, and SoftLogix™ controllers. This course presents a deeper understanding of project development tasks, such as organizing tasks and routines, organizing controller data, configuring modules, and sharing data. Students will use Producer/Consumer technology to multicast input and output devices, share data between controllers, and control remote I/O.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create and organize a project
- Create periodic and event tasks
- Develop an add-on instruction in ladder diagram
- Organize arrays
- Create a user-defined data type
- Import components
- Enter, edit, and verify ladder logic
- Configure a controller to produce and consume data
- Configure controllers to share data over EtherNet/IP™
- Communicate with a local 1756-I/O module and over an EtherNet/IP network
- Configure a message
- Allocate connections
- Retrieve and set controller status values with GSV/SSV instructions
- Program a BTM instruction
- Handle a major fault
- Manage project files
- Update firmware

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide ABT-1756-TSJ50

Who Should Attend?

Individuals who need to maintain and troubleshoot Kinetix 6500 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common controller terms and operation through experience or completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or completion of the RSTrainer for ControlLogix Fundamentals computer-based training (9393-RSTCLX)
- Ability to write basic ladder logic with common instructions or through completion of the Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming course (CCP151)

➤ Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals

CCP146

2 Days

CEUs 1.4

Course Purpose

This course will assist students in developing and building a solid foundation with a fundamental knowledge of Logix5000 systems. Students will be introduced to Logix5000 system components and functionality and will have an opportunity to use Studio 5000 Logix Designer application to perform basic system configuration tasks.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand ControlLogix system components
- Select and connect to industrial networks in a Logix5000 system
- Download and go online to a Logix5000 controller
- Operate the Logix Designer application
- Configure local 1756-I/O modules
- Create tags and monitor data in a Logix Designer project
- Draft basic ladder logic for a Logix Designer routine
- Select basic ladder logic instructions for a Logix Designer routine
- Enter ladder logic components in a Logix Designer routine
- Locate ControlLogix system components, I/O Tags, and devices in a Logix5000 system

Job Aids Included

Studio 5000 Logix Designer and Logix5000
Fundamentals Procedures Guide

ABT-1756-TSJ53

Who Should Attend?

Individuals who have little or no working experience with Logix5000 systems or other programmable controllers

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

This course is intended for maintainers or programmers. Some topics may be similar to topics covered in course CCP299.

➤ Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming

CCP151

2 Days

CEUs 1.4

Course Purpose

This is a skill-building course that provides programmers with the resources and hands-on practice required to program basic ladder logic instructions for a Logix5000 controller. Students will use the Logix Designer Application to perform basic software tasks to meet the requirements of a given functional specification. In addition, students will set up a sequencer to run equipment through a predefined procedure and separate production procedure from equipment control.

Objectives

After completing this course, students should be able to perform the following tasks:

- Start and test a ladder diagram
- Program timer and counter instructions
- Program compare, move, and math instructions
- Document and search and handle expressions
- Program and separate the procedure from equipment control
- Copy and fill an array

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide

ABT-1756-TSJ50

Who Should Attend?

Individuals who:

- Have little controller experience
- Are responsible for programming Logix5000 controllers using the Logix Designer Application
- Need to learn how to draft ladder logic for any application

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or equivalent experience

➤ Studio 5000 Logix Designer Level 4: Function Block Programming

CCP152

2 Days

CEUs 1.4

Course Purpose

This course provides students with an understanding of Logix Designer function block diagrams and terminology. Resources and hands-on practice are provided to program a Logix5000 controller using function block diagrams. Students will perform parameter modifications to individual function block instructions and create and develop function block diagram programs and routines.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a function block diagram
- Program logical function block instructions
- Program timer and counter function block instructions
- Program analog function block instructions
- Program device driver function block instructions
- Select timing modes in a function block instruction
- Program a totalizer function block instruction
- Program and monitor an RMPS (ramp/soak) function block instruction
- Control program flow using function block instructions
- Program a PID loop using a function block diagram
- Tune a PID loop using ActiveX controls
- Develop an add-on instruction in function block diagram

Job Aid Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide

ABT-1756-TSJ50

Who Should Attend?

Individuals who:

- Are responsible for developing, debugging, and programming Logix5000 controllers using Logix Designer application with function block diagrams
- Use ActiveX controls in an operator interface such as FactoryTalk View ME software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Understanding of basic measurement and control theory, including basic loop control
- Completion of the Studio 5000 Logix Designer Level 3: Project Developing course (CCP143) or equivalent experience

➤ Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting

CCP153

4 Days

CEUs 1.4

Course Purpose

This course provides students with the necessary resources and hands-on practice to efficiently troubleshoot a previously operational ControlLogix system and restore normal operation. This course adds to students' skill sets by introducing new tasks, such as connecting to a network, interpreting project execution, and editing ladder logic online. After practicing such skills, students will be presented with a systematic strategy for diagnosing and troubleshooting a variety of system errors, such as controller, I/O, and other hardware problems, noise-related problems, and software configuration problems.

Objectives

After completing this course, students should be able to perform the following tasks:

- *Optional:* Locate ControlLogix system components
- Interpret project organization and execution, frequently used instructions, arrays, and tags of user-defined data types
- Locate and edit tag values
- Force I/O and toggle bits
- Troubleshoot digital, analog, and remote I/O
- Update Logix5000 firmware
- Troubleshoot controller, power supply, noise related, and digital I/O module problems
- Analyze and troubleshoot a system using trend chart
- Edit ladder logic online
- *Optional:* Edit FDB's online
- Document, print, and search project components

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide
ControlLogix Troubleshooting Guide

ABT-1756-TSJ50
ABT-1756-TSJ20

Who Should Attend?

Individuals who need to maintain and troubleshoot a ControlLogix or other Logix 5000 system

Prerequisites

- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or equivalent experience
- Knowledge of basic ladder logic instructions

This course is intended for maintainers. Some topics may be similar to topics covered in course CCP299.

➤ Studio 5000 Logix Designer Level 4: Structured Text/Sequential Function Chart Programming (Private Delivery Only)

CCP154

2 Days

CEUs 1.4

Course Purpose

This course provides students with the skills and knowledge to program using the structured text and sequential function chart programming languages. Students will learn how to select instructions, expressions, and constructs, and then enter these elements and more into a routine. Students will also learn how to test sequential function chart logic using forces and step throughs.

Objectives

After completing this course, students should be able to perform the following tasks:

- Program assignments, expressions, and instructions in structured text
- Program constructs and comments in structured text
- Design a sequential function chart
- Program and test a sequential function chart
- Store, pause, and reset sequential function chart data

Job Aid Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide

ABT-1756-TSJ50

Who Should Attend?

Individuals who need to program structured text and sequential function chart routines in Logix Designer projects for any Logix5000 controller

Prerequisites

- Completion of the Studio 5000 Logix Designer Level 1: Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 3: Project Development course (CCP143) or experience with basic Logix Designer projects (navigating the software, creating tags, creating routines, etc.)

➤ Application Code Manager and Library Object Development (Private Delivery Only)

CCP157

3 Days

CEUs 2.1

Course Purpose

Project engineers and programmers who need to use existing code libraries, rapidly deploy applications, and improve engineering quality and efficiency by automatically generating Studio 5000 solutions with tested standards. Project librarians and programmers who need to be able to create new standardized code libraries and manage/edit existing code libraries for use in the Application Code Manager.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify and register pre-configured Application Code Manager (ACM) library objects
- Create and decorate Studio 5000 Library Objects
- Create Application Code Manager (ACM) Library Objects from Studio 5000 Library Objects
- Add FactoryTalk® Alarms and Events, FactoryTalk® View and Historian SE content to the Library Object

Who Should Attend?

Individuals who need to program structured text and sequential function chart routines in Logix Designer projects for any Logix5000 controller

Prerequisites

- Completion of the Studio 5000 Logix Designer Level 3: Project Development course (Course No. CCP143), or experience creating Studio 5000 Logix Designer® content
- Completion of the Studio 5000 Logix Designer Level 4: Function Block Programming (CCP152) or function block experience

➤ Studio 5000 Logix Designer Level 1: CompactLogix Fundamentals and Troubleshooting

CCP298

4.5 Days

CEUs 3.2

Course Purpose

Upon completion of this course, students should be able to troubleshoot a previously operational CompactLogix™ system and restore normal operation.

Objectives

After completing this course, students should be able to perform the following tasks:

- Locate CompactLogix system components
- Interpret tags of user defined data types
- Navigate through the Logix Designer application
- Search for project components
- Connect a computer to a communications network
- Force I/O and toggle bits
- Download and go online
- Troubleshoot digital I/O, analog I/O, banked local I/O, distributed I/O, controller, power supply, and noise related problems
- Locate I/O tags and devices
- Update Logix5000 firmware
- Interpret Logix Designer project organization and execution
- Analyze and troubleshoot a system using a trend chart
- Interpret ladder logic structure
- Edit ladder logic online
- Locate and edit tag values
- Manage Logix Designer project files
- Interpret bit and frequently used instructions
- Document and print components
- Interpret arrays

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide

ABT-1756-TSJ50

Who Should Attend?

Individuals who need to program structured text and sequential function chart routines in Logix Designer projects for any Logix5000 controller

Prerequisites

- Completion of the Studio 5000 Logix Designer Level 1: Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 3: Project Development course (CCP143) or experience with basic Logix Designer projects (navigating the software, creating tags, creating routines, etc.)

This course is intended for maintainers. Some topics may be similar to topics covered in course CCP146, CCP153, and CCP299.

➤ Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting

CCP299

4.5 Days

CEUs 3.2

Course Purpose

Upon completion of this course, students should be able to troubleshoot a previously operational ControlLogix system and restore normal operation. Students will have the opportunity to develop and practice these skills by learning basic concepts and terminology, practicing a systematic strategy for diagnosing and troubleshooting problems, and performing hands-on exercises.

Objectives

After completing this course, students should be able to perform the following tasks:

- Locate CompactLogix system components
- Navigate through the Logix Designer application
- Connect a computer to a communications network
- Download and go online
- Locate I/O tags and devices
- Interpret Logix Designer project organization and execution
- Interpret ladder logic structure
- Locate and edit tag values
- Interpret bit and frequently used instructions
- Interpret arrays
- Interpret tags of user defined data types
- Search for project components
- Force I/O and toggle bits
- Troubleshoot digital I/O, analog I/O, remote I/O, controller, power supply, and noise related problems
- Update Logix5000 firmware
- Analyze and troubleshoot a system using a trend chart
- Edit ladder logic online
- Manage Logix Designer project files
- Document and print components

Job Aids Included

RSLogix 5000 and Logix5000 Procedures Guide
ControlLogix Troubleshooting Guide

ABT-1756-TSJ50
ABT-1756-TSJ20

Who Should Attend?

Individuals who need to maintain and troubleshoot a ControlLogix or other Logix5000 system, but have no current working experience with Logix5000 systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience with common industrial control system concepts

This course is intended for maintainers. Some topics may be similar to topics covered in course CCP146, CCP153, and CCP298.

➤ Introduction to the Integrated Architecture™ System

CIA101

(Private Delivery Only)

2 Days

CEUs 1.4

Course Purpose

This course will assist students in developing and building a solid foundation of Integrated Architecture and automation system knowledge. Students will learn about and interact with a variety of automation hardware. They will also have an opportunity to use Rockwell Automation software to perform basic system configuration tasks. While performing these tasks, students will gain an understanding of how controllers, drives, motors, networks, and human-machine interface (HMI) products function together within Integrated Architecture.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify components of the integrated architecture system
- Establish communications in an integrated system
- Program a basic Logix Designer project for an integrated system
- Program with tag-based addressing in an integrated system
- Identify programming languages in an integrated system
- Understand Logix5000 multi-discipline control
- Understand NetLinx-enabled networks
- Understand the visualization development environment of an integrated system
- Understand HMI direct tag referencing in an integrated system

Who Should Attend?

Individuals who:

- Have little or no working experience with automation systems
- Are interested in gaining a broad understanding of automation and the Integrated Architecture System

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

➤ OEM: ControlLogix, FactoryTalk View ME, Kinetix 6000, and PowerFlex 40 Fundamentals and Troubleshooting

OEM100

5 Days

CEUs 3.5

Course Purpose

This course provides students with the skills necessary to maintain and troubleshoot: Studio 5000 applications that operate on a ControlLogix-based machine; FactoryTalk View Machine Edition (ME) applications that run on PanelView Plus terminals; Kinetix 6000 motion systems; and PowerFlex 40 drives. Students will have the opportunity to develop and practice these skills by learning basic concepts and terminology used with: ControlLogix hardware, PanelView Plus terminal, Kinetix 6000 systems, and PowerFlex 40 drives; Studio 5000 Logix Designer application; and FactoryTalk View ME application. Students will also learn to diagnose and troubleshoot problems with controller, I/O or other hardware issues.

Objectives

After completing this course, students should be able to perform the following tasks:

- Assign an IP address to a computer
- Connect a computer to a network
- Configure EtherNet/IP addresses
- Download and go online
- Update firmware
- Locate I/O tags and devices
- Locate and edit tag values
- Create and modify projects
- Draft basic ladder logic
- Select ladder logic instructions
- Edit ladder logic online
- Program timer, counter, math, compare, and move instructions
- Search for project components
- Force I/O and toggle bits
- Configure produced/consumed data
- Tune a PID loop
- Manage project files
- Configure a trend chart
- Test a ladder diagram
- Troubleshoot digital and analog I/O modules
- Modify application communications
- Download runtime files
- Configure display security, graphic displays, and interactive controls
- Troubleshoot workstation problems
- Interpret motion instructions and indicators
- Modify drive parameters

Who Should Attend?

OEMs who need to maintain and troubleshoot a ControlLogix-based machine, but have little to no working experience with ControlLogix systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Perform basic voltage and current checks
- Read wiring diagrams

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
FactoryTalk View ME and PanelView Plus Procedures Guide	ABT-2711P-TSJ50
EtherNet/IP™ Procedures Guide	ABT-N300-TSJ50
ControlLogix Troubleshooting Guide	ABT-1756-TSJ20

➤ SI: Logix 5000 Project Development and Basic Ladder Logic Programming

SI100

4 Days

CEUs 2.8

Course Purpose

This course is a skill-building course that provides students with the resources and hands-on practice required to develop a project and program basic ladder logic instructions for any Logix5000 controller. Students will have an opportunity to use the RSLogix 5000 application to perform basic software tasks to meet the requirements of a given functional specification. In addition, students will be introduced to basic Logix5000 concepts and terminology.

Objectives

After completing this course, students should be able to perform the following tasks:

- Locate control system components
- Create and modify a project
- Organize project and arrays
- Connect a computer to a communication network
- Download and go online
- Communicate with local and remote I/O modules
- Update Logix5000 firmware
- Start a ladder diagram
- Create tags and monitor data
- Enter ladder logic components
- Create UDTs
- Select basic ladder logic instructions
- Program timer, counter, move, math, and compare instructions
- Document and search ladder logic
- Configure produce/consume messaging and message instructions
- Configure controllers to share data over an EtherNet/IP network
- Create a periodic and event task
- Develop an add-on instruction
- Test a ladder diagram
- Handle a major fault
- Import Logix Designer components
- *Optional:*
 - Understand control systems
 - Manage Logix Designer project files

Who Should Attend?

System integrator programmers who have little or no working experience with Logix5000 controllers, and are responsible for programming Logix5000 controllers using the RSLogix 5000 application.

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Read wiring diagrams

This course contains many of the lessons in courses CCP143, CCP146, and CCP151 in a consolidated format. Do not take all 4 courses.

➤ Ladder Logic Basics With CompactLogix Starter Workstation

VC-LLB-B

(5) 120-Min. Sessions

CEUs 1.0

Course Purpose

This course will teach students how to write and test basic ladder logic code and how to employ common programming strategies and best practices. Students will learn how to select and program bit, timer, counter, compare, and move instructions. Examples and labs will use Studio 5000 Logix Designer and a CompactLogix controller; however, the general ladder logic concepts covered in this course are applicable to most common programmable controllers.

Objectives

After completing this course, students should be able to perform the following tasks:

- Review basic logic flow
- Convert scenarios to if – then statements
- Convert if – then statements to simple rungs
- Enter ladder logic into software
- Download a project
- Monitor the ladder logic
- Tie the alias to an existing address
- Apply bit instructions and common ladder logic strategies
- Select a class of instruction categories
- Select and integrate timers and counters
- Select and integrate compare and move instructions
- Combine compare with move instructions

Who Should Attend?

Beginning programmers or individuals who are required to edit ladder logic

Prerequisites

A general knowledge of automation, including the general purpose of a controller, data, and I/O; and the purpose of common devices like push buttons, pilot lights, limit switches, relays, contractors, and solenoids is required

Technical Requirements

- A computer and phone
- Studio 5000 Logix Designer (version 21) must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.
- CompactLogix starter workstation (shipped prior to class)

➤ Machine-Level Design Optimization: Drive and Motor Selection

VC-MLDO-01

90 Min.

CEUs 0.15

Course Purpose

This course covers best practices for architecting control solutions for machines. The instructor will show students how to size and select drives and motors and then they will practice these tasks with an example application. The design tools and best practices covered in the course aim to optimize and reduce build time with machine-level design.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure a motion profile, a mechanism, and transmissions
- Select a motor and drive

Who Should Attend?

Control engineers and OEMs who design machine-level control applications

Prerequisites

There are no prerequisites for this course; however, experience with designing machine-level control applications is helpful

Technical Requirements

- A computer and phone
- Motion Analyzer software, version 6.1, must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

➤ Point I/O Implementation

VC-PIO-A

120 Min.

CEUs 0.2

Course Purpose

This course will teach students how to implement a POINT I/O system from determining the quantity and type of I/O needed to testing your system. This course will also show students how to calculate power requirements and decide whether an expansion power supply will be needed. Students will also add and configure an Ethernet adapter and I/O modules in a Studio 5000 Logix Designer project.

Objectives

After completing this course, students should be able to perform the following tasks:

- Size a POINT I/O control system
- Set the EtherNet/IP address of an Ethernet adapter
- Configure POINT I/O control system components in a Studio 5000 Logix Designer project
- Test POINT I/O control system components

Who Should Attend?

Control engineers who design and develop control applications and who will be working with POINT I/O system components over an EtherNet/IP™ network

Prerequisites

- Studio 5000 Logix Designer experience or one of the following courses:
 - Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting (CCP299)
 - Studio 5000 Logix Designer Level 1: CompactLogix Fundamentals and Troubleshooting (CCP298)
- Knowledge of Ethernet fundamentals
- Knowledge of safe electrical practices
- Knowledge of electrical principles such as voltage, current, and power

Technical Requirements

- A computer and phone
- The Studio 5000 Logix Designer application (version 21) must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

➤ Ladder Logic Basics without CompactLogix Hardware VC-LLBWO-A

120 Min

CEUs 1.0

Course Purpose

This course will teach you how to write and test basic ladder logic code and how to employ common programming strategies and best practices. You will also learn how to select and program bit, timer, counter, compare, and move instructions. Examples and labs will use the Studio 5000 Logix Designer® application and RSLogix™ Emulate 5000 simulation software. Note: There is no hardware provided for this course; however, the general ladder logic concepts covered in this course are applicable to most common programmable controllers and will be simulated using RSLogix Emulate 5000 simulation software.

Objectives

After completing this course, students should be able to perform the following tasks:

- Ladder Logic Basics: If-Then Statements
- Ladder Logic Basics: Ladder Logic Verification
- Ladder Logic Basics: Common Strategies and Best Practices
- Ladder Logic Basics: Timers and Counters
- Ladder Logic Basics: Compare and Move Instructions

Characteristic	Minimum	Recommended
Processor	Pentium 4	Intel Core i5
Speed	2.8 GHz	2.8GHz
RAM Memmory	2 GB	8 GB
Hard Disk Space - Free	16 GB	20 GB
Graphic Device	DirectX 9, with WDDM 1.0 or higher drive	DirectX 9, with WDDM 1.0 or higher drive

Note: The Logix Designer application is currently not supported on Windows® 8 operating systems.

Who Should Attend?

Beginning programmers or individuals who are required to edit ladder logic should attend this course

Prerequisites

- A general knowledge of automation, including the general purpose of a controller, data, and I/O; and the purpose of common devices like pushbuttons, pilot lights, limit switches, relays, contactors, and solenoids is required.

Technical Requirements

- A computer and phone are required. For minimum computer requirements for the virtual classroom tool, please visit: <http://support.webex.com/support/system-requirements.html>
- RSLogix Emulate 5000 software, version 21.
- Studio 5000 Logix Designer software, version 21, must be installed and activated.
 - If you don't have the software, your virtual classroom invitation will provide details on how to obtain a temporary installation.

➤ Accelerated Logix5000 Programmer Certificate Level 1

CCP250

5 Days

CEUs 3.5

Course Purpose

This accelerated course is for individuals who can quickly learn and apply Logix5000™ concepts, terminology, hardware, and the Studio 5000 Logix Designer® programming environment. You will quickly move from these early concepts to using producer/consumer technology and messages to multicast input and output devices, share data between controllers and control remote I/O.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a Studio 5000 Logix Designer project
- Program an application
- Add advance functionality to an application (data arrays, add-on instructions, produce/consume data and messages)

Who Should Attend?

Individuals responsible for programming Logix5000 controllers using the Studio 5000 Logix Designer application. Also, needs to learn how to draft ladder logic for any application.

Prerequisites

- Completion of at least one Rockwell Automation Logix5000 course in the last two years (course completed on or after 3/31/2016)
- Pursuing a Logix5000 Certificate for Programmers

Technical Requirements

All technology is provided for student use in the classroom by Rockwell Automation. It is not necessary for students to bring any technology with them when attending this course.

UNDERSTAND

PROGRAM OR DESIGN

e-LEARNING

➤ Introduction to the Integrated Architecture™ System

CIA101

(Private Delivery Only)

2 Days

CEUs 1.4

Course Purpose

This course will assist students in developing and building a solid foundation of Integrated Architecture and automation system knowledge. Students will learn about and interact with a variety of automation hardware. They will also have an opportunity to use Rockwell Automation software to perform basic system configuration tasks. While performing these tasks, students will gain an understanding of how controllers, drives, motors, networks, and human-machine interface (HMI) products function together within Integrated Architecture.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify components of the integrated architecture system
- Establish communications in an integrated system
- Program a basic Logix Designer project for an integrated system
- Program with tag-based addressing in an integrated system
- Identify programming languages in an integrated system
- Understand Logix5000 multi-discipline control
- Understand NetLinx-enabled networks
- Understand the visualization development environment of an integrated system
- Understand HMI direct tag referencing in an integrated system

Who Should Attend?

Individuals who:

- Have little or no working experience with automation systems
- Are interested in gaining a broad understanding of automation and the Integrated Architecture System

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

➤ PowerFlex 523/525 Drives with PowerFlex 525 Drive Kit: Communications and Programming

VC-PF523P

(2) 90-Min Sessions

CEUs 0.3

Course Purpose

After completing this course, students should be able to program drive parameters for a drive application. This course will teach students how to create a custom parameter group based upon drive applications. Throughout this course, the instructor will cover a range of topics from establishing communications with a PowerFlex 523/525 drive via a USB connection and EtherNet/IP network to testing parameters of a PowerFlex 523/525 drive using the HIM.

Objectives

After completing this course, students should be able to perform the following tasks:

- Establish communications with a PowerFlex 523/525 drive via a USB connection
- Establish communications with a PowerFlex 525 drive via an EtherNet/IP network
- Configure a PowerFlex 523/525 drive using the Startup Wizard in Connected
- Components Workbench™ software
- Create a CustomView parameter group
- Edit and test parameters using the HIM

Who Should Attend?

Individuals who have drive programming experience but are new to PowerFlex component-class drives

Prerequisites

- Knowledge of AC/DC drive fundamentals and drives programming experience
- Basic working knowledge of safe electrical practices including, but not limited to:
 - Understanding electricity, how it works, and the dangers involved in working with electricity
 - Identifying hazardous conditions
 - Adhering to all safety regulations

Technical Requirements

- PowerFlex 525 drive kit (shipped prior to class)
- A computer and phone
- Connected Components Workbench software must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

UNDERSTAND

PROGRAM OR DESIGN

e-LEARNING

MAINTAIN OR TROUBLESHOOT

RSTrainer licensing options:

- Single license (node-locked)
- 5 concurrent licenses (Enterprise Edition)

➤ Implementing an EtherNet/IP Network of Motion and Standard Drive Axes Using Premiere Integration

VC-CCN300-C

(3) 120 MIN

CEUs 0.6

Course Purpose

This course will teach you how to choose an EtherNet/IP network topology and relevant components, configure controllers and axes, and add Kinetix® 6500 and PowerFlex® 755 drives for control over an EtherNet/IP network (also known as CIP™ motion). This course will also show you how to start up the network, run hookup tests, autotune axes, and test axes with motion direct commands.

Objectives

After completing this course, students should be able to perform the following tasks:

- Choose a network topology
- Choose network components
- Configure a network
- Add the motion group and axes
- Add drives
- Configure axes
- Start up an EtherNet/IP network
- Test hardware
- Autotune axes
- Test axis performance

Who Should Attend?

Control engineers who design and develop motion control applications and who will be working with drives controlled over an EtherNet/IP network should attend this course.

Prerequisites

Experience developing motion control applications and working in the Studio 5000® environment.

Technology Requirements

A computer and phone are required. For minimum computer requirements for the virtual classroom tool, please visit:

<http://support.webex.com/support/system-requirements.html>

➤ Motion Control Fundamentals

CCN130

2 Days

CEUs 1.4

Course Purpose

This course provides students with an overview of motion control concepts, terminology, functionality, and applications. In addition, students will learn how motion control applications function using the concepts and principles discussed in each lesson. This course allows students to establish the strong essential foundation needed to maintain and program motion control systems.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify:
 - Servo motion elements
 - Motion drive elements
 - Motor types and components
 - Feedback devices
- Trace the power supply circuit
- Create a motion profile
- Identify and apply a reference
- Trace signal flow through the drive control module
- Identify and scale loads

Job Aids Included

Motion Control Fundamentals Procedures Guide

ABT-M100-TSJ50

Who Should Attend?

Individuals who:

- Need to learn basic motion control concepts for their job
- Need a prerequisite for attending other motion control courses

Prerequisites

Background in basic electricity, electronics, controllers operation, and computer concepts is helpful

➤ Introduction to the Integrated Architecture™ System

(Private Delivery Only)

CIA101

2 Days

CEUs 1.4

Course Purpose

This course will assist students in developing and building a solid foundation of Integrated Architecture and automation system knowledge. Students will learn about and interact with a variety of automation hardware. They will also have an opportunity to use Rockwell Automation software to perform basic system configuration tasks. While performing these tasks, students will gain an understanding of how controllers, drives, motors, networks, and human-machine interface (HMI) products function together within Integrated Architecture.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify components of the integrated architecture system
- Establish communications in an integrated system
- Program a basic Logix Designer project for an integrated system
- Program with tag-based addressing in an integrated system
- Identify programming languages in an integrated system
- Understand Logix5000 multi-discipline control
- Understand NetLinx-enabled networks
- Understand the visualization development environment of an integrated system
- Understand HMI direct tag referencing in an integrated system

Who Should Attend?

Individuals who:

- Have little or no working experience with automation systems
- Are interested in gaining a broad understanding of automation and the Integrated Architecture System

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

➤ OEM: ControlLogix, FactoryTalk View ME, Kinetix 6000, and PowerFlex 40 Fundamentals and Troubleshooting

OEM100

5 Days

CEUs 3.5

Course Purpose

This course provides students with the skills necessary to maintain and troubleshoot: Studio 5000 applications that operate on a ControlLogix-based machine; FactoryTalk View Machine Edition (ME) applications that run on PanelView Plus terminals; Kinetix 6000 motion systems; and PowerFlex 40 drives. Students will have the opportunity to develop and practice these skills by learning basic concepts and terminology used with: ControlLogix hardware, PanelView Plus terminal, Kinetix 6000 systems, and PowerFlex 40 drives; Studio 5000 Logix Designer application; and FactoryTalk View ME application. Students will also learn to diagnose and troubleshoot problems with controller, I/O or other hardware issues.

Objectives

After completing this course, students should be able to perform the following tasks:

- Assign an IP address to a computer
- Connect a computer to a network
- Configure EtherNet/IP addresses
- Download and go online
- Update firmware
- Locate I/O tags and devices
- Locate and edit tag values
- Create and modify projects
- Draft basic ladder logic
- Select ladder logic instructions
- Edit ladder logic online
- Program timer, counter, math, compare, and move instructions
- Search for project components
- Force I/O and toggle bits
- Configure produced/consumed data
- Tune a PID loop
- Manage project files
- Configure a trend chart
- Test a ladder diagram
- Troubleshoot digital and analog I/O modules
- Modify application communications
- Download runtime files
- Configure display security, graphic displays, and interactive controls
- Troubleshoot workstation problems
- Interpret motion instructions and indicators
- Modify drive parameters

Who Should Attend?

OEMs who need to maintain and troubleshoot a ControlLogix-based machine, but have little to no working experience with ControlLogix systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Perform basic voltage and current checks
- Read wiring diagrams

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
FactoryTalk View ME and PanelView Plus Procedures Guide	ABT-2711P-TSJ50
EtherNet/IP™ Procedures Guide	ABT-N300-TSJ50
ControlLogix Troubleshooting Guide	ABT-1756-TSJ20

➤ Studio 5000 Logix Designer Level 4: Kinetix 6500 (CIP) Programming

CCN144

4 Days

CEUs 2.8

Course Purpose

After completing this course, students should be able to configure, test, tune, and program CIP motion axes in the Studio 5000 Logix Designer programming environment. Building upon the skills gained in the Studio 5000 Logix Designer Level 3: Project Development course (CCP143), students will learn how to apply the Logix5000 architecture to a multi-axis CIP motion control system. Students will practice project planning and efficient programming skills necessary for translating a machine specification into reliable ladder logic code. Because all Logix5000 products share common features and a common operating system, students will be able to apply the configuring and programming motion control skills they learn in this course to any of the Logix5000 controllers that are capable of motion control.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a Studio 5000 Logix Designer project for a CIP motion application
 - Axis-level waiting routine
- Add drives and configure CIP motion axes
 - Aborting, clearing, stopping, resetting, and starting routine
- Test CIP motion hardware
- Autotune CIP motion axes
- Plan a motion project
- Create user-defined data types, axis-level program shell, and axis-level tags
- Program the:
 - Axis-level dispatch and power up routines
 - Axis-level command routine
- Replicate the axis program
- Replicate an application-level program and the execute routines
- Add a virtual axis
- Program electronic gearing and camming

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Motion Procedures Guide ABT-1756-TSJ52

Who Should Attend?

Individuals who need to configure and program Logix5000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Motion Control Fundamentals course (CCN130) or equivalent knowledge of general motion control, drives, feedback devices, and servo motion systems
- Completion of the Studio 5000 Logix Designer Level 3: Project Development course (CCP143) or equivalent experience

➤ Studio 5000 Logix Designer Level 5: Advanced Motion Programming

CCN190-LD

2 Days

CEUs 1.4

Course Purpose

This course is intended to provide students with the skills to configure and program Logix5000 applications specifically for integrated motion control functionality using ladder logic including SERCOS motion control technology. Students will learn how to apply advanced programming skills including tuning with motion analyzer software, advanced camming techniques, coordinated motion, and add-on instructions for motion applications.

Objectives

After completing this course, students should be able to perform the following tasks:

- Tune a servo axis with motion analyzer software
- Program event driven tasks
- Program output cam instructions
- Calculate a cam profile
- Program coordinate and motion add-on instructions
- Develop a motion control project using the power programming state model
- Program coordinated move transform instructions in a pick and place application

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Motion Procedures Guide ABT-1756-TSJ52

Who Should Attend?

Individuals who need to configure and program Logix5000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 3: Project Development course (CCP143) or equivalent experience with basic ladder logic programming
- Completion of the Studio 5000 Logix Designer Level 4: Kinetix 6000 (SERCOS) Programming course (CCN145) or equivalent experience

➤ Kinetix 6500 Troubleshooting and Project Interpretation

CCN201

3 Days

CEUs 2.1

Course Purpose

This course is intended to provide students with the skills required to diagnose common problems on a Kinetix 6500 servo drive system. During class, students will practice operating and troubleshooting the system through hands-on exercises using the Studio 5000 Logix Designer application. Building upon the skills developed in the Fundamentals of Motion Control course (CCN130), students will learn how to maintain and troubleshoot a multi-axis motion control system. Students will practice identifying faults related to hardware, software, and motion networks by leveraging tools such as web pages, system LEDs, and Logix Designer status indicators. Upon completion of this course, students will be able to apply maintenance and troubleshooting techniques to diagnose and correct common problems on a Kinetix 6500 servo drive system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify the physical components and wiring of a Kinetix 6500 servo drive
 - Verify a Kinetix 6500 servo drive and drive axis configuration
- Interpret Kinetix 6500 servo drive status indicators
 - Interpret motion state instructions for a Kinetix 6500 servo drive axis
- Using the Studio 5000 Logix Designer application:
 - Determine the status of a drive and its associated axis
 - Interpret motion move instructions for a Kinetix 6500 servo drive axis
 - Test wiring and signals for a Kinetix 6500 servo drive axis
 - Troubleshoot ladder logic for a Kinetix 6500 servo drive axis
 - Trend status information for a Kinetix 6500 servo drive axis
 - Tune a Kinetix 6500 servo drive axis
- In a Studio 5000 Logix Designer project:
 - Troubleshoot failed communications for a Kinetix 6500 servo drive control module
 - Access a Kinetix 6500 servo drive web page
 - Remove and replace a Kinetix 6500 servo drive

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Motion Control Procedures Guide

ABT-1756-TSJ52

Who Should Attend?

Individuals who need to maintain and troubleshoot Kinetix 6500 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Motion Control Fundamentals course (CCN130) or equivalent experience with drives, feedback devices, and velocity and position loop systems
- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or equivalent experience with the ControlLogix platform and basic ladder logic

➤ Kinetix 6000 Troubleshooting and Project and Project Interpretation

CCN200

2 Days

CEUs 1.4

Course Purpose

This course provides students with skills required to diagnose common problems on a Kinetix 6000 system. Students will practice operating and troubleshooting the system through hands-on exercises using the Studio 5000 Logix Designer application. Students will learn how to maintain and troubleshoot a multi-axis motion control system. Students will practice identifying faults related to hardware and software by employing methods such as fault code tables, system LEDs, and other status indicators. Upon completion of this course, students will be able to apply maintenance and troubleshooting techniques to diagnose and correct common problems on a Kinetix 6000 system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Locate Kinetix 6000 system components
- Check Kinetix 6000 connections
- Interpret Kinetix 6000 indicators
- Analyze fault codes in a Kinetix 6000 system
- Interpret motion state and move instructions in a Logix Designer project
- Test and tune axes in a Logix Designer project
- Replace a Kinetix 6000 drive

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Motion Control Procedures Guide ABT-1756-TSJ52

Who Should Attend?

Individuals who need to maintain and troubleshoot Kinetix 6000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Motion Control Fundamentals course (CCN130) or equivalent experience with drives, feedback devices, and velocity and position loop systems
- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or equivalent experience with the ControlLogix platform and basic ladder logic

➤ Studio 5000 Logix Designer Level 4: Kinetix 6000 (SERCOS) Programming

CCN145

4 Days

CEUs 2.8

Course Purpose

After completing this course, students should be able to configure, test, tune, and program SERCOS motion axes in the Studio 5000 Logix Designer programming environment. Building upon the skills gained in the Studio 5000 Logix Designer Level 3: Project Development course (CCP143), students will learn how to apply the Logix5000 architecture to a multi-axis SERCOS motion control system. Students will also practice project planning and efficient programming skills necessary for translating a machine specification into reliable ladder logic code. Because all Logix5000 products share common features and a common operating system, students will be able to apply the configuring and programming motion control skills they learn in this course to any of the Logix5000 controllers that are capable of motion control.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a Studio 5000 Logix Designer project for a SERCOS motion application
- Add drives and configure SERCOS axes
- Test SERCOS hardware
- Autotune SERCOS axes
- Plan a motion project
- Create user-defined data types, an axis-level program shell, and axis-level tags
- Program the:
 - Axis-level dispatch and power up routines
 - Axis-level command routine
 - Axis-level waiting routine
 - Aborting, clearing, stopping, resetting, and starting routine
- Replicate the axis program
- Replicate an application-level program and the execute routines
- Add a virtual axis
- Program electronic gearing and camming
- Replicate the axis program and application-level program
- Add a virtual axis

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Motion Procedures Guide ABT-1756-TSJ52

Who Should Attend?

Individuals who need to configure and program Logix5000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Motion Control Fundamentals course (CCN130) or equivalent knowledge of general motion control, drives, feedback devices, and servo motion systems
- Completion of the Studio 5000 Logix Designer Level 3: Project Development course (CCP143) or equivalent experience

UNDERSTAND

PROGRAM OR DESIGN

e-LEARNING

MAINTAIN OR TROUBLESHOOT

Combination of DeviceNet,
ControlNet and EtherNet/IP
Maintenance Topics

EtherNet/IP Bundle
Hardware and
IP Addressing
Communications and
Diagnostics

- RSTrainer licensing options:
- Single license (node-locked)
 - 5 concurrent licenses (Enterprise Edition)

➤ CenterLine MCC With IntelliCenter® Software Commissioning on an EtherNet/IP Network

CCI108

3 Days

CEUs 2.1

Course Purpose

After completing this course, given a newly installed CENTERLINE MCC with IntelliCENTER software, students should be able to produce an operational motor control system over an EtherNet/IP network. Throughout the course, students will work with a number of hardware and software products, including IntelliCENTER software; E300™ and E3 Plus™ electronic overload relays; PowerFlex 525 and PowerFlex 40 variable speed drives; Stratix 5700 industrial Ethernet switches; Logix5000 controllers and the Studio 5000 Logix Designer application; and FactoryTalk View software. Students will be introduced to a variety of tools they can use to ensure proper functioning of a motor control system. This course also shows how CENTERLINE MCCs interact with other parts of a control system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Verify connections between CENTERLINE MCC sections
- Implement an EtherNet/IP network topology for an MCC
- Configure:
 - Stratix 5700 EtherNet/IP switch settings
 - IntelliCENTER software preferences
 - E300 and E3 Plus electronic overload relays
 - PowerFlex 525 and PowerFlex 40 drive parameters
- Install IntelliCENTER software and data disks
- Modify CENTERLINE MCC lineup properties using IntelliCENTER software
- Add MCC components to a Studio 5000 Logix Designer application
- Enable automatic device configuration for a PowerFlex 525 drive in a CENTERLINE MCC
- Add IntelliCENTER ActiveX controls to a FactoryTalk View application
- Configure and view IntelliCENTER energy software data
- Add documentation to an IntelliCENTER software database
- Modify MCC component spare parts lists in IntelliCENTER software
- Manage IntelliCENTER software databases

Who Should Attend?

System engineers and/or other individuals responsible for starting the operation of a CENTERLINE motor control center

Prerequisites

- Working knowledge of electricity, and knowledge of electrical and industrial safety (including PPE requirements and safe practices)
- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or equivalent experience

Job Aids Included

IntelliCENTER Software Procedures Guide

ABT-MCC-TSJ50

➤ Segmenting an Industrial Ethernet Network

VC-SEGNET-A

3 Hours

CEUs 0.3

Course Purpose

This course will teach you how to start the transition from industrial Ethernet network designs that use a flat and open infrastructure to ones that are structured, hardened, modular, and future-ready. You will be introduced to the concept of organizing a network as smaller, modular, building blocks that:

- Minimize network sprawl
- Give you a scalable, robust, and future-ready network infrastructure

Once you have defined the building blocks of a network, you will then look at options to segment and manage the required traffic flows of the network. Segmentation techniques will include physical segmentation, VLANs, and Network Address Translation (NAT). Finally, you will make decisions around organizing the IP subnets for the network.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define cell/area zones
- Identify level 3 site operations
- Identify switch requirements
- Decide whether to use NAT
- Decide between physical or VLAN segmentation
- Assign VLANs and subnets to each cell/area zone

Who Should Attend?

Control or network engineers who have to design industrial Ethernet networks should attend this course.

Prerequisites

- To attend this course, you should already have these prerequisite skills and knowledge:
 - Familiarity with the concepts of IP addresses and subnets
 - Working knowledge of common components of an industrial automation system: controllers, drives, I/O, &HMI

➤ DeviceNet and RSNetworx Configuration and Troubleshooting

CCP164

3 Days

CEUs 2.1

Course Purpose

This course prepares students to successfully design and configure an efficient DeviceNet network using components for the ControlLogix platform. To meet this objective, students begin by designing a cable system, and then configure a driver, a 1756-DNB scanner module, and network devices. This course prepares students to troubleshoot a malfunctioning DeviceNet network and return it to normal operation with minimum downtime. Students will verify proper network installation and perform both hardware and software-based tasks used to isolate DeviceNet problems, as well as practice the tasks necessary to add and replace network devices.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify DeviceNet network components and design a DeviceNet cable system
- Create a DeviceNet network configuration
- Commission nodes on a DeviceNet network
- Configure a 1756-DNB DeviceNet scanner module
- Map inputs and outputs on a DeviceNet network
- Manage DeviceNet EDS files
- Configure Automatic Device Recovery (ADR) on a DeviceNet network
- Communicate on a DeviceNet network using explicit messaging
- Troubleshoot a DeviceNet network using:
 - RSNetWorx for DeviceNet software
 - RSLogix 5000 software
 - DeviceNet and ControlLogix hardware indicators
- Troubleshoot duplicate node addresses on a DeviceNet network
- Restore a malfunctioning DeviceNet network to normal operation

Who Should Attend?

Individuals who are:

- Responsible for designing and configuring a new DeviceNet network
- Responsible for isolating and correcting problems or performing basic maintenance on a DeviceNet network

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
 - Completion of the RSLogix 5000 Level 1: ControlLogix System Fundamentals course (CCP146)
- OR
- Knowledge of common ControlLogix terminology and the ability to program and interpret basic ladder logic instructions in RSLogix 5000 software

Job Aids Included

DeviceNet and RSNetWorx Troubleshooting Guide

ABT-N100-TSJ20

DeviceNet and RSNetWorx Procedures Guide

ABT-N100-TSJ50

➤ ControlNet and RSNetworx Configuration and Troubleshooting (Private Delivery Only)

CCP173

3 Days

CEUs 2.1

Course Purpose

This course provides students with the skills necessary to efficiently design and configure a ControlNet network. Students will gain these skills from the ground up, practicing each step in the design and configure process from choosing the correct cable to configuring the connections that will transmit data from ControlLogix (Logix5000) controllers and other devices across that cable. This course provides students with the skills needed to safely and efficiently return a malfunctioning network to normal operation. The instructor will introduce a logical process for troubleshooting ControlNet and RSNetWorx components and demonstrate how to identify problems with communications cards, cabling, and other network hardware.

Objectives

After completing this course, students should be able to perform the following tasks:

- Design and troubleshoot a ControlNet media system
- Go online to a ControlNet network
- Enter scheduled ControlNet I/O data connections for Logix5000 controllers
- Enter ControlNet messages for Logix5000 controllers
- Isolate faulty ControlNet and RSNetWorx media using signal measurement equipment
- Isolate ControlNet and RSNetWorx network malfunctions using LEDs and mnemonic displays
- Identify a ControlNet and RSNetWorx network malfunction using RSLinx software
- Troubleshoot a ControlNet and RSNetWorx network using RSNetWorx for ControlNet software

Who Should Attend?

Individuals who are:

- Responsible for designing/configuring a new ControlNet & RSNetWorx network
- Managing/modifying an existing ControlNet & RSNetWorx network

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience with Windows-based programming software (Studio 5000 Logix Designer)

Job Aids Included

ControlNet and RSNetWorx Procedures Guide

ABT-N200-TSJ50

ControlNet and RSNetWorx Troubleshooting Guide

ABT-N200-TSJ20

➤ Introduction to the Integrated Architecture™ System (Private Delivery Only)

CIA101

2 Days

CEUs 1.4

Course Purpose

This course will assist students in developing and building a solid foundation of Integrated Architecture and automation system knowledge. Students will learn about and interact with a variety of automation hardware. They will also have an opportunity to use Rockwell Automation software to perform basic system configuration tasks. While performing these tasks, students will gain an understanding of how controllers, drives, motors, networks, and human-machine interface (HMI) products function together within Integrated Architecture.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify components of the integrated architecture system
- Establish communications in an integrated system
- Program a basic Logix Designer project for an integrated system
- Program with tag-based addressing in an integrated system
- Identify programming languages in an integrated system
- Understand Logix5000 multi-discipline control
- Understand NetLinx-enabled networks
- Understand the visualization development environment of an integrated system
- Understand HMI direct tag referencing in an integrated system

Who Should Attend?

Individuals who:

- Have little or no working experience with automation systems
- Are interested in gaining a broad understanding of automation and the Integrated Architecture System

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

➤ Studio 5000 Logix Designer Level 4: Kinetix 6500 (CIP) Programming

CCN144

4 Days

CEUs 2.8

Course Purpose

After completing this course, students should be able to configure, test, tune, and program CIP motion axes in the Studio 5000 Logix Designer programming environment. Building upon the skills gained in the Studio 5000 Logix Designer Level 3: Project Development course (CCP143), students will learn how to apply the Logix5000 architecture to a multi-axis CIP motion control system. Students will practice project planning and efficient programming skills necessary for translating a machine specification into reliable ladder logic code. Because all Logix5000 products share common features and a common operating system, students will be able to apply the configuring and programming motion control skills they learn in this course to any of the Logix5000 controllers that are capable of motion control.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a Studio 5000 Logix Designer project for a CIP motion application
 - Axis-level waiting routine
- Add drives and configure CIP motion axes
 - Aborting, clearing, stopping, resetting, and starting routine
- Test CIP motion hardware
- Autotune CIP motion axes
- Plan a motion project
- Create user-defined data types, axis-level program shell, and axis-level tags
- Program the:
 - Axis-level dispatch and power up routines
 - Axis-level command routine
- Replicate the axis program
- Replicate an application-level program and the execute routines
- Add a virtual axis
- Program electronic gearing and camming

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Motion Procedures Guide ABT-1756-TSJ52

Who Should Attend?

Individuals who need to configure and program Logix5000 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Motion Control Fundamentals course (CCN130) or equivalent knowledge of general motion control, drives, feedback devices, and servo motion systems
- Completion of the Studio 5000 Logix Designer Level 3: Project Development course (CCP143) or equivalent experience

➤ EtherNet/IP Configuration and Troubleshooting

CCP183

3 Days

CEUs 2.1

Course Purpose

This course will assist students in developing fundamental knowledge of industrial communications over an EtherNet/IP network. Students will learn basic concepts and learn how to use various tools to assign IP addresses to EtherNet/IP devices. This course prepares students to effectively resolve issues with communications between a controller and the devices it is controlling. Students will troubleshoot EtherNet/IP network media and components, including a Stratix 5700, 8000 and/or 8300 switch. Students will have an opportunity to monitor diagnostic information using web-based technologies and modify web server module data views and tag values.

Objectives

After completing this course, students should be able to perform the following tasks:

- Assign an IP address to a computer
- Ping a module IP address
- Assign IP addresses using:
 - RSLinx classic software and rotary switches
 - BOOTP-DHCP server software
- Isolate an EtherNet/IP network problem
- Diagnose problems with EtherNet/IP modules and network components
- Monitor an EtherNet/IP network using web-enabled technologies

Who Should Attend?

Individuals who are responsible for maintaining Industrial Automation and Control Systems (IACS) networks

Prerequisites

- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix Systems
- Fundamentals course (CCP146) or equivalent experience

Technical Requirements

All technology is provided for student use in the classroom by Rockwell Automation. It is not necessary for students to bring any technology with them when attending this course.

➤ Managing Industrial Networks with CISCO Networking Technologies (Private Delivery Only)

IMINS

5 Days

CEUs 3.5

Course Purpose

Managing Industrial Networks with Cisco® Networking Technologies (IMINS) Version 1.0 is a hands-on lab-based course, which helps students with the foundational skills needed for the management and administration of networked industrial control systems. The IMINS course, developed in conjunction with Rockwell Automation, helps plant administrators, control system engineers, and traditional network engineers understand networking technologies that are needed in today's connected plants and enterprises. This course also helps students prepare for the Cisco Industrial Networking Specialist Certification exam (exam ID 600-601) and qualify for the Cisco Industrial Networking Specialist certification. The goal of this course is to enable students to achieve competency and skills to install, configure, maintain, and troubleshoot industrial network systems while helping to ensure network availability, reliability, and Internet security throughout your company.

Objectives

After completing this course, students should be able to perform the following tasks:

- Describe Cisco Industrial Ethernet (IE) switches, Cisco Connected Grid™ switches and routers, and Rockwell Automation Stratix™ switches
- Interpret designs and drawings, recognize industrial topologies, and access reference materials
- Install industrial network components
- Deploy industrial network components
- Perform basic maintenance tasks
- Troubleshoot network and control issues

Who Should Attend?

IT and operations technology (OT) professionals and control engineers who will be involved with the implementation, operation, and support of networked industrial products and solutions for the manufacturing, process control, and oil and gas industries

Prerequisites

The knowledge and skills that you must have before attending this course include a college degree or non-degreed qualified technician with 2-3 years experience. Also, it is recommended you take the following Cisco Electronic Learning and Training (ELT) courses to achieve a basic understanding of networking and industrial protocols:

- Networking Fundamentals for Industrial Control Systems (INICS)
- Industrial Control Systems Fundamentals for Network Engineers (ICINS)

➤ NetLinx System Maintenance and Troubleshooting

(Private Delivery Only)

CCP177

4 Days

CEUs 2.8

Course Purpose

This course is designed to provide students with the necessary skills to effectively maintain and troubleshoot DeviceNet™, ControlNet™, and EtherNet/IP™ hardware and software. Students will build their skills by using troubleshooting best practices and network troubleshooting tools; gain experience troubleshooting DeviceNet, ControlNet, and EtherNet/IP networks by maintaining connectivity to the networks; and learn a variety of software packages and hardware indicators to ensure that the Logix5000 controllers and devices on the networks maintain communications to sustain optimal performance.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify NetLinx networks and hardware components of an EtherNet/IP system
- Connect a computer to a Logix5000 system over an EtherNet/IP network
- Troubleshoot EtherNet/IP network media components
- Monitor/troubleshoot EtherNet/IP media components
- Identify ControlNet media components/signal measuring equipment
- Connect to a ControlNet network using RSLinx classic software
- Troubleshoot a scheduled ControlNet data connection for a ControlLogix controller
- Troubleshoot a ControlNet network using RSNNetWorx™ for ControlNet software
- Identify DeviceNet network components
- Commission nodes on, and troubleshoot, a DeviceNet network
- Troubleshoot a DeviceNet network using RSNNetWorx for DeviceNet software

Job Aids Included

ControlNet and RSNNetWorx Troubleshooting Guide	ABT-N200-TSJ20	DeviceNet and RSNNetWorx Procedures Guide	ABT-N100-TSJ50
ControlNet and RSNNetWorx Procedures Guide	ABT-N200-TSJ50	EtherNet/IP Procedures Guide	ABT-N300-TSJ50
DeviceNet and RSNNetWorx Troubleshooting Guide	ABT-N100-TSJ20	Studio 5000 Logix Designer and Logix 5000 Procedures Guide	ABT-1756-TSJ50

Who Should Attend?

Individuals who are responsible for maintaining and troubleshooting existing DeviceNet, ControlNet, and EtherNet/IP networks

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or equivalent experience

Curriculum Note:

This course is intended for maintainers. Some topics may be similar to topics covered in courses CCP164, and CCP173.

➤ Configuring and Troubleshooting a Device-Level Ring Network

VC-DLR

2 Hours

CEUs .2

Course Purpose

This course will teach you the process of configuring a device-level ring (DLR) network including determining node counts, supervisor, back up and ring nodes. You will be provided with an understanding of normal operation of a DLR network and how to configure a supervisor node for managing traffic. This course will also show you the troubleshooting tools for diagnosing issues on the network along with resolutions to return a faulted DLR network back to normal operation.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define Supervisor Nodes
- Add an EtherNet/IP Device
- Connect Devices to the Network
- Configure Supervisor Nodes in a Logix Designer Project
- Complete the Physical Connections of the Network
- Verify the Network

Who Should Attend?

Control and automation engineers who are responsible for configuring a DLR network and returning a faulted network back to normal operation.

Prerequisites

- Experience configuring embedded switch technology devices in a Studio 5000 Logix Designer® project.

UNDERSTAND

PROGRAM OR DESIGN

e-LEARNING

MAINTAIN OR TROUBLESHOOT

- RSTrainer licensing options:
- Single license (node-locked)
 - 5 concurrent licenses (Enterprise Edition)

➤ PLC-5/SLC 500 and RSLogix Fundamentals

CCP122

2 Days

CEUs 1.4

Course Purpose

This course is an introduction to programmable controller systems. Students will identify the main components of programmable controller systems and describe their functions and describe the flow of information through a programmable controller system. They will receive a thorough introduction to RSLogix 5 or RSLogix 500 software, and will learn how to transfer, monitor, and run projects on a PLC-5 or SLC 500 processor and how to interpret simple ladder logic.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand programmable controller systems
- Identify common hardware components of processors
- Identify hardware components of I/O systems
- Identify I/O configurations
- Get started with programming systems
- Change the radix (base) of a number
- Set up communications between a programming system and a processor
- Identify PLC-5 and SLC 500 system addresses
- Interpret ladder logic
- Interpret Timer On-Delay (TON) and Count Up (CTU) instructions

Who Should Attend?

Individuals who:

- Have little or no working experience with programmable controller systems
- Are preparing for the following courses: PLC-5 and RSLogix 5 Programming (CCP410), SLC 500 and RSLogix 500 Programming (CCPS41), PLC-5 and RSLogix 5 Maintenance and Troubleshooting (CCP412), and SLC 500 and RSLogix 500 Maintenance and Troubleshooting (CCPS43)

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ PLC-5 and RSLogix 5 Programming

(Private Delivery Only)

CCP410

4 Days

CEUs 2.8

Course Purpose

This course introduces students to programming techniques and instructions to configure and program a 1785 PLC-5 system. The instructor will demonstrate how to use programming instructions and techniques to create a ladder logic project. Students will be given exercises that provide them with hands-on practice using RSLogix 5 software to program a PLC-5 processor.

Objectives

After completing this course, students should be able to perform the following tasks:

- Establish communications
- Configure channels
- Identify addresses and organize the data table
- Draft ladder logic
- Program bit instructions
- Enter, edit, and verify ladder logic
- Select and program timer and counter instructions
- Control program flow
- Enter documentation
- Search ladder logic
- Convert integer values to and from binary coded decimal values
- Select and program mathematical, compare, and manipulation instructions
- Configure and preview a project printout

Who Should Attend?

Individuals who have to write ladder logic projects for 1785 PLC-5 processors

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the PLC-5/SLC 500 and RSLogix Fundamentals course (CCP122) or equivalent experience

Job Aids Included

RSLogix 5 and PLC-5 Procedures Guide

ABT-1785-TSJ53

➤ PLC-5 and RSLogix 5 Maintenance and Troubleshooting

CCP412

4 Days

CEUs 2.8

Course Purpose

This skill-building course provides students with the knowledge and the practice needed to interpret, isolate, and diagnose common hardware problems related to noise, power, and discrete and analog I/O. In troubleshooting scenarios, students are introduced to basic ladder logic interpretation, which is applied to diagnostic tasks. Students practice these diagnostic skills by tracing through ladder logic instructions in an RSLogix 5 project.

Objectives

After completing this course, students should be able to perform the following tasks:

- Communicate with a PLC-5 processor
- Monitor and enter data
- Interpret bit instructions
- Edit and search ladder logic
- Document a project
- Force inputs and outputs
- Configure and preview a project report
- Create a histogram and trend chart
- Troubleshoot noise, discrete and analog I/O, I/O channel and chassis, and processor/power supply problems
- Interpret and edit counter and timer instructions
- Search and interpret basic ladder logic
- Interpret and edit compare, data manipulation, and program control instructions
- Maintain and troubleshoot a PLC-5 system

Who Should Attend?

Individuals who are responsible for troubleshooting and maintaining PLC-5 systems using RSLogix 5 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience maintaining electrically controlled systems
- Working knowledge of programmable controllers or completion of the PLC-5/SLC 500 and RSLogix Fundamentals course (CCP122)

Job Aids Included

PLC-5 and RSLogix 5 Troubleshooting Guide

ABT-1785-TSJ22

RSLogix 5 and PLC-5 Procedures Guide

ABT-1785-TSJ53

APPLICATION-SPECIFIC COURSES

PROGRAM OR DESIGN

MAINTAIN OR TROUBLESHOOT

➤ OEM: ControlLogix, FactoryTalk View ME, Kinetix 6000, AND PowerFlex 40 Fundamentals and Troubleshooting

OEM100

5 Days

CEUs 3.5

Course Purpose

This course provides students with the skills necessary to maintain and troubleshoot: Studio 5000 applications that operate on a ControlLogix-based machine; FactoryTalk View Machine Edition (ME) applications that run on PanelView Plus terminals; Kinetix 6000 motion systems; and PowerFlex 40 drives. Students will have the opportunity to develop and practice these skills by learning basic concepts and terminology used with: ControlLogix hardware, PanelView Plus terminal, Kinetix 6000 systems, and PowerFlex 40 drives; Studio 5000 Logix Designer application; and FactoryTalk View ME application. Students will also learn to diagnose and troubleshoot problems with controller, I/O or other hardware issues.

Objectives

After completing this course, students should be able to perform the following tasks:

- Assign an IP address to a computer
- Connect a computer to a network
- Configure EtherNet/IP addresses
- Download and go online
- Update firmware
- Locate I/O tags and devices
- Locate and edit tag values
- Create and modify project
- Draft basic ladder logic
- Select ladder logic instructions
- Edit ladder logic online
- Program timer, counter, math, compare, and move instructions
- Search for project components
- Force I/O and toggle bits
- Configure produced/consumed data
- Tune a PID loop
- Manage project files
- Configure a trend chart
- Test a ladder diagram
- Troubleshoot digital and analog I/O modules
- Modify application communications
- Download runtime files
- Configure display security, graphic displays, and interactive controls
- Troubleshoot workstation problems
- Interpret motion instructions and indicators
- Modify drive parameters

Who Should Attend?

OEMs who need to maintain and troubleshoot a ControlLogix-based machine, but have little to no working experience with ControlLogix systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Perform basic voltage and current checks
- Read wiring diagrams

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
FactoryTalk View ME and PanelView Plus Procedures Guide	ABT-2711P-TSJ50
EtherNet/IP™ Procedures Guide	ABT-N300-TSJ50
ControlLogix Troubleshooting Guide	ABT-1756-TSJ20

➤ PowerFlex 523/525 Drives with PowerFlex 525 Drive Kit: Communications and Programming

VC-PF523P

(2) 90-Min Sessions

CEUs 0.3

Course Purpose

After completing this course, students should be able to program drive parameters for a drive application. This course will teach students how to create a custom parameter group based upon drive applications. Throughout this course, the instructor will cover a range of topics from establishing communications with a PowerFlex 523/525 drive via a USB connection and EtherNet/IP network to testing parameters of a PowerFlex 523/525 drive using the HIM.

Objectives

After completing this course, students should be able to perform the following tasks:

- Establish communications with a PowerFlex 523/525 drive via a USB connection
- Establish communications with a PowerFlex 525 drive via an EtherNet/IP network
- Configure a PowerFlex 523/525 drive using the Startup Wizard in Connected
- Components Workbench™ software
- Create a CustomView parameter group
- Edit and test parameters using the HIM

Who Should Attend?

Individuals who have drive programming experience but are new to PowerFlex component-class drives

Prerequisites

- Knowledge of AC/DC drive fundamentals and drives programming experience
- Basic working knowledge of safe electrical practices including, but not limited to:
 - Understanding electricity, how it works, and the dangers involved in working with electricity
 - Identifying hazardous conditions
 - Adhering to all safety regulations

Technical Requirements

- PowerFlex 525 drive kit (shipped prior to class)
- A computer and phone
- Connected Components Workbench software must be installed and activated. The virtual classroom invitation will provide details on this software.

➤ PowerFlex 7000 Medium Voltage Drive Operation and Maintenance

CAN7000

3.5 Days

CEUs 2.5

Course Purpose

This course will provide students with techniques needed to facilitate operation and maintenance of the medium voltage (MV) PowerFlex 7000 Drive. Emphasis is on hardware familiarity, programming procedures, and troubleshooting. Upon completion of this course, students should be able to adopt proper safety measures while working on MV equipment, recognize proper drive and motor operation, understand the significance of all the key parameters, and troubleshoot drive malfunctions. Students should also be able to remove and replace power components of the PowerFlex 7000 adjustable frequency AC drive.

Objectives

After completing this course, students should be knowledgeable about the following topics:

- MV products overview
- PF7000 drive topology
- Power components
- Safety training (LOTO)
- Power supplies (classic and ForGe)
- PF7000 classic and ForGe control boards
- Voltage and current monitoring (classic and ForGe)
- Drive cooling system and operation
- Maintenance and troubleshooting
- Labs:
 - Device replacement
 - Resistance checks
 - Control voltage checks
 - Classic and ForGe control board checks
 - Review classic and ForGe drawings
 - HMI PV550 / PV1000
 - Uploading drive setup and control data
 - Downloading firmware

Who Should Attend?

Engineers, technicians, and electrical maintenance persons engaged in the operation and maintenance of PowerFlex 7000 drives (frames A and B).

Prerequisites

- Working knowledge of electricity, and knowledge of electrical and industrial safety (including PPE requirements and safe practices)
- Comprehensive knowledge of electrical principles and circuits
- Practical experience using a multimeter, ammeter and oscilloscope

Curriculum Note:

This course covers PowerFlex 7000 drives frame A and B. For PowerFlex 7000C drives, take course CAN7000C which covers everything in this course plus liquid-cooled drives (frame C).

➤ PowerFlex 7000 Medium Voltage Drive Operation and Maintenance Lite

CAN7000-L

3 Days

CEUs 2.1

Course Purpose

This course will provide students with techniques needed to facilitate operation and maintenance of the medium voltage (MV) PowerFlex 7000 Drive. Emphasis is on hardware familiarity, programming procedures, and troubleshooting. Upon completion of this course, students should be able to adopt proper safety measures while working on MV equipment, recognize proper drive and motor operation, understand the significance of all the key parameters, and troubleshoot drive malfunctions. Students should also be able to remove and replace power components of the PowerFlex 7000 adjustable frequency AC drive.

Note: This course is delivered at the MV Center of Excellence. This course does NOT include commissioned drive.

Objectives

After completing this course, students should be knowledgeable about the following topics:

- MV products overview
- PF7000 drive topology
- Power components
- Safety training (LOTO)
- Power supplies (classic and ForGe)
- PF7000 classic and ForGe control boards
- Voltage and current monitoring (classic and ForGe)
- Drive cooling system and operation
- Maintenance and troubleshooting
- Labs:
 - Device replacement
 - Resistance checks
 - Control voltage checks
 - Classic and ForGe control board checks
 - Review classic and ForGe drawings
 - HMI PV550 / PV1000
 - Uploading drive setup and control data
 - Downloading firmware

Who Should Attend?

Engineers, technicians, and electrical maintenance persons engaged in the operation and maintenance of PowerFlex 7000 drives (frames A and B).

Prerequisites

- Working knowledge of electricity, and knowledge of electrical and industrial safety (including PPE requirements and safe practices)
- Comprehensive knowledge of electrical principles and circuits
- Practical experience using a multimeter, ammeter and oscilloscope

Curriculum Note:

This course covers PowerFlex 7000 drives frame A and B. For PowerFlex 7000C drives, take course CAN7000C which covers everything in this course plus liquid-cooled drives (frame C).

➤ PowerFlex 7000 Liquid-Cooled Medium Voltage Drive Operation and Maintenance

CAN7000C

4 Days

CEUs 2.8

Course Purpose

This course provides students with techniques needed to facilitate operation and maintenance of the medium voltage (MV) PowerFlex 7000C drive. Emphasis is on hardware familiarity, programming procedures, and troubleshooting. Upon completion of this course, students should be able to adopt proper safety measures while working on MV equipment, recognize proper drive and motor operation, understand the significance of all the key parameters, and troubleshoot drive malfunctions. Students should also be able to remove and replace power components of the PowerFlex 7000C adjustable frequency AC drive.

Objectives

After completing this course, students should be knowledgeable about the following topics:

- MV products and liquid-cooled system overview
- PF7000 drive topology
- Power components
- Safety training (LOTO)
- Power supplies (classic and ForGe)
- PF7000 classic and ForGe control boards
- Voltage and current monitoring (classic and ForGe)
- Drive cooling system and operation
- Maintenance and troubleshooting
- PF7000C features and parameters
- Heat exchangers
- Chill block and thermostatic valve replacement
- Labs:
 - Device replacement
 - Resistance checks
 - Control voltage checks
 - Classic and ForGe control board checks
 - Review classic and ForGe drawings
 - HMI PV550 / PV1000
 - Uploading drive setup and control data
 - Downloading firmware

Who Should Attend?

Engineers, technicians, and electrical maintenance persons engaged in the operation and maintenance of PowerFlex 7000C drives.

Prerequisites

- Working knowledge of electricity, and knowledge of electrical and industrial safety (including PPE requirements and safe practices)
- Comprehensive knowledge of electrical principles and circuits
- Practical experience using a multimeter, ammeter and oscilloscope

Curriculum Note:

Do not take this course and course CAN7000. The first 3.5 days are the same.

➤ PowerFlex 7000C Liquid-Cooled Medium Voltage Drive Operation and Maintenance Lite

CAN7000C-L

3.5 Days

CEUs 2.45

Course Purpose

This course provides students with techniques needed to facilitate operation and maintenance of the medium voltage (MV) PowerFlex 7000C drive. Emphasis is on hardware familiarity, programming procedures, and troubleshooting. Upon completion of this course, students should be able to adopt proper safety measures while working on MV equipment, recognize proper drive and motor operation, understand the significance of all the key parameters, and troubleshoot drive malfunctions. Students should also be able to remove and replace power components of the PowerFlex 7000C adjustable frequency AC drive.

Note: This course is delivered at the MV Center of Excellence. This course does NOT include commissioned drive.

Objectives

After completing this course, students should be knowledgeable about the following topics:

- MV products and liquid-cooled system overview
- PF7000 drive topology
- Power components
- Safety training (LOTO)
- Power supplies (classic and ForGe)
- PF7000 classic and ForGe control boards
- Voltage and current monitoring (classic and ForGe)
- Drive cooling system and operation
- Maintenance and troubleshooting
- PF7000C features and parameters
- Heat exchangers
- Chill block and thermostatic valve replacement
- Labs:
 - Device replacement
 - Resistance checks
 - Control voltage checks
 - Classic and ForGe control board checks
 - Review classic and ForGe drawings
 - HMI PV550 / PV1000
 - Uploading drive setup and control data
 - Downloading firmware

Who Should Attend?

Engineers, technicians, and electrical maintenance persons engaged in the operation and maintenance of PowerFlex 7000C drives.

Prerequisites

- Working knowledge of electricity, and knowledge of electrical and industrial safety (including PPE requirements and safe practices)
- Comprehensive knowledge of electrical principles and circuits
- Practical experience using a multimeter, ammeter and oscilloscope

Curriculum Note:

Do not take this course and course CAN7000. The first 3.5 days are the same.

➤ PowerFlex 70 Maintenance and Troubleshooting

(Private Delivery Only)

CCA159LD

1 Day

CEUs 0.7

Course Purpose

This skill-building course introduces concepts and techniques that will assist students in successfully maintaining and troubleshooting a PowerFlex 70 AC drive. Students will learn how to recognize PowerFlex 70 drive hardware and properly wire the drive. Students will learn to diagnose specific load-related, environmental, and equipment faults. Throughout the course, students will use the LCD HIM, DriveExplorer software, and DriveExecutive software to clear faults and alarms. After each demonstration, students will be given an application-based exercise that offers extensive hands-on practice using a PowerFlex 70 drive.

Objectives

After completing this course, students should be able to perform the following tasks:

- Replace and rewire drive hardware
- Configure drive parameters using the LCD HIM, DriveExplorer & DriveExecutive software
- Upload and download drive data
- Troubleshoot and clear drive alarms
- Clear drive faults
- Troubleshoot drive load and environmental faults
- Troubleshoot drive equipment malfunctions
- Maintain and troubleshooting a PowerFlex 70 drive

Who Should Attend?

Individuals responsible for maintaining and troubleshooting PowerFlex 70 drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and knowledge of electrical/ industrial safety
- Completion of the AC/DC Motors and Drives Fundamentals course (CCA101) or equivalent experience

➤ PowerFlex 700 Vector Control Configuration and Startup

CCA161

1 Day

CEUs 0.7

Course Purpose

This skill-building course introduces techniques and instructions that will assist students in successfully configuring and starting up a PowerFlex 700 vector control drive. Throughout the course, the instructor will demonstrate how to configure PowerFlex 700 drive parameters. The instructor will demonstrate how to install and commission one or more of the following communications adapters: remote I/O, DeviceNet, EtherNet/IP, and ControlNet. Then, students will practice these tasks during hands-on exercises using the LCD HIM, DriveExplorer software, and DriveExecutive software. This course is designed as a stand-alone course, or it can be taken in conjunction with other PowerFlex 700 courses for further skill development.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure drive parameters using DriveExplorer and DriveExecutive software
- Configure drive parameters using an LCD HIM
- Startup a drive, upload and download drive data
- Control drive operation
- Install and configure a EtherNet/IP communications adapter
- *Optional:* Install and configure a DeviceNet, ControlNet, and remote I/O communications adapter

Job Aids Included

PowerFlex 700 Standard and Vector Control Procedures Guide	ABT-20B-TSJ50
PowerFlex 700 Standard and Vector Control Quick Reference Guide	ABT-20AB-TQR90

Who Should Attend?

Individuals responsible for configuring parameters and starting up PowerFlex 700 vector control drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and safety practices
- Completion of the AC/DC Motor and Drive Fundamentals course (CCA101) or equivalent experience

➤ PowerFlex 700 Vector Control Maintenance and Troubleshooting

CCA163

1 Day

CEUs 0.7

Course Purpose

This skill-building course introduces concepts and techniques that will assist students in successfully maintaining and troubleshooting a PowerFlex 700 vector control drive. Students will learn how to recognize PowerFlex 700 drive hardware and properly wire the drive. Students will learn to diagnose specific load-related, environmental, and equipment faults. Throughout the course, students will use the LCD HIM, DriveExplorer, and DriveExecutive software to clear faults and alarms.

Objectives

After completing this course, students should be knowledgeable about the following topics and tasks:

- Replace and rewire drive hardware
- Configure drive parameters using LCD HIM, DriveExplorer, and DriveExecutive software
- Upload and download drive data
- Troubleshoot and clear drive alarms
- Clear drive faults
- Troubleshoot drive load and environmental faults
- Troubleshoot drive equipment malfunctions

Job Aids Included

PowerFlex 700 Standard and Vector Control Troubleshooting Guide	ABT-20B-TSJ20
PowerFlex 700 Standard and Vector Control Procedures Guide	ABT-20B-TSJ50
PowerFlex 700 Standard and Vector Control Quick Reference Guide	ABT-20AB-TQR90

Who Should Attend?

Individuals responsible for maintaining and troubleshooting PowerFlex 700 vector control drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and electrical/industrial safety
- Completion of the AC/DC Motors and Drives Fundamentals course (CCA101) or equivalent experience

This course is intended for maintainers. Some topics may be similar to topics covered in course CCA161.

➤ PowerFlex 400 AC Drive Field Startup For HVAC Applications

CCA171

1 Day

CEUs 0.7

Course Purpose

This course provides fundamental concepts of AC/DC drive and motor operation to enable effective startup of PowerFlex 400 drives within the HVAC market. This course provides students with information related to applications, proper drive selection, and sizing as well as various installation considerations. Students will learn how to recognize PowerFlex 400 drive hardware and properly program and troubleshoot the drive as part of a typical startup service. Throughout this course, students will use the LCD HIM and DriveExplorer software to program and monitor various drive parameters. After each demonstration, students will be given an application-based exercise that offers extensive hands-on practice using the PowerFlex 400 drive.

Objectives

After completing this course, students should be knowledgeable about the following topics and tasks:

- Basic drive and motor technology
- PowerFlex 400 and configured product overview
- General programming and bypass lab
- Application specific features overview and labs
- Installation and application considerations
- DriveExplorer software overview
- Network communications overview
- Start up registration procedure
- Relate product features to application needs
- Verify proper installation of the drive
- Effectively program the drive

Who Should Attend?

Individuals who will be conducting startup of PowerFlex 400 drives for HVAC applications

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Previous experience working with AC Drive technology
- Working knowledge of electricity, and knowledge of electrical/ industrial safety
- Completion of the AC/DC Motors and Drives Fundamentals course (CCA101) or equivalent experience

➤ PowerFlex 400/70/700/753 AC Drive Field Startup For Water Wastewater Applications (Private Delivery Only)

CCA177

2 Days

CEUs 1.4

Course Purpose

This skill-building course provides students with fundamental concepts of AC drive and motor operation to enable effective startup of PowerFlex 400, PowerFlex 70 EC (enhanced control), PowerFlex 700 VC (vector control), and PowerFlex 753 drives for Water Wastewater applications. The course provides information related to applications, proper drive selection, and sizing as well as various installation considerations and troubleshooting practices. Students will learn how to recognize PowerFlex 400, 70, 700, and 753 drive hardware and properly program and troubleshoot the drive as part of a typical startup. Throughout the course, students will use the various LCD HIMs, DriveExplorer software, DriveExecutive software, and DriveObserver™ software to program and monitor various drive parameters. After each demonstration, students will be given an exercise that offers hands-on practice using PowerFlex 400, PowerFlex 700 VC, and/or PowerFlex 753 drives.

Objectives

After completing this course, students should understand the following topics:

- Basics of drive and motor control theory (review)
- PowerFlex 400/70/700/753 product overview
- Apply drive installation best practices
- Monitor and modify PowerFlex drive parameters using the HIM and software Program PowerFlex drives
- Set up a PowerFlex drive to communicate over Ethernet
- Troubleshoot a PowerFlex drive over Ethernet

Who Should Attend?

Individuals responsible for starting up PowerFlex drives in Water Wastewater applications

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity, and knowledge of electrical/industrial safety
- Completion of the AC/DC Motors and Drives Fundamentals course (CCA101) or equivalent experience

➤ PowerFlex 750-Series Configuration and Startup

CCA182

2 Days

CEUs 1.4

Course Purpose

Upon completion of this course, given a wired PowerFlex 750-Series drive (PowerFlex 753 or PowerFlex 755) and AC motor, students will be able to startup the drive and configure drive parameters to meet application needs. Throughout the course, students will have the chance to use a variety of hardware and software tools, including the A6 LCD HIM, DriveExecutive software, and DriveExplorer software. After each demonstration, students will be given exercises that offer extensive hands-on practice using a PowerFlex 753 or PowerFlex 755 drive.

Objectives

After completing this course, students should be able to perform the following tasks:

- Verify PowerFlex 750-Series drive installation
- Locate and modify PowerFlex 750-Series drive data using the A6 HIM and drive software Configure EtherNet/IP communications adapter for a PowerFlex 750-Series drive
- Startup a PowerFlex 750-Series drive
- Interpret PowerFlex 750-Series control block diagrams
- Control PowerFlex 750-Series drive operation
- Create a DeviceLogix program in a PowerFlex 750-Series drive

Who Should Attend?

Individuals who need to configure and startup PowerFlex 750-Series drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and safety practices
- Completion of the AC/DC Motors and Drives Fundamentals course (CCA101) or equivalent experience

This course is intended for programmers. Some topics may be similar to topics covered in course CCA183.

➤ PowerFlex 750-SERIES Maintenance and Troubleshooting

CCA183

2 Days

CEUs 1.4

Course Purpose

This skill-building course introduces concepts and techniques that will assist students in successfully maintaining and troubleshooting a PowerFlex 750-Series (PowerFlex 753 or PowerFlex 755) drive. Students will learn how to recognize PowerFlex 750-Series drive hardware and properly wire the drive. Students will learn to diagnose specific faults. Throughout the course, students will have the chance to use a variety of maintenance and troubleshooting tools, including the A6 LCD HIM, DriveExplorer software, and DriveExecutive software. After each demonstration, students will be given exercises that offer extensive hands-on practice using a PowerFlex 753 or PowerFlex 755 drive.

Objectives

After completing this course, students should be able to perform the following tasks:

- Locate PowerFlex 750-Series drive hardware
- Locate and modify PowerFlex 750-Series drive data using the A6 HIM and drive software
- Clear PowerFlex 750-Series drive alarms and faults
- Perform predictive maintenance using PowerFlex 750-Series parameters
- Troubleshoot PowerFlex 750-Series load/environmental faults and equipment malfunctions

Who Should Attend?

Individuals responsible for maintaining and troubleshooting PowerFlex 750-Series drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and safety practices
- Completion of the AC/DC Motors and Drives Fundamentals course (CCA101) or equivalent experience

➤ Intellicenter and DeviceNet™ Configuration

(Private Delivery Only)

CCI106-LD

2 Days

CEUs 1.4

Course Purpose

This course provides the concepts, knowledge, and tools necessary to design, specify, install, troubleshoot, and use an IntelliCENTER MCC or DeviceNet MCC. During the course, students will employ control and communication architectures by solving sample architecture problems presented in class. Students will learn to use various software tools associated with DeviceNet MCCs, such as RSLinx and RSNetWorx for DeviceNet software in addition to MCC start-up, maintenance, and replacement. The last day focuses on network configuration, mapping of scanners, and PLC programming in a DeviceNet MCC system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand basics of DeviceNet and NetLinx
- RSLinx and RSNetWorx for DeviceNet, EDS files
- Search for EDS files
- DeviceNet media in CENTERLINE MCCs
- Add MCC units and sections to IntelliCENTER software
- Replace a device/auto-device and node recovery options
- IntelliCENTER support services
- Set up a ControlLogix chassis with DeviceNet and Ethernet
- Map devices to a DeviceNet scanner
- PLC Programs for IntelliCENTER

Who Should Attend?

Control engineers, electrical technicians, and system integrators who will be involved in designing, installing, and using IntelliCENTER/DeviceNet MCCs

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Familiarity with PLC programming software
- Working knowledge of electricity and knowledge of electrical/industrial safety

➤ PowerFlex DC Drive Troubleshooting

(AVAILABLE ON-SITE ONLY)

(Private Delivery Only)

CDD163

2 Days

CEUs 1.4

Course Purpose

This skill-building course is delivered at your facility and requires 230V, 3-phase power to operate the workstations. This course introduces concepts and techniques that will assist students in successfully troubleshooting a PowerFlex DC drive. Students will learn how to recognize PowerFlex DC drive hardware and properly rewire the drive. Students will learn to diagnose and correct specific faults. Throughout this course, students will have the chance to use a variety of troubleshooting tools, including: LCD HIM, DriveExplorer software, and DriveExecutive software. After each demonstration, students will be given exercises that offer extensive hands-on practice using the PowerFlex DC drive. This course can be taken as a stand-alone course, or it can be taken in conjunction with other courses in the PowerFlex AC and DC drives curriculum for further skills development.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify PowerFlex DC drive hardware
- Locate and modify PowerFlex DC drive parameters using the A3 LCD HIM, the A6 LCD HIM (optional), and DriveExplorer software
- Clear PowerFlex DC drive alarms and faults
- Troubleshoot PowerFlex DC load, environmental faults, and drive equipment malfunctions
- Troubleshoot a PowerFlex DC drive
- Apply DC drive and motor fundamentals (optional review)
- Prepare for PowerFlex DC drive troubleshooting

Who Should Attend?

Individuals responsible for troubleshooting PowerFlex DC drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of basic DC motor and drive fundamentals through the completion of the AC/DC Motors and Drives Fundamentals course (CCA101) or equivalent experience

➤ Motor Control

EM-204

5 Days

CEUs 3.5

Course Purpose

This course provides students with information on the concepts associated with AC and DC motor fundamentals, motor control fundamentals, control of motor starting, and motors and motor controllers. The lessons cover a wide range of topics such as motor enclosures, nameplate data, AC motors, DC motors, magnetic contactors, control circuits, Wye-Delta starters, speed controllers, AC/DC machine maintenance, and motor control circuit maintenance.

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain AC motor theory
- Describe contacts
- Distinguish relays, contactors, and motor starters
- Identify pilot devices
- Interpret motor control device symbols
- Construct basic, reversing, and advanced motor control circuits
- Troubleshoot acceleration circuits and basic, reversing, time delay, soft-start, and advanced motor control circuits
- Accelerate motors using motor controllers
- Perform maintenance inspections
- Use time delays in motor control circuits

Who Should Attend?

Electrical maintenance technicians

Prerequisites

Understanding of electrical theory and electrical systems

Curriculum Note:

Many of the lessons in this course are consolidated in course EM-206 in a condensed format. Do not take both courses.

➤ PowerFlex 700S Phase II Maintenance and Troubleshooting (Private Delivery Only)

PFX700S2-LD

3 Days

CEUs 2.1

Course Purpose

This skill-building course introduces concepts and techniques that will assist students in successfully maintaining and troubleshooting a PowerFlex 700S Phase II AC drive. Students will learn how to recognize PowerFlex 700S Phase II drive hardware and properly wire the drive. Students will learn to diagnose specific load-related, environmental, and equipment faults. Throughout the course, students will use the LCD HIM, DriveExplorer software, and DriveExecutive software to clear faults and alarms. After each demonstration, students will be given an application-based exercise that offers extensive hands-on practice using the PowerFlex 700S drive.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand PowerFlex 700S Phase II high-performance AC drive hardware
- Configure parameters using the LCD HIM
- Configure drive parameters using DriveExecutive and DriveExplorer software
- Configure motor control options
- Select speed feedback options
- Upgrade communications module firmware
- Configure a gear-in application
- Configure Synchlink™ communications
- Troubleshoot a PowerFlex 700S Phase II high-performance AC drive
- Install and configure a ControlNet communications adapter
- Install and configure an EtherNet communications adapter

Who Should Attend?

Individuals responsible for starting up, configuring, maintaining, and troubleshooting PowerFlex 700S Phase II drives

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and knowledge of electrical/ industrial safety
- Completion of the AC/DC Motors and Drives Fundamentals course (CCA101) or equivalent experience

➤ AutoMax Maintenance and Troubleshooting

(Private Delivery Only)

RE0520

4 Days

CEUs 2.8

Course Purpose

This course is designed to provide students with a general understanding of AutoMax hardware and to acquire the necessary skills to interrogate the AutoMax processors for information needed to troubleshoot the system. Students will be provided an opportunity to monitor and load an AutoMax processor and to locate the necessary points for voltage measurements. After completing this course, students will understand AutoMax hardware in order to perform basic troubleshooting.

Objectives

After completing this course, students should understand the following topics:

- AutoMax concepts
- Hardware discussion
- AutoMax executive
- Configuration
- PC task
- Basic language
- Control block language

Who Should Attend?

Individuals who are responsible for the installation, maintenance, and repair of AutoMax systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Familiarity with test equipment and drive systems
- Working knowledge of electricity and knowledge of electrical/industrial safety (including PPE requirements and safe practices)
- Knowledge of basic DC motor and drive fundamentals through the completion of the AC/DC Motors and Drives Fundamentals course (CCA101) or equivalent experience

➤ PowerFlex 755 Floor-Mounted Drives: Pre-Installation Planning

VC-PF755H-A

120 Min.

CEUs 0.2

Course Purpose

This course will help students plan for the successful installation of PowerFlex 755 floor-mounted, frame 8 and larger (300 Hp (200 kW) and above) drives. Students will explore common drive pre-installation topics including specific wiring, mounting, fusing, and option card installation considerations for floor-mounted PowerFlex 755 units. During this course, students will use a variety of available technical documents and tools to help them prepare for installation situations unique to these drives.

Objectives

After completing this course, students should be able to perform the following tasks:

- Interpret and verify floor-mounted drive catalog numbers
- Prepare for frame 8 and larger drive mounting
- Verify drive option card locations
- Plan for floor-mounted drive
- Fusing and wiring
- Plan floor-mounted drive integration with a motor control center

Who Should Attend?

Individuals responsible for installing Frame 8 and larger PowerFlex 755 drives

Prerequisites

- Knowledge of safe electrical practices
- Prior experience working with AC drives
- Experience with wall-mounted (frame 1...7) PowerFlex 750-series drives is helpful, but not required

Technical Requirements

A computer and phone

➤ PowerFlex 750-Series Configuration For an Integrated Architecture System

(Private Delivery Only)

CCA184

1 Day

CEUs 0.7

Course Purpose

Upon completion of this course, given a PowerFlex 750-Series drive (PowerFlex 753 or PowerFlex 755) that has been successfully started up, students will be able to integrate their drive into a system that includes Logix5000 controllers and PanelView™ Plus terminals running FactoryTalk View ME software. Throughout the course, students will have the chance to use a variety of hardware and software tools, including the A6 LCD HIM, Logix Designer software, and FactoryTalk® View ME software. After each demonstration, students will be given exercises that offer extensive hands-on practice using a PowerFlex 753 or PowerFlex 755 drive.

Objectives

After completing this course, students should be able to perform the following tasks:

- Add a PowerFlex 750-Series drive to a Logix Designer project
- Locate and modify PowerFlex 750-Series data using Logix Designer software
- Integrate a PowerFlex 750-Series drive with a Logix5000 controller
- Add PowerFlex 750-Series faceplates to a FactoryTalk View ME application
- Operate a PowerFlex 750-Series drive in an Integrated Architecture system

Job Aids Included

Studio 5000 Logix Designer and
Logix5000 Procedures Guide

ABT-1756-TSJ50

Who Should Attend?

Individuals who need to add PowerFlex 750-Series drives to an Integrated Architecture system

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of electricity and knowledge of electrical/industrial safety (including PPE requirements and safe practices)
- Completion of the PowerFlex 750-Series Startup & Configuration course (CCA182)
- Knowledge of Logix5000 system fundamentals and basic programming skills through one or more of the following methods:
 - Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146)
 - Logix 5000 software computer-based training
 - Equivalent experience programming Logix5000 control systems
- Previous experience with FactoryTalk View ME software is suggested, but not required

➤ CenterLine MCC with IntelliCenter® Software Commissioning on an EtherNet/IP Network

CCI108

3 Days

CEUs 2.1

Course Purpose

After completing this course, given a newly installed CENTERLINE MCC with IntelliCENTER software, students should be able to produce an operational motor control system over an EtherNet/IP network. Throughout the course, students will work with a number of hardware and software products, including IntelliCENTER software; E300™ and E3 Plus™ electronic overload relays; PowerFlex 525 and PowerFlex 40 variable speed drives; Stratix 5700 industrial Ethernet switches; Logix5000 controllers and the Studio 5000 Logix Designer application; and FactoryTalk View software. Students will be introduced to a variety of tools they can use to ensure proper functioning of a motor control system. This course also shows how CENTERLINE MCCs interact with other parts of a control system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Verify connections between CENTERLINE MCC sections
- Implement an EtherNet/IP network topology for an MCC
- Configure:
 - Stratix 5700 EtherNet/IP switch settings
 - IntelliCENTER software preferences
 - E300 and E3 Plus electronic overload relays
 - PowerFlex 525 and PowerFlex 40 drive parameters
- Install IntelliCENTER software and data disks
- Modify CENTERLINE MCC lineup properties using IntelliCENTER software
- Add MCC components to a Studio 5000 Logix Designer application
- Enable automatic device configuration for a PowerFlex 525 drive in a CENTERLINE MCC
- Add IntelliCENTER ActiveX controls to a FactoryTalk View application
- Configure and view IntelliCENTER energy software data
- Add documentation to an IntelliCENTER software database
- Modify MCC component spare parts lists in IntelliCENTER software
- Manage IntelliCENTER software databases

Who Should Attend?

System engineers and/or other individuals responsible for starting the operation of a CENTERLINE motor control center

Prerequisites

- Working knowledge of electricity, and knowledge of electrical and industrial safety (including PPE requirements and safe practices)
- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or equivalent experience

Job Aids Included

IntelliCENTER Software Procedures Guide

ABT-MCC-TSJ50

➤ PowerFlex 700 Vector Control Communications

CCA165

Over EtherNet/IP

1 Day

CEUs 0.7

(Private Delivery Only)

Course Purpose

After completing this course, given a PowerFlex 700 vector control drive that has been successfully started up and configured, students should be able to add their drive to an EtherNet/IP network that includes Logix5000 controllers or PanelView Plus terminals running FactoryTalk View ME software. Throughout the course, students will have the chance to use a variety of hardware and software tools, including: A3 LCD HIM; Studio 5000 Logix Designer application; and drive configuration software (DriveExecutive, Connected Components Workbench). After each demonstration, students will be given exercises that offer extensive hands-on practice using a PowerFlex 700 vector control drive in tandem with a CompactLogix controller and/or PanelView Plus terminal.

Objectives

After completing this course, students should be able to perform the following tasks:

- Add a PowerFlex 700 vector control drive to a Studio 5000 Logix Designer project
- Import PowerFlex 700 vector control drive control code into a Studio 5000 Logix Designer project
- Create new PowerFlex 700 vector control drive control code in a Studio 5000 Logix Designer project
- Synchronize data and test PowerFlex 700 vector control drive operating modes
- Configure PowerFlex 700 vector control drive peer-to-peer communications

Job Aids Included

PowerFlex 700 Standard and Vector Control Procedures Guide	ABT-20B-TSJ50
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50

Who Should Attend?

Individuals responsible for commissioning PowerFlex 700 vector control drives on an EtherNet/IP network

Prerequisites

- Working knowledge of electricity, and knowledge of electrical/industrial safety
- Completion of the PowerFlex 700 Vector Control Configuration and Startup course (CCA161) or equivalent experience
- Knowledge of Logix5000 system fundamentals and basic programming skills through one of the following methods:
 - Completion of the Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming course (CCP151)
 - Completion of available RSLogix 5000/Studio 5000 software computer-based training
- Equivalent on-the-job experience

UNDERSTAND

PROGRAM OR DESIGN

e-LEARNING

Available
in Spanish

MAINTAIN OR TROUBLESHOOT

RSLogix 500- Software Bundle

Online Monitoring
Offline Programming
Documenting and Searching

SLC 500- Fundamentals Bundle

Hardware Fundamentals
Programming Fundamentals

- RSTrainer licensing options:
- Single license (node-locked)
 - 5 concurrent licenses (Enterprise Edition)

➤ PLC-5/SLC 500 and RSLogix Fundamentals

CCP122

2 Days

CEUs 1.4

Course Purpose

This course is an introduction to programmable controller systems. Students will identify the main components of programmable controller systems and describe their functions and describe the flow of information through a programmable controller system. They will receive a thorough introduction to RSLogix 5 or RSLogix 500 software, and will learn how to transfer, monitor, and run projects on a PLC-5 or SLC 500 processor and how to interpret simple ladder logic.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand programmable controller systems
- Identify common hardware components of processors
- Identify hardware components of I/O systems
- Identify I/O configurations
- Get started with programming systems
- Change the radix (base) of a number
- Set up communications between a programming system and a processor
- Identify PLC-5 and SLC 500 system addresses
- Interpret ladder logic
- Interpret Timer On-Delay (TON) and Count Up (CTU) instructions

Who Should Attend?

Individuals who:

- Have little or no working experience with programmable controller systems
- Are preparing for the following courses: PLC-5 and RSLogix 5 Programming (CCP410), SLC 500 and RSLogix 500 Programming (CCPS41), PLC-5 and RSLogix 5 Maintenance and Troubleshooting (CCP412), and SLC 500 and RSLogix 500 Maintenance and Troubleshooting (CCPS43)

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ SLC 500 and RSLogix 500 Programming

CCPS41

4 Days

CEUs 2.8

Course Purpose

This course provides students with the resources and hands-on practice to program an SLC 500 processor. Students will create a step-by-step program to meet the requirements of a given functional specification. As each section of the program is built, students will gain experience that can be applied to more advanced RSLogix 500 projects.

Objectives

After completing this course, students should be able to perform the following tasks:

- Communicate with a SLC 500 processor
- Create a new project and draft ladder logic
- Determine addresses and assign symbols
- Determine program flow and create subroutines
- Select and program timer, counter, math, data handling, and comparison instructions
- Enter and search for documentation
- Organize the data table
- Enter, edit, and verify ladder logic
- Test a project
- Configure and preview a project report

Who Should Attend?

Individuals who are responsible for programming SLC 500 applications using RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
 - Experience with basic control and electrical principles
 - Working knowledge of programmable controllers
- OR
- Completion of the PLC-5/SLC 500 and RSLogix Fundamentals course (CCP122) or completion of the PLC-5/SLC 500 and RSLogix Fundamentals course (CCP122)

Job Aids Included

RSLogix 500 and SLC 500 Procedures Guide

ABT-1747-TSJ52

➤ SLC 500 and RSLogix 500 Maintenance and Troubleshooting

CCPS43

4 Days

CEUs 2.8

Course Purpose

This skill-building course provides the necessary practice needed to interpret, isolate, and diagnose common hardware problems related to noise, power, and discrete and analog I/O. In troubleshooting scenarios, students will be introduced to basic ladder logic interpretation, which is applied to diagnostic tasks. Students practice these diagnostic skills by tracing through ladder logic instructions in an RSLogix 500 project.

Objectives

After completing this course, students should be able to perform the following tasks:

- Communicate with a SLC 500 processor
- Identify memory layout and SLC 500 system addresses
- Monitor and enter data
- Search, document, and edit ladder logic
- Interpret various ladder logic instructions
- Configure and preview a project report
- Troubleshoot processor, power supply, and noise-related problems
- Troubleshoot discrete and analog I/O problems
- Create a histogram
- Force inputs and outputs
- Maintain and troubleshoot a SLC 500 system

Who Should Attend?

Individuals who need to troubleshoot and maintain SLC 500 systems using RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience maintaining electrically controlled systems
- Working knowledge of programmable controllers or completion of the PLC-5/SLC 500 and RSLogix Fundamentals course (CCP122)

Job Aids Included

RSLogix 500 and SLC 500 Procedures Guide

ABT-1747-TSJ52

SLC 500 and RSLogix 500 Troubleshooting Guide

ABT-1747-TSJ22

➤ SLC 500 and RSLogix 500 Advanced Maintenance and Troubleshooting (Private Delivery Only)

CCPS45

4 Days

CEUs 2.8

Course Purpose

This course provides the practice needed to interpret, isolate, and diagnose problems found in advanced SLC 500 applications. In troubleshooting scenarios, students will interpret and modify advanced ladder logic instructions by operating a variety of simulation devices and software HMI applications, such as PanelView terminals, and RSVIEW[®]32 software applications. Students will practice these diagnostic skills by tracing through ladder logic instructions and troubleshooting communication problems with DH+ and remote I/O networks.

Objectives

After completing this course, students should be able to perform the following tasks:

- Setup a SLC 500 system on a DH+ network
- Troubleshoot RSLogix 500 projects containing the following:
 - STI, DII, program flow/interrupt, and fault routines
 - Immediate I/O update, shift register, sequencer, and PID instructions
 - Indexed and indirect addressing
 - Message instructions for DH+ communications
 - Remote I/O addressing
 - Discrete data transfers on a remote I/O link
 - Block transfers on a remote I/O link
- Apply preventative maintenance and troubleshooting strategies

Who Should Attend?

Individuals who are responsible for maintaining and troubleshooting advanced SLC 500 applications using RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience maintaining electrically controlled systems
- Completion of the SLC 500 and RSLogix 500 Maintenance and Troubleshooting course (CCPS43) Fundamentals course (CCP122)

Job Aids Included

RSLogix 500 and SLC 500 Procedures Guide

ABT-1747-TSJ52

SLC 500 and RSLogix 500 Troubleshooting Guide

ABT-1747-TSJ22

➤ OEM: SLC 500 and RSLogix 500 Fundamentals and Troubleshooting

OEM101

2 Days

CEUs 1.4

Course Purpose

This course provides students with the resources and hands-on practice required to maintain and troubleshoot an RSLogix 500 application on a SLC 500-based machine. Students will have the opportunity to develop and practice these skills by learning basic concepts and terminology used with SLC 500 hardware and RSLogix 500 software. Students will also practice diagnosing and troubleshooting problems with Controller, I/O, or other hardware issues.

Objectives

After completing this course, students should be able to perform the following tasks:

- Communicate with a processor
- Determine addresses
- Draft basic ladder logic
- Program bit, timer, counter, math, and compare instructions
- Search ladder logic
- Force I/O and toggle bits
- Configure a histogram

Curriculum Note:

This course contains many of the lessons in courses CCP122 and CCPS43 in an accelerated format. Do not take this course with the other two courses.

Who Should Attend?

OEMs who need to maintain and troubleshoot SLC 500 applications using RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Perform basic voltage and current checks
- Read wiring diagrams

Job Aids Included

RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
SLC 500 and RSLogix 500 Troubleshooting Guide	ABT-1747-TSJ22

UNDERSTAND

CERTIFICATIONS

➤ Vibration Analysis Fundamentals

(Private Delivery Only)

EK-ICM101

3 Days

CEUs 2.1

Course Purpose

This course is designed for the new user of vibration analysis or predictive maintenance instrumentation or for the individual that desires to become more familiar with the basics of vibration. The relationship between the mechanical condition of machinery and vibration is presented. This background helps show how vibration detection and analysis can be used in a cost-effective program to identify machinery problems and schedule repairs to avoid costly machine downtime.

Objectives

After completing this course, students should understand the following topics and tasks:

- Introduction to vibration technology, vibration analysis, and dynamic balancing
- Characteristics of vibration
- Relate vibration frequency, amplitude, and phase to machine condition
- Review of severity charts
- Differences between displacement, velocity, and acceleration
- Instruments for vibration detection and analysis
- Transducer selection and mounting methods
- Calculate trial and correction weights
- Identify the most common machinery problems
- Implement a predictive maintenance program

Who Should Attend?

Maintenance supervisors, mechanics, technicians, engineers or analysts involved in the maintenance or operation of plant machinery

Prerequisites

There are no prerequisites for this course

➤ Vibration Analysis: Level I

(Private Delivery Only)

EK-ICM201

3.5 Days

CEUs 2.5

Course Purpose

The fundamental information necessary to implement and operate a successful predictive maintenance program is presented in this seminar. Vibration basics and the relationship between vibration and machinery condition are reviewed. Proven techniques for specifying meaningful overall and spectrum band alarm limits for a wide variety of machinery are presented. The material in this course is applicable to all vendors' vibration data collection or analysis equipment. Case histories are used extensively throughout the course to emphasize the practical application of the material. An optional certification test is administered during the last half day of this course.

Objectives

After completing this course, students should understand the following topics:

- Characteristics of vibration and review of severity charts
- Relate time waveform and vibration frequency
- Digital vs. analog overall vibration measurement
- Vibration transducer overview and selection criteria
- Role of spike energy, HFD, and shock pulse and alarm levels
- Vibration signature analysis to diagnose machine problems
- How to track rolling element bearing health
- Methods for specifying spectral alarm band levels and frequencies
- Common pitfalls in vibration measurements

Who Should Attend?

- Mechanics, technicians, engineers, or analysts involved in the maintenance or operation of plant machinery

Prerequisites

- 6 months or more of field experience
- Completion of the Vibration Analysis Fundamentals (EK-ICM101), or similar, course

UNDERSTAND

PROGRAM OR DESIGN



MAINTAIN OR TROUBLESHOOT

Combination of DeviceNet,
ControlNet and EtherNet/IP
Maintenance Topics

➤ PlantPAx System Configuration Fundamentals

(Private Delivery Only)

PRS013

4.5 Days

CEUs 3.2

Course Purpose

This course is intended for control engineers who have a background in process control – but are new to Rockwell Automation. This course introduces new students to the core components of a PlantPAx process control system, including controllers, HMI, networks, and instrumentation devices. Students will look at the individual components and see their relationships to the complete system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify a PlantPAx system
- Locate ControlLogix components and organize ControlLogix data
- Create and organize a new project
- Configure device-level ring
- Program a function block diagram
- Configure PlantPAx AOI and devices using HART
- Use tag placeholders
- Configure global objects and PlantPAx faceplates
- Create a graphic display, tag database, alarm, data log model, and trend
- Set up reporting
- Configure security
- Program and tune a PID loop
- Program considerations for applications and structured text
- Design an SFC
- Determine workstation layout
- Configure redundancy

Who Should Attend?

Individuals who have a background in process control applications who are new to Rockwell Automation

Prerequisites

- Basic knowledge of process control

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
FactoryTalk View SE Procedures Guide	ABT-9701SE-TSJ50

➤ Pulp and Paper Application Suite Configuration (Private Delivery Only)

PRS017

2 Days

CEUs 1.4

Course Purpose

Upon completion of this course, students will be able to use a Rockwell Automation application suite to develop effective control applications for a PlantPAx process automation system. The focus of this course will be on the pulp and paper industry and applications. In this course, students will have the opportunity to create, configure, and develop working code to address a variety of application scenarios. Students will realize the benefits of using a Rockwell Automation application suite through a combination of instruction and hands-on experience, which emphasize concepts, common features, and functions.

Objectives

After completing this course, students should be able to perform the following tasks:

- Locate components of the application suite
- Recognize common functions and configuration options in the application suite
- Program and configure Logix Designer and FactoryTalk View SE systems
- Recognize industry-specific functions
- Select functions through configuration
- Operate and troubleshoot
- Locate reference material and access ongoing support
- Analyze and interpret application requirements
- Identify the repeatable portions of an application
- Determine the optimum use of the application suite for control applications
- Modifying an application
- Coordinate, sequence, and manage equipment

Who Should Attend?

Individuals who need to maintain and/or troubleshoot a system which utilizes a Rockwell Automation application suite

Prerequisites

- Completion of the PlantPAx Process System Configuration course (PRS013) or
- Personal experience with process applications, ControlLogix systems and programming, including basic ladder logic instructions, and FactoryTalk View SE applications

➤ Vibration Analysis Fundamentals

(Private Delivery Only)

EK-ICM101

3 Days

CEUs 2.1

Course Purpose

This course is designed for the new user of vibration analysis or predictive maintenance instrumentation or for the individual that desires to become more familiar with the basics of vibration. The relationship between the mechanical condition of machinery and vibration is presented. This background helps show how vibration detection and analysis can be used in a cost-effective program to identify machinery problems and schedule repairs to avoid costly machine downtime.

Objectives

After completing this course, students should understand the following topics and tasks:

- Introduction to vibration technology, vibration analysis, and dynamic balancing
- Characteristics of vibration
- Relate vibration frequency, amplitude, and phase to machine condition
- Review of severity charts
- Differences between displacement, velocity, and acceleration
- Instruments for vibration detection and analysis
- Transducer selection and mounting methods
- Calculate trial and correction weights
- Identify the most common machinery problems
- Implement a predictive maintenance program

Who Should Attend?

Maintenance supervisors, mechanics, technicians, engineers or analysts involved in the maintenance or operation of plant machinery

Prerequisites

There are no prerequisites for this course

➤ Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting

CCP299

4.5 Days

CEUs 3.2

Course Purpose

Upon completion of this course, students should be able to troubleshoot a previously operational ControlLogix system and restore normal operation. Students will have the opportunity to develop and practice these skills by learning basic concepts and terminology, practicing a systematic strategy for diagnosing and troubleshooting problems, and performing hands-on exercises.

Objectives

After completing this course, students should be able to perform the following tasks:

- Locate CompactLogix system components
- Interpret arrays
- Navigate through the Logix Designer application
- Interpret tags of user defined data types
- Connect a computer to a communications network
- Search for project components
- Download and go online
- Force I/O and toggle bits
- Locate I/O tags and devices
- Troubleshoot digital I/O, analog I/O, remote I/O, controller, power supply, and noise related problems
- Interpret Logix Designer project organization and execution
- Update Logix5000 firmware
- Interpret ladder logic structure
- Analyze and troubleshoot a system using a trend chart
- Locate and edit tag values
- Edit ladder logic online
- Interpret bit and frequently used instructions
- Manage Logix Designer project files
- Document and print components

Job Aids Included

RSLogix 5000 and Logix5000 Procedures Guide

ABT-1756-TSJ50

ControlLogix Troubleshooting Guide

ABT-1756-TSJ20

Who Should Attend?

Individuals who need to maintain and troubleshoot a ControlLogix or other Logix5000 system, but have no current working experience with Logix5000 systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Experience with common industrial control system concepts

This course is intended for maintainers. Some topics may be similar to topics covered in course CCP146, CCP153, and CCP298.

➤ FactoryTalk View SE Architecture

(Private Delivery Only)

CCV205-LD

2 Days

CEUs 1.4

Course Purpose

This course will allow students to successfully deploy a finished FactoryTalk View SE distributed application. Building on students' knowledge of HMI (human-machine interface) application development and their experience with operating these systems, this course covers: review of Windows domains and Windows 2003 security; Windows networking basics; FactoryTalk View SE distributed application architecture guidelines; deployment of components for a distributed application; terminal server and remote desktop connection configuration; and troubleshooting.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify network/Windows considerations for a Distributed FactoryTalk View SE Application
- Design a FactoryTalk View SE network (distributed) application
- Evaluate FactoryTalk View SE system design using the reference system
- Add terminal services to a FactoryTalk View SE network system
- Implement FactoryTalk Security
- Install FactoryTalk View SE software
- Deploy a FactoryTalk View SE network application
- Implement redundancy in a FactoryTalk View SE Network Application
- Use remote desktop connection and terminal services to view remote FactoryTalk View SE clients

Job Aid Included

FactoryTalk View SE Procedures Guide

ABT-9701SE-TSJ50

Who Should Attend?

Individuals who need to move a distributed FactoryTalk View SE application from an engineering environment to the plant floor

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Familiarity with Windows 2003 Server and Windows networking concepts
- Completion of the FactoryTalk View SE Programming course (CCV207)
OR
- Previous experience working with FactoryTalk View SE software or similar HMI/SCADA (Supervisory Control and Data Acquisition) products

➤ FactoryTalk View SE Maintenance and Troubleshooting (Private Delivery Only)

CCV206-LD

2 Days

CEUs 1.4

Course Purpose

This course is intended to provide students with the skills required to diagnose common problems on a FactoryTalk View SE system. Students will practice operating and troubleshooting the system through hands-on exercises using FactoryTalk View SE software. In the class, students will practice troubleshooting methods such as alarming, diagnostics logging, data logging, and trending. Students will learn how to configure communications with a processor and the functions of redundancy.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand FactoryTalk View SE software
- Establish and maintain communications
- Monitor and interact with alarms
- Utilize diagnostics/data logging and trending
- Configure redundancy
- Development and operating tips

Job Aid Included

FactoryTalk View SE Procedures Guide

ABT-9701SE-TSJ50

Who Should Attend?

Individuals who maintain FactoryTalk View SE projects

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ FactoryTalk View SE Programming

CCV207

4.5 Days

CEUs 3.2

Course Purpose

This course will aid students in developing FactoryTalk View Site Edition (SE) applications. All aspects of the FactoryTalk View SE software are presented, followed by interactive hands-on lab assignments emphasizing application of the concepts in an industrial setting. Students will have the opportunity to create an application and build graphic displays. Students will work with RSLinx Enterprise communications software and the FactoryTalk diagnostics system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure RSLinx enterprise communications
- Configure OPC communications
- Create a network FactoryTalk View SE application
- Create graphic displays
- Build and animate an interactive graphic display
- Configure global objects
- Configure HMI tag-based alarms and FactoryTalk alarms/events
- Create and configure a trend
- Create macros, symbols, and keys
- Create an HMI tag database
- Use tag placeholders and create a FactoryTalk View SE client
- Create and view a data log model
- Create a derived tag tile and an event file
- *Optional:* Add VBA display code

Job Aid Included

FactoryTalk View SE Procedures Guide

ABT-9701SE-TSJ50

Who Should Attend?

Individuals who need to develop FactoryTalk View SE local (stand-alone) or network (distributed) applications

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ Studio 5000 Logix Designer Level 4: Function Block Programming

CCP152

2 Days

CEUs 1.4

Course Purpose

This course provides students with an understanding of Logix Designer function block diagrams and terminology. Resources and hands-on practice are provided to program a Logix5000 controller using function block diagrams. Students will perform parameter modifications to individual function block instructions and create and develop function block diagram programs and routines.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a function block diagram
- Program logical function block instructions
- Program timer and counter function block instructions
- Program analog function block instructions
- Program device driver function block instructions
- Select timing modes in a function block instruction
- Program a totalizer function block instruction
- Program and monitor an RMPS (ramp/soak) function block instruction
- Control program flow using function block instructions
- Program a PID loop using a function block diagram
- Tune a PID loop using ActiveX controls
- Develop an add-on instruction in function block diagram

Job Aid Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide

ABT-1756-TSJ50

Who Should Attend?

Individuals who:

- Are responsible for developing, debugging, and programming Logix5000 controllers using Logix Designer application with function block diagrams
- Use ActiveX controls in an operator interface such as FactoryTalk View ME software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Understanding of basic measurement and control theory, including basic loop control
- Completion of the Studio 5000 Logix Designer Level 3: Project Developing course (CCP143) or equivalent experience

➤ Studio 5000 Logix Designer Level 4: Structured Text/Sequential Function Chart Programming (Private Delivery Only)

CCP154

2 Days

CEUs 1.4

Course Purpose

This course provides students with the skills and knowledge to program using the structured text and sequential function chart programming languages. Students will learn how to select instructions, expressions, and constructs, and then enter these elements and more into a routine. Students will also learn how to test sequential function chart logic using forces and step throughs.

Objectives

After completing this course, students should be able to perform the following tasks:

- Program assignments, expressions, and instructions in structured text
- Program constructs and comments in structured text
- Design a sequential function chart
- Program and test a sequential function chart
- Store, pause, and reset sequential function chart data

Job Aid Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide

ABT-1756-TSJ50

Who Should Attend?

Individuals who need to program structured text and sequential function chart routines in Logix Designer projects for any Logix5000 controller

Prerequisites

- Completion of the Studio 5000 Logix Designer Level 1: Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 3: Project Development course (CCP143) or experience with basic Logix Designer projects (navigating the software, creating tags, creating routines, etc.)

➤ Vibration Analysis: Level I (Private Delivery Only)

EK-ICM201

3.5 Days

CEUs 2.5

Course Purpose

The fundamental information necessary to implement and operate a successful predictive maintenance program is presented in this seminar. Vibration basics and the relationship between vibration and machinery condition are reviewed. Proven techniques for specifying meaningful overall and spectrum band alarm limits for a wide variety of machinery are presented. The material in this course is applicable to all vendors' vibration data collection or analysis equipment. Case histories are used extensively throughout the course to emphasize the practical application of the material. An optional certification test is administered during the last half day of this course.

Objectives

After completing this course, students should understand the following topics:

- Characteristics of vibration and review of severity charts
- Relate time waveform and vibration frequency
- Digital vs. analog overall vibration measurement
- Vibration transducer overview and selection criteria
- Role of spike energy, HFD, and shock pulse and alarm levels
- Vibration signature analysis to diagnose machine problems
- How to track rolling element bearing health
- Methods for specifying spectral alarm band levels and frequencies
- Common pitfalls in vibration measurements

Who Should Attend?

- Mechanics, technicians, engineers, or analysts involved in the maintenance or operation of plant machinery

Prerequisites

- 6 months or more of field experience
- Completion of the Vibration Analysis Fundamentals (EK-ICM101), or similar, course

➤ FactoryTalk VantagePoint Configuration and Reporting

FTVP

3 Days

CEUs 2.1

Course Purpose

In this course, students will learn various tools to analyze and display data using FactoryTalk VantagePoint and/or VantagePoint EMI. The course covers how to use the analysis and reporting tools to create trends, Excel reports, and dashboards. Students will have an opportunity to use the Portal and configure it to display content in various ways. The course also focuses on extending the model in the product and configuring security. Upon completion of the course, students will be able to utilize many tools and techniques for the display, analysis and reporting of data using FactoryTalk VantagePoint EMI.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a FactoryTalk connector
- Create and publish trends and VantagePoint Excel reports
- Create and use types and type reports in VantagePoint
- Pass parameters to reports using hyperlinks
- Create composite and dashboard reports
- Use incuity tags for data entry, calculated tags, and status indicators
- Customize the VantagePoint portal
- Create and use a Microsoft SQL server database connector
- Use VantagePoint security
- Import ControlLogix structures

Who Should Attend?

- Developers or engineers who will work with FactoryTalk VantagePoint EMI applications and need to view, analyze, and create reports

Prerequisites

Experience with:

- Microsoft SQL Server 2008
- Microsoft Office Excel 2010
- ControlLogix and FactoryTalk products and terminology

➤ PID Loop Development and Tuning

PRS010

1 Day

CEUs 0.7

Course Purpose

This course enables students to develop an understanding of process control by allowing them to practice PID control methods. This course prepares students for further process control classes with more specialized applications and design involvement. This course provides students with the skills needed to obtain a tuned process control loop for typical applications. Students will create and develop a process model; calculate proportional, integral, and derivative gains; verify gains using ladder diagram; practice PID programming in function block diagram and learn how to autotune typical PID loops.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a process reaction curve
- Develop a process model
- Determine the control action
- Configure program timing
- Program a simple PID loop using function block diagram
- Calculate and verify PID gains
- Autotune a PID loop

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide ABT-1756-TSJ50

Who Should Attend?

Individuals who need to learn:

- How to make basic PID design decisions
- How to program and configure PIDE instructions using function block diagram
- How to tune basic PID loops using manual methods and ladder diagram
- How to autotune

Prerequisites

- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or equivalent experience
- ISA Process Control Fundamentals training or equivalent experience is recommended but not required
- Knowledge of automation systems and experience using function block diagram programming language or attending training (CCP152) is helpful but not required

➤ PlantPAx System Design and Configuration

(Private Delivery Only)

PRS019

4.5 Day

CEUs 3.2

Course Purpose

This course enables students to develop an understanding of process control by allowing them to practice PID control methods. This course prepares students for further process control classes with more specialized applications and design involvement. This course provides students with the skills needed to obtain a tuned process control loop for typical applications. Students will create and develop a process model; calculate proportional, integral, and derivative gains; verify gains using ladder diagram; practice PID programming in function block diagram and learn how to autotune typical PID loops.

Objectives

After completing this course, students should be able to perform the following tasks:

- Architect a PlantPAx process automation system
- Create process control applications with the PlantPAx library of add-on instructions, faceplates, and process strategies
- Create interactive displays for operator workstations, including alarms
- Secure a PlantPAx system

Who Should Attend?

System Integrators who have a background in automated process control and Rockwell Automation products should attend this course. This course covers concepts related to PlantPAx components. For details on the topics covered, please see the Course Agenda.

Prerequisites

- PlantPAx System Configuration Fundamentals (Course No. PRS013) or
- Practical work experience with process applications, ControlLogix® systems and programming, and FactoryTalk® View SE applications

➤ FactoryTalk Batch Project Design and Implementation

PRS101-LD

5 Days

CEUs 3.5

Course Purpose

This course is designed to provide students with a complete overview of the design and implementation of a batch project using FactoryTalk Batch software. This includes an introduction to batch processing and to the ANSI/ISA S88.01 Standard. FactoryTalk Batch system architecture, system operation, and system configuration are covered in detail.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define batching and the S88 Standard
- Work in FactoryTalk Batch and FactoryTalk View
- Define an area model from a P&ID
- Use FactoryTalk Equipment Editor
- Translate a product definition into a recipe
- Configure the FactoryTalk Recipe Editor including the basic mechanics, divergent flow, class-based recipes, and enhanced unit binding
- Configure Batch Archiver and enhanced batch reporting
- Interface with the FactoryTalk Batch API and ActiveX controls
- Perform system administration tasks related to file structure, project folder, and security
- Equipment Phase–FactoryTalk Batch Communications (phase design and equipment phase instructions)
- Integrate manual phases and FactoryTalk Batch eProcedure
- Integrate material-based phases and the FactoryTalk Batch Material Manager

Who Should Attend?

Supervisors, operators, formulators, and engineers who will be involved with the installation, setup, and operation of a FactoryTalk Batch system

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Familiarity with S88 Batch Standard is helpful

➤ FactoryTalk Historian Site Edition Configuration and Data Collection

RS-FTHSEC

3.5 Days

CEUs 2.5

Course Purpose

This course will provide students with an overview of the various FactoryTalk Historian tools for collecting data. Students will learn how to configure a FactoryTalk Historian Site Edition system and how to use Microsoft Excel to create and modify FactoryTalk Historian tags. During the course, students will learn how to apply exception and compression to filter data to be archived. Students will be given an opportunity to compare the use of Polled versus Advised data collection modes and learn about data buffering, layers/methods of redundancy, archive management and backup. Upon completion of the course, students will have gained exposure to the many aspects of the FactoryTalk Historian system and be able to install and configure FactoryTalk Historian to collect data.

Objectives

After completing this course, students should be knowledgeable about the following topics and tasks:

- FactoryTalk Historian tag types
- Work with digital states
- Backfill data into FactoryTalk Historian server
- Understand Historian tags and use Excel tag configurator, exception & compression
- Buffer disturbed FTLD interface data
- Configure event trigger, event framing, performance equations/totalizers, interface redundancy, and buffering
- Use BatchView
- Use and display audit information
- Schedule backups of Historian data
- Use FactoryTalk VantagePoint, health points, performance monitor tags, archive management tools, FactoryTalk View SE to display Historian data and server collective

Who Should Attend?

Field engineers, MPS, pre-sales consultants, and support individuals who need to install and configure FactoryTalk Historian Site Edition for data collection

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or knowledge of common ControlLogix terminology and the ability to program and interpret basic ladder logic instructions in Logix Designer software

➤ Studio 5000 Logix Designer Level 3: Project Development

CCP143

4 Days

CEUs 2.8

Course Purpose

Given a functional specification for a Logix5000 application, students will be able to develop a project during the course to meet the specification requirements. This course covers tasks common to all controllers that use the Logix5000 control engine or operating system, including ControlLogix, CompactLogix, and SoftLogix™ controllers. This course presents a deeper understanding of project development tasks, such as organizing tasks and routines, organizing controller data, configuring modules, and sharing data. Students will use Producer/Consumer technology to multicast input and output devices, share data between controllers, and control remote I/O.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create and organize a project
- Create periodic and event tasks
- Develop an add-on instruction in ladder diagram
- Organize arrays
- Create a user-defined data type
- Import components
- Enter, edit, and verify ladder logic
- Configure a controller to produce and consume data
- Configure controllers to share data over EtherNet/IP™
- Communicate with a local 1756-I/O module and over an EtherNet/IP network
- Configure a message
- Allocate connections
- Retrieve and set controller status values with GSV/SSV instructions
- Program a BTM instruction
- Handle a major fault
- Manage project files
- Update firmware

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide ABT-1756-TSJ50

Who Should Attend?

Individuals who need to maintain and troubleshoot Kinetix 6500 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common controller terms and operation through experience or completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or completion of the RSTrainer for ControlLogix Fundamentals computer-based training (9393-RSTCLX)
- Ability to write basic ladder logic with common instructions or through completion of the Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming course (CCP151)

➤ AAdvance Comprehensive System Training

(Private Delivery Only)

PRST9063LD

3 Days

CEUs 2.1

Course Purpose

This course provides a comprehensive overview of AADvance hardware, software, and troubleshooting. Upon successful completion of this course, students should be able to understand how AADvance operates as a fail-safe or fault tolerant controller; understand the configuration limits of the system; examine process I/O requirements and select the appropriate hardware; design and assemble a complete system; use the Workbench to configure and program the system, including communication with external devices; develop functions, function blocks and programs using standard IEC 61131 programming languages; make hardware expansions to an existing system; and isolate faults to the module level by interpreting automatic fault indications.

Objectives

After completing this course, students should be able to perform the following tasks:

- Recognize system architectures
- Identify components
- Install and wire a system
- Develop a program
- Simulate and test a project
- Download and monitor a project
- Create and use functions and function blocks
- Update a running project
- Map a binding between controllers
- Manage version source control
- Protect a project
- Import and export elements
- Archive and restore a project
- Configure OPC communication
- Troubleshoot a system
- Develop a project

Curriculum Note:

Do not take both PRST9063LD and PRST9064LD because they share similar content. If your responsibilities are limited to maintaining and troubleshooting the AADvance system, take this course instead: AADvance Operation, Maintenance, & Troubleshooting (PRST9064LD)

Who Should Attend?

Individuals who are responsible for designing, building, programming, and troubleshooting an AADvance system

Prerequisites

- General knowledge of programmable logic controllers (PLCs)
- Background in industrial electronic control principles and practices

➤ AAdvanced Operation, Maintenance, and Troubleshooting (Private Delivery Only)

PRST9064LD

2 Days

CEUs 1.4

Course Purpose

This course provides an overview of AADvance hardware, software, and troubleshooting. The course consists of a mixture of lecture and hands-on lessons. Upon successful completion of this course, students should be able to understand how AADvance operates as a fail-safe or fault tolerant controller; understand the configuration limits of the system; navigate the workbench; monitor programs; lock/force I/O points; isolate faults to the module level by interpreting automatic fault indications; and hot-replace failed modules without disrupting the systems or process.

Objectives

After completing this course, students should be able to perform the following tasks:

- Recognize system architectures
- Identify components
- Install and wire a system
- Develop a program
- Download and monitor a project
- Update a running project
- Manage version source control
- Troubleshoot a system

Curriculum Note:

Do not take both PRST9063LD and PRST9064LD because they share similar content. If you are responsible for designing, building, or programming an AADvance system take this course instead: AADvance Comprehensive System Training (PRST9063LD)

Who Should Attend?

Individuals responsible for maintaining and troubleshooting the AADvance system

Prerequisites

- General knowledge of programmable logic controllers (PLCs)
- Background in industrial electronic control principles and practices

➤ Netlinx System Maintenance and Troubleshooting

(Private Delivery Only)

CCP177

4 Days

CEUs 2.8

Course Purpose

This course is designed to provide students with the necessary skills to effectively maintain and troubleshoot DeviceNet™, ControlNet™, and EtherNet/IP™ hardware and software. Students will build their skills by using troubleshooting best practices and network troubleshooting tools; gain experience troubleshooting DeviceNet, ControlNet, and EtherNet/IP networks by maintaining connectivity to the networks; and learn a variety of software packages and hardware indicators to ensure that the Logix5000 controllers and devices on the networks maintain communications to sustain optimal performance.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify NetLinx networks and hardware components of an EtherNet/IP system
- Connect a computer to a Logix5000 system over an EtherNet/IP network
- Troubleshoot EtherNet/IP network media components
- Monitor/troubleshoot EtherNet/IP media components
- Identify ControlNet media components/signal measuring equipment
- Connect to a ControlNet network using RSLinx classic software
- Troubleshoot a scheduled ControlNet data connection for a ControlLogix controller
- Troubleshoot a ControlNet network using RSNetWorx™ for ControlNet software
- Identify DeviceNet network components
- Commission nodes on, and troubleshoot, a DeviceNet network
- Troubleshoot a DeviceNet network using RSNetWorx for DeviceNet software

Job Aids Included

ControlNet and RSNetWorx Troubleshooting Guide	ABT-N200-TSJ20	DeviceNet and RSNetWorx Procedures Guide	ABT-N100-TSJ50
ControlNet and RSNetWorx Procedures Guide	ABT-N200-TSJ50	EtherNet/IP Procedures Guide	ABT-N300-TSJ50
DeviceNet and RSNetWorx Troubleshooting Guide	ABT-N100-TSJ20	Studio 5000 Logix Designer and Logix 5000 Procedures Guide	ABT-1756-TSJ50

Who Should Attend?

Individuals who are responsible for maintaining and troubleshooting existing DeviceNet, ControlNet, and EtherNet/IP networks

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or equivalent experience

Curriculum Note:

This course is intended for maintainers. Some topics may be similar to topics covered in courses CCP164 and CCP173.

➤ EtherNet/IP Configuration and Troubleshooting

CCP183

3 Day

CEUs 2.1

Course Purpose

This course will assist students in developing fundamental knowledge of industrial communications over an EtherNet/IP network. Students will learn basic concepts and learn how to use various tools to assign IP addresses to EtherNet/IP devices. This course prepares students to effectively resolve issues with communications between a controller and the devices it is controlling. Students will troubleshoot EtherNet/IP network media and components, including a Stratix 5700, 8000 and/or 8300 switch. Students will have an opportunity to monitor diagnostic information using web-based technologies and modify web server module data views and tag values.

Objectives

After completing this course, students should be able to perform the following tasks:

- Assign an IP address to a computer
- Ping a module IP address
- Assign IP addresses using:
 - RSLinx classic software and rotary switches
 - BOOTP-DHCP server software
- Isolate an EtherNet/IP network problem
- Diagnose problems with EtherNet/IP modules and network components
- Monitor an EtherNet/IP network using web-enabled technologies

Who Should Attend?

Individuals who are responsible for maintaining Industrial Automation and Control Systems (IACS) networks

Prerequisites

Completion of the Studio 5000 Logix Designer Level 1: ControlLogix Systems Fundamentals course (CCP146) or equivalent experience

Technical Requirements

All technology is provided for student use in the classroom by Rockwell Automation. It is not necessary for students to bring any technology with them when attending this course.

UNDERSTAND

PROGRAM OR DESIGN

e-LEARNING

MAINTAIN OR TROUBLESHOOT

FactoryTalk View
Machine Edition-
Bundle

Applications and
Displays
Drawing Objects
Interactive Objects

- RSTrainer licensing options:
- Single license (node-locked)
 - 5 concurrent licenses (Enterprise Edition)

➤ FactoryTalk View ME and PanelView Plus Programming

CCV204-A

4 Days

CEUs 2.8

Course Purpose

This course is a skill-building course that provides students with the skills necessary to develop FactoryTalk View Machine Edition (ME) applications that run on the next-generation PanelView Plus terminals. During class, students will gain hands-on skills, like preparing a PanelView Plus terminal for operation, creating a new application and run it on a terminal, creating/configuring/animating graphic objects on graphic displays, configuring security for granting/restricting access to certain graphic displays or for rights to perform certain actions, and creating/configuring messages and alarms for alerting operators to changes in a process.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure a PanelView Plus terminal, RSLinx enterprise communications, FactoryTalk security, and display security
- Create and customize a FactoryTalk View ME application
- Create and modify tags and graphic objects
- Add and configure graphic display
- Create and manipulate graphic objects
- Create and configure interactive controls, information messages, alarms, and macros
- Create and manage FactoryTalk View ME runtime files
- Configure basic animation for FactoryTalk View ME objects, recipes with the RecipePlus system, and language switching
- Create data logs and trends, tag placeholders, and parameter files
- Add global objects
- Insert faceplates

Job Aid Included

FactoryTalk ME and PanelView Plus Procedures Guide

ABT-2711P-TSJ50

Who Should Attend?

Individuals who need to create FactoryTalk View ME applications for use on a PanelView Plus terminal

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) OR
- Basic experience with ControlLogix tags and architecture

➤ FactoryTalk View SE Architecture

(Private Delivery Only)

CCV205-LD

2 Days

CEUs 1.4

Course Purpose

This course will allow students to successfully deploy a finished FactoryTalk View SE distributed application. Building on students' knowledge of HMI (human-machine interface) application development and their experience with operating these systems, this course covers: review of Windows domains and Windows 2003 security; Windows networking basics; FactoryTalk View SE distributed application architecture guidelines; deployment of components for a distributed application; terminal server and remote desktop connection configuration; and troubleshooting.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify network/Windows considerations for a Distributed FactoryTalk View SE Application
- Design a FactoryTalk View SE network (distributed) application
- Evaluate FactoryTalk View SE system design using the reference system
- Add terminal services to a FactoryTalk View SE network system
- Implement FactoryTalk Security
- Install FactoryTalk View SE software
- Deploy a FactoryTalk View SE network application
- Implement redundancy in a FactoryTalk View SE Network Application
- Use remote desktop connection and terminal services to view remote FactoryTalk View SE clients

Job Aid Included

FactoryTalk View SE Procedures Guide

ABT-9701SE-TSJ50

Who Should Attend?

Individuals who need to move a distributed FactoryTalk View SE application from an engineering environment to the plant floor

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Familiarity with Windows 2003 Server and Windows networking concepts
- Completion of the FactoryTalk View SE Programming course (CCV207)
OR
- Previous experience working with FactoryTalk View SE software or similar HMI/SCADA (Supervisory Control and Data Acquisition) products

➤ FactoryTalk View SE Maintenance and Troubleshooting (Private Delivery Only)

CCV206-LD

2 Days

CEUs 1.4

Course Purpose

This course is intended to provide students with the skills required to diagnose common problems on a FactoryTalk View SE system. Students will practice operating and troubleshooting the system through hands-on exercises using FactoryTalk View SE software. In the class, students will practice troubleshooting methods such as alarming, diagnostics logging, data logging, and trending. Students will learn how to configure communications with a processor and the functions of redundancy.

Objectives

After completing this course, students should be able to perform the following tasks:

- Understand FactoryTalk View SE software
- Establish and maintain communications
- Monitor and interact with alarms
- Utilize diagnostics/data logging and trending
- Configure redundancy
- Development and operating tips

Job Aid Included

FactoryTalk View SE Procedures Guide

ABT-9701SE-TSJ50

Who Should Attend?

Individuals who maintain FactoryTalk View SE projects

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ FactoryTalk View SE Programming

CCV207

4.5 Days

CEUs 3.2

Course Purpose

This course will aid students in developing FactoryTalk View Site Edition (SE) applications. All aspects of the FactoryTalk View SE software are presented, followed by interactive hands-on lab assignments emphasizing application of the concepts in an industrial setting. Students will have the opportunity to create an application and build graphic displays. Students will work with RSLinx Enterprise communications software and the FactoryTalk diagnostics system.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure RSLinx enterprise communications
- Configure OPC communications
- Create a network FactoryTalk View SE application
- Create graphic displays
- Build and animate an interactive graphic display
- Configure global objects
- Configure HMI tag-based alarms and FactoryTalk alarms/events
- Create and configure a trend
- Create macros, symbols, and keys
- Create an HMI tag database
- Use tag placeholders and create a FactoryTalk View SE client
- Create and view a data log model
- Create a derived tag tile and an event file
- *Optional:* Add VBA display code

Job Aid Included

FactoryTalk View SE Procedures Guide

ABT-9701SE-TSJ50

Who Should Attend?

Individuals who need to develop FactoryTalk View SE local (stand-alone) or network (distributed) applications

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ FactoryTalk View ME and PanelView Plus Maintenance and Troubleshooting

CCV209-A

2 Days

CEUs 1.4

Course Purpose

This course provides students with the skills necessary to maintain and troubleshoot FactoryTalk View Machine Edition (ME) applications that run on PanelView Plus terminals. This course provides opportunities to work with both the hardware and software. Students will gain the hands-on skills required to prepare a PanelView Plus terminal for operation. Students will work with FactoryTalk View ME software and RSLinx Enterprise software and will practice downloading FactoryTalk View ME applications to a PanelView Plus terminal.

Objectives

After completing this course, students should be able to perform the following tasks:

- Replace components on a PanelView Plus terminal
- Set options on a PanelView Plus terminal
- Manage runtime files on a PanelView Plus terminal
- Manage development files using the application manager
- Modify RSLinx Enterprise communications in a FactoryTalk View ME application
- Download and upload FactoryTalk View ME runtime files
- Troubleshoot a PanelView Plus terminal
- Create tags and test data in a FactoryTalk View ME application
- Modify graphic displays in a FactoryTalk View ME application
- View and print FactoryTalk View ME components using the application documenter

Job Aid Included

FactoryTalk View ME and PanelView Plus Procedures Guide

ABT-2711P-TSJ50

Who Should Attend?

Individuals who need to maintain FactoryTalk ME applications and troubleshoot PanelView Plus terminals

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or basic experience with ControlLogix tags and architecture

Curriculum Note:

This course contains many of the lessons in course CCV207 in a consolidated format. Do not take both courses.

➤ SI: FactoryTalk View SE Configuration

SI101

3 Days

CEUs 2.1

Course Purpose

Upon completion of this course, students should be able to organize and develop FactoryTalk View Site Edition (SE) applications. This course provides opportunities for students to organize and develop FactoryTalk View SE applications. During class, students will have the opportunity to practice the skills used to create/build graphic displays. Students will learn how to configure alarms and security, trend data, and test their application using FactoryTalk View SE Client. Students will also work with RSLinx Enterprise communications software.

Objectives

After completing this course, students should be able to perform the following tasks:

- Get started with FactoryTalk View SE
- Configure:
 - RSLinx Enterprise communications in a new FactoryTalk View SE application
 - Global objects
 - HMI tag-based alarms
 - FactoryTalk alarms and events
- Create a graphic display and an HMI tag database
- Build an interactive graphic display
- Animate a graphic display
- Use tag placeholders and create a FactoryTalk View SE client
- Create and configure a trend
- Create a derived tag file and an event file
- Configure security

Job Aids Included

FactoryTalk View SE Procedures Guide

ABT-9701SE-TSJ50

Who Should Attend?

System Integrator Programmers who have little or no working experience with developing FactoryTalk View SE local (stand-alone) or network (distributed) applications

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Read wiring diagrams

Curriculum Note:

This course contains many of the lessons in course CCV207 in a consolidated format. Do not take both courses.

➤ Introduction to the Integrated Architecture™ System

(Private Delivery Only)

CIA101

2 Days

CEUs 1.4

Course Purpose

This course will assist students in developing and building a solid foundation of Integrated Architecture and automation system knowledge. Students will learn about and interact with a variety of automation hardware. They will also have an opportunity to use Rockwell Automation software to perform basic system configuration tasks. While performing these tasks, students will gain an understanding of how controllers, drives, motors, networks, and human-machine interface (HMI) products function together within Integrated Architecture.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identify components of the integrated architecture system
- Establish communications in an integrated system
- Program a basic Logix Designer project for an integrated system
- Program with tag-based addressing in an integrated system
- Identify programming languages in an integrated system
- Understand Logix5000 multi-discipline control
- Understand NetLinx-enabled networks
- Understand the visualization development environment of an integrated system
- Understand HMI direct tag referencing in an integrated system

Who Should Attend?

Individuals who:

- Have little or no working experience with automation systems
- Are interested in gaining a broad understanding of automation and the Integrated Architecture System

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

➤ FactoryTalk® ViewPoint Implementation

(Available in Spanish)

VC-FTVIEW-A

3.5 Days

CEUs 2.5

Course Purpose

This course will teach you how to monitor your FactoryTalk View ME projects in a web browser. This course will also show you how to create a new FactoryTalk View ME web application and connect to an existing FactoryTalk View ME web application via Ethernet from a PanelView Plus.

Objectives

After completing this course, students should understand the following topics:

- Verifying client requirements
- Verifying server requirements
- Creating a new ME web application
- Connecting to an existing ME web application
- Troubleshooting common integration problems

Who Should Attend?

Individuals who need to monitor installations from any remote location with Internet access, but without FactoryTalk View ME software, should attend this course.

Prerequisites

- Experience using FactoryTalk View ME software and PanelView Plus programming is required. Specifically, students must know how to create .apa files and download files to PanelView Plus terminals.

➤ OEM: ControlLogix, FactoryTalk View ME, Kinetix 6000, and PowerFlex 40 Fundamentals and Troubleshooting

OEM100

5 Days

CEUs 3.5

Course Purpose

This course provides students with the skills necessary to maintain and troubleshoot: Studio 5000 applications that operate on a ControlLogix-based machine; FactoryTalk View Machine Edition (ME) applications that run on PanelView Plus terminals; Kinetix 6000 motion systems; and PowerFlex 40 drives. Students will have the opportunity to develop and practice these skills by learning basic concepts and terminology used with: ControlLogix hardware, PanelView Plus terminal, Kinetix 6000 systems, and PowerFlex 40 drives; Studio 5000 Logix Designer application; and FactoryTalk View ME application. Students will also learn to diagnose and troubleshoot problems with controller, I/O or other hardware issues.

Objectives

After completing this course, students should be able to perform the following tasks:

- Assign an IP address to a computer
- Connect a computer to a network
- Configure EtherNet/IP addresses
- Download and go online
- Update firmware
- Locate I/O tags and devices
- Locate and edit tag values
- Create and modify project
- Draft basic ladder logic
- Select ladder logic instructions
- Edit ladder logic online
- Program timer, counter, math, compare, and move instructions
- Search for project components
- Force I/O and toggle bits
- Configure produced/consumed data
- Tune a PID loop
- Manage project files
- Configure a trend chart
- Test a ladder diagram
- Troubleshoot digital and analog I/O modules
- Modify application communications
- Download runtime files
- Configure display security, graphic displays, and interactive controls
- Troubleshoot workstation problems
- Interpret motion instructions and indicators
- Modify drive parameters

Who Should Attend?

OEMs who need to maintain and troubleshoot a ControlLogix-based machine, but have little to no working experience with ControlLogix systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Perform basic voltage and current checks
- Read wiring diagrams

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
FactoryTalk View ME and PanelView Plus Procedures Guide	ABT-2711P-TSJ50
EtherNet/IP™ Procedures Guide	ABT-N300-TSJ50
ControlLogix Troubleshooting Guide	ABT-1756-TSJ20

➤ Studio 5000 View Designer and PanelView 5500 Programming

CCV210

3 Days

CEUs 2.1

Course Purpose

This course will teach you, given a computer with Studio 5000 View Designer and a PanelView 5000 terminal, to produce an operational project running on the terminal

Objectives

After completing this course, students should understand the following:

- Prepare a PanelView 5000 terminal for operation
- Create a new project and run it on the terminal
- Create, configure and animate graphic elements on screens
- Configure security of restricting access to certain screens or graphic elements
- Configure alarm screen to monitor and manage alarms from your Studio 5000 Logix Designer project

Who Should Attend?

Individuals who need to create Studio 5000 View Designer project for use on a PanelView 5000 terminal.

Prerequisites

- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course. (Course No CCP146) or basic experience with Logix 5000 tags and architecture.

Technical Requirements

All technology is provided for student use in the classroom by Rockwell Automation. It is not necessary for students to bring any technology with them when attending this course.

Maintain

- ★ Offered as Open Enrollment Course in US
- ★ Offered as Open Enrollment Course in Canada

MOTORS - DC

MOTORS - AC

INSTRUMENTATION

Electric Safety and Lockout
SAF-001 • 1 Day

Electric Safety and Lockout
SAF-001 • 1 Day

Electric Safety and Lockout
SAF-001 • 1 Day

Basic Electricity - DC
EM-101 • 5 Days

Basic Electricity - AC
EM-102 • 10 Days

Electrical Print Reading
EM-103 • 3 Days

Electrical Print Reading
EM-103 • 3 Days

Electrical Print Reading
EM-103 • 3 Days

Test Equipment
EM-104 • 3 Days

Test Equipment
EM-104 • 3 Days

Test Equipment
EM-104 • 3 Days

Instrumentation I
EM-400A • 1 Day

Wiring
EM-105 • 3 Days

Wiring
EM-105 • 3 Days

Instrumentation II
EM-400B • 2 Days

Motor Theory
EM-202 • 3 Days

Motor Theory
EM-202 • 3 Days

Valves and Valve Actuators
EM-401 • 5 Days

AC and DC Generator Theory
EM-203 • 2 Days

Electrical Troubleshooting
and Motor Control
EM-206 • 5 Days

Analytical Measurement
EM-402 • 1 Day

Electrical Troubleshooting
EM-206 • 5 Days

Process Control Fundamentals
EM-403 • 5 Days

★ Offered as Open Enrollment Course in US

★ Offered as Open Enrollment Course in Canada

➤ Basic Electricity — DC

(Private Delivery Only)

EM-101

5 Days

CEUs 3.5

Course Purpose

This course provides information on the basic concepts of DC electricity and magnetism, including electrostatics, basic circuit concepts, and measurement of electrical quantities and associated numerical concepts, Ohm's Law, practical circuits, electromagnetism, and electrical measurements. There are hands-on exercises for device operation and simple circuit construction and analysis.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define electrical terms and basic circuit constructs (resistance, voltage, and current)
- List electrical safety requirements
- Distinguish conductors and insulators
- Explain electrical energy production and how electricity is derived from atoms
- Construct simple circuits
- State, define, and apply Ohm's Law to electrical circuits
- Calculate and measure electrical quantities in simple circuits and electrical power in series and parallel resistive circuits
- Apply Kirchhoff's Law to electrical circuits and scientific notation and prefixes to electrical quantities
- Construct series and parallel circuits, and measure applicable electrical quantities
- Apply the properties of magnetism and electromagnetism to electrical components
- Calculate voltage, current, resistance, and power in voltage dividers
- Describe the properties of conduction in liquids and gasses

Who Should Attend?

Electrical maintenance technicians

Prerequisites

There are no prerequisites for this course

Curriculum Note:

Many of the lessons in this course are consolidated in course EM-101A in a condensed format. Do not take both courses.

➤ Basic AC/DC Concepts

EM-101A

5 Days

CEUs 3.5

Course Purpose

This course provides information on the basic concepts of electricity and magnetism, including basic circuit concepts, and measurement of electrical quantities and associated numerical concepts, Ohm's Law, practical circuits, electromagnetism, and electrical measurements. There are hands-on exercises for device operation and simple circuit construction and analysis.

Objectives

After completing this course, students should be able to perform the following tasks:

- Distinguish conductors and insulators
- Observe electrical safety precautions
- Define electromotive force/voltage, basic electrical laws, frequency, period, and wavelength
- Explain current flow
- Describe the properties of resistance
- Construct series circuits, parallel circuits, and resistive circuits
- Generate sine waves
- Calculate sine wave voltage, current values, and power/resistance in AC circuits
- Observe AC phase relationships
- Use inductance and capacitance in AC circuits

Who Should Attend?

I&C technicians, electricians, and electrical technicians

Prerequisites

There are no prerequisites for this course

Curriculum Note:

This course contains many of the lessons in courses EM-101 and EM-102 in a consolidated five-day format. Do not take all three courses.

➤ Basic Electricity — AC

(Private Delivery Only)

EM-102

10 Days

CEUs 7

Course Purpose

This course provides information on the basic concepts of AC electricity, including AC waveforms, electrical measurements, resistance, inductance, capacitance, impedance, multi-phase circuits, and transformer action. There are extensive hands-on exercises to construct, evaluate, and troubleshoot AC circuits.

Objectives

After completing this course, students should be able to perform the following tasks:

- Differentiate AC components
- Generate sine waves and power for distribution
- Determine peak, average, and RMS values
- Locate peak, average, and RMS values on waveforms
- Apply resistors to AC circuits
- Determine voltage and current relationships in AC circuits and complex reactive circuits
- Determine characteristics of inductors, inductive circuits, capacitors, and capacitive circuits
- Explain voltage and current transients in inductive and capacitive circuits
- Apply transformers to circuits
- Transmit power
- Distribute power
- Determine Delta and Wye transformer and electrical systems

Who Should Attend?

Electrical maintenance technicians

Prerequisites

There are no prerequisites for this course

Curriculum Note:

Many of the lessons in this course are consolidated in course EM-101A in a condensed format. Do not take both courses.

➤ Electrical Print Reading

(Private Delivery Only)

EM-103

3 Days

CEUs 2.1

Course Purpose

This course provides students with the basic understanding of electrical prints and components associated with electrical print reading, and the ability to interpret simple ladder logic diagrams used for PLC programming. There are hands-on exercises for print reading.

Objectives

After completing this course, students should be able to perform the following tasks:

- Distinguish electrical print types and uses
- Recognize print organization and layout
- Interpret print symbology and conventions, block diagrams, loop diagrams, and ladder logic layout
- Outline one-line diagrams
- Analyze circuits and logic circuits
- Read P&ID drawings
- Recognize and diagram ladder logic symbols

Who Should Attend?

Electrical maintenance technicians, but is also used for cross-training of mechanical maintenance technicians

Prerequisites

There are no prerequisites for this course

➤ Test Equipment

(Private Delivery Only)

EM-104

3 Days

CEUs 2.1

Course Purpose

This course provides students with information on the four categories of testing, safety precautions associated with testing, and the use and care of different test equipment to include Doble test sets, megohmmeter function and operation, and various applications for thermography and infrared scanning. There are hands-on exercises for inspection and use of given test equipment.

Objectives

After completing this course, students should be able to perform the following tasks:

- Categorize electrical tests
- Recognize test equipment types
- Interpret ammeter readings
- Use oscilloscopes, megohmmeters, and Doble testers
- Evaluate waveforms with an oscilloscope and infrared images
- Measure insulation resistance
- Perform high potential tests, thermography, and infrared testing
- Apply predictive maintenance basics

Who Should Attend?

Electrical maintenance technicians

Prerequisites

There are no prerequisites for this course

➤ Wiring

(Private Delivery Only)

EM-105

3 Days

CEUs 2.1

Course Purpose

This course provides students with information on the wiring requirements, material identification, and the installation and splicing of wiring. There are hands-on exercises for wiring installation.

Objectives

After completing this course, students should be able to perform the following tasks:

- Describe the electrical characteristics of conductors, semiconductors, and insulators
- Differentiate construction material characteristics
- Select cable jackets
- Recognize cable types and characteristics
- Utilize proper installation methods
- Pull wire and cable
- Splice low and medium voltage wires
- Apply cable and wire terminations
- Install and connect terminal board

Who Should Attend?

Electrical maintenance technicians

Prerequisites

There are no prerequisites for this course

➤ Batteries

(Private Delivery Only)

EM-106

1 Day

CEUs 0.7

Course Purpose

This course provides students with information on the concepts associated with industrial batteries, Universal Power Supplies (UPS), battery and UPS function, battery and UPS design, battery maintenance, storage and transportation, installation and removal, and potential faults.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define battery characteristics
- Distinguish primary and secondary batteries
- List types of lead-acid batteries and battery applications
- Interpret battery system terminology
- Follow standards and code requirements
- Apply charging and discharging methods
- Use “maintenance-free” batteries
- Recognize overcharging
- Prevent thermal runaway

Who Should Attend?

Electrical maintenance technicians

Prerequisites

There are no prerequisites for this course

➤ Conduit Bending

(Private Delivery Only)

EM-108

3 Days

CEUs 2.1

Course Purpose

This course provides students with information on the calculating and making conduit bends. There are hands-on exercises for bending and installing conduit.

Objectives

After completing this course, students should be able to perform the following tasks:

- Distinguish conduit types and functions
- Recognize materials and their uses in conduit application
- Interpret conduit data
- Bend rigid conduit (IMC)
- Use liquid tight flexible metal conduit
- Follow fill and spacing requirements
- Apply conduit cutting methods
- Ream and thread conduit
- Calculate bend radius
- Follow support requirements
- Offset bending

Who Should Attend?

Electrical maintenance technicians

Prerequisites

There are no prerequisites for this course

➤ Industrial Electronics

(Private Delivery Only)

EM-200

5 Days

CEUs 3.5

Course Purpose

This course provides students with information on the function and circuit analysis of power supplies, amplifiers, integrators, comparators, and oscillators. There are hands-on exercises for wiring, and analyzing the various circuits.

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain diode operations and LED operation methods
- Use diodes in circuits
- Compare diode types
- Differentiate NPN and PNP bipolar transistors and rectifier types
- Filter rectified waveforms using capacitive, choke, multiple section, pi, and RC input filters
- Divide voltage using series and parallel voltage dividers
- Use Zener diodes as regulators, current dividers, and opto-electronic devices
- Regulate and multiply voltage
- Apply SCRs to circuits, varistors, and integrated circuits
- Bias and test transistors
- Wire transistor circuits for amplification

Who Should Attend?

Electrical maintenance technicians, electronic technicians, and I&C technicians

Prerequisites

There are no prerequisites for this course

➤ Transformers

(Private Delivery Only)

EM-201

3 Days

CEUs 2.1

Course Purpose

This course provides students with information on the concepts associated with transformers (transformer function, design, maintenance, faults, and inspecting/testing). There are hands-on exercises for transformer wiring and installation.

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain induction and transformer action
- Distinguish transformer types
- Describe transformer components
- Detail three-phase circuits
- Wire single-phase and three-phase configurations
- Interpret nameplate data
- Follow safety precautions
- Change taps
- Size transformers
- Perform maintenance and inspections
- Identify transformer malfunctions
- Troubleshoot and repair transformers

Who Should Attend?

Electrical maintenance technicians

Prerequisites

There are no prerequisites for this course

➤ Motor Theory (Private Delivery Only)

EM-202

3 Days

CEUs 2.1

Course Purpose

This course provides students with information on the principles of operation associated with motors and motor components, including AC/DC theory of operation (torque, pullout torque, and slip).

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain motor theory
- Define motor terminology
- Wire motor connections
- Apply motor control methods
- Test direction and speed controls
- Identify replacement considerations
- Recognize special maintenance requirements
- Perform rotating machinery maintenance and testing
- Troubleshoot and repair

Who Should Attend?

Electrical maintenance technicians

Prerequisites

There are no prerequisites for this course

➤ AC and DC Generator Theory

(Private Delivery Only)

EM-203

2 Days

CEUs 1.4

Course Purpose

This course provides students with information on the concepts associated with generators, generator function, generator design, three phase voltage, and load sharing.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define generator terms
- Explain generator theory
- Describe AC and DC generator construction and operation
- Apply the effects of armature reaction to generator operation
- Share loads between generators
- Differentiate between stationary and rotating armature generators
- Perform generator maintenance

Who Should Attend?

Electrical maintenance technicians

Prerequisites

There are no prerequisites for this course

➤ Motor Control

EM-204

5 Days

CEUs 3.5

Course Purpose

This course provides students with information on the concepts associated with AC and DC motor fundamentals, motor control fundamentals, control of motor starting, and motors and motor controllers. The lessons cover a wide range of topics such as motor enclosures, nameplate data, AC motors, DC motors, magnetic contactors, control circuits, Wye-Delta starters, speed controllers, AC/ DC machine maintenance, and motor control circuit maintenance.

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain AC motor theory
- Describe contacts
- Distinguish relays, contactors, and motor starters
- Identify pilot devices
- Interpret motor control device symbols
- Construct basic, reversing, and advanced motor control circuits
- Troubleshoot acceleration circuits and basic, reversing, time delay, soft-start, and advanced motor control circuits
- Accelerate motors using motor controllers
- Perform maintenance inspections
- Use time delays in motor control circuits

Who Should Attend?

Electrical maintenance technicians

Prerequisites

Understanding of electrical theory and electrical systems

Curriculum Note:

Many of the lessons in this course are consolidated in course EM-206 in a condensed format. Do not take both courses.

➤ DC Cranes and Controls

(Private Delivery Only)

EM-205

3 Days

CEUs 2.1

Course Purpose

This course provides students with information on the function and troubleshooting of DC crane controls.

Objectives

After completing this course, students should be able to perform the following tasks:

- Detail power circuits
- Trace control circuits and reversing-plugging control
- Operate series and shunt motors
- List crane hoist controls
- Describe hoist points 1-5 and off-position dynamic braking
- Troubleshoot hoist direction
- Explain crane lowering and limit switch controls, time limit acceleration, and condenser timing
- Define lowering principles and dynamic lowering
- Identify collector bars and shoes
- Troubleshoot lowering direction and bridge control, trolley control, and bridge/trolley circuits
- Utilize knife switches
- Use voltage drop acceleration

Who Should Attend?

Electrical maintenance technicians

Prerequisites

Understanding of electrical theory and electrical systems

➤ Electrical Troubleshooting and Motor Controls

EM-206

5 Days

CEUs 3.5

Course Purpose

This course provides students with information on the concepts associated with systematic troubleshooting of instrumentation systems. Students will use practical application of troubleshooting techniques in exercise scenarios.

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain troubleshooting philosophy
- Apply basic troubleshooting methods, motor controls fundamentals, and root cause analysis
- Use the 7 step troubleshooting method
- Distinguish contactors, switches, and contacts
- Determine motor controls diagnosis and repair
- Control AC motors
- Inspect rotating AC machinery
- Use customized troubleshooting techniques
- Troubleshoot motor control circuits and intermittent failures

Who Should Attend?

Electrical maintenance technicians

Prerequisites

Understanding of electrical theory and electrical systems

Curriculum Note:

This course contains many of the lessons in courses EM-204 and GEN-003 in a consolidated five-day format. Do not take all three courses.

➤ Basic Digital Circuits

(Private Delivery Only)

EM-303

5 Days

CEUs 3.5

Course Purpose

This course provides students with information on basic digital electronics concepts, gates, circuits, flip-flop based circuits, and troubleshooting techniques. There are hands-on exercises for circuit construction.

Objectives

After completing this course, students should be able to perform the following tasks:

- Use alternative number systems, integrated circuit families, and counters
- Interpret boolean expressions
- Read digital signal diagrams
- Express binary data
- Apply logic gates
- Create truth tables
- Derive logic equations
- Detail flip-flop circuits
- Wire encoders and decoders
- Address registers
- Explain RAM characteristics
- Troubleshoot digital circuits

Who Should Attend?

Electrical maintenance technicians, electronic technicians, or I&C technicians

Prerequisites

Understanding of electrical theory and electrical systems

➤ Instrumentation I

(Private Delivery Only)

EM-400A

1 Day

CEUs 0.7

Course Purpose

This course serves as introductory to provide students with a basic understanding of the fundamentals of measurement. The course will explain the various methods used to measure: pressure, temperature, flow, and pH. Upon completion of this course, students will be able to explain these functions and how they can be used in process control.

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain the characteristics of a process
- Define measurement
- Differentiate direct and inferred measurements
- Determine accuracy and calibration
- Apply pressure, temperature, flow, and pH measurement methods
- Use consistency measurement methods

Who Should Attend?

Electrical maintenance technicians, electronic technicians, or I&C technicians

Prerequisites

Understanding of electrical theory and electrical systems

➤ Instrumentation II

(Private Delivery Only)

EM-400B

2 Days

CEUs 0.7

Course Purpose

This course provides students with fundamental information on the concepts associated with the various measurement instruments used in process control. The lessons cover a wide range of topics such as measurement methods, pressure measurement devices, temperature measurement devices, flow measurement devices, level measurement devices. Upon completion of this course, the participants will be able to explain the function, design, and operation of these instruments and they function in process control.

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain instrument loop basics
- Use temperature, level, flow, pressure, weight and force, and conductivity and pH Devices
- Apply actuators

Who Should Attend?

Instrument technicians

Prerequisites

Understanding of electrical theory and electrical systems

➤ Valves and Valve Actuators

(Private Delivery Only)

EM-401

5 Days

CEUs 3.5

Course Purpose

This course provides students with information on the types of valves and actuator used as control elements, valve components, and valve applications. There are hands-on exercises for equipment setup and evaluation.

Objectives

After completing this course, students should be able to perform the following tasks:

- Describe valve functions and actuator construction
- List valve parts and positioner types and construction
- Explain valve construction
- Differentiate valve types
- List advantages and disadvantages of valve types
- Discuss valve actuators
- Troubleshoot actuators and positioners
- Use position feedback
- Perform process troubleshooting

Who Should Attend?

Electrical maintenance technicians, electronic technicians, or I&C technicians

Prerequisites

Understanding of electrical theory and electrical systems

➤ Analytical Measurement

(Private Delivery Only)

EM-402

1 Day

CEUs 0.7

Course Purpose

This course provides students with information on the concepts associated the operation and calibration of analytical sensors. Upon completion of this course, students will be able to explain the function, and calibration of sensors and instruments for conductivity, pH, ORP (Oxidation Reduction Potential), and selected optical and combustion product measuring equipment.

Objectives

After completing this course, students should be able to perform the following tasks:

- Describe properties of matter and electrodes
- Define electrolytes
- Explain pH definition and properties
- Use pH measurement methods
- Differentiate acids and bases
- Make ORB measurements
- Perform conductivity measurements
- List factors affecting fluid chemistry

Who Should Attend?

Electrical maintenance technicians, electronic technicians, or I&C technicians

Prerequisites

Understanding of electrical theory and electrical systems

➤ Process Control Fundamentals

(Private Delivery Only)

EM-403

5 Days

CEUs 3.5

Course Purpose

This course provides students with information on the fundamentals of process control and PID loop tuning. Lessons include characteristics of process, criteria for loop response, and controller tuning methods. This course introduces advanced control methods including cascade and feed forward control methods. There are extensive hands-on exercises for process measurements, controller setup, and process tuning.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define characteristics of the process
- Differentiate manual versus automatic control
- Use two position control
- Apply proportional control
- Explain integral (reset) control
- Use derivative (rate) control
- Apply proportional plus integral plus derivative control schemes
- Use controller tuning methods
- Apply advanced control methods

Who Should Attend?

Electrical maintenance technicians, electronic technicians, or I&C technicians

Prerequisites

Understanding of electrical theory and electrical systems

➤ Basic Mathematics

(Private Delivery Only)

GEN-001

5 Days

CEUs 3.5

Course Purpose

This course provides students with information on the concepts associated with basic algebra, basic geometry, measurements, and basic trigonometry.

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain numbers and number systems
- Perform whole number operations and algebraic operations
- Calculate fractions and mixed numbers
- Use polynomials, percentages, measurements and conversions, trigonometry functions, and square roots
- Calculate with exponents and bases
- Measure angles and polygons
- Calculate perimeter, area, and volume
- Apply geometry

Who Should Attend?

Mechanical and electrical maintenance technicians

Prerequisites

There are no prerequisites for this course

➤ Industrial Electrical Controls Fundamentals

MFG213

4 Days

CEUs 2.8

Course Purpose

This course provides students with the knowledge and skills required to install, maintain and troubleshoot machine controls. At the completion of this course, students will be able to: define the safety considerations that must be observed when installing, checking, or locking out electrical equipment; define uses and functions of input and output devices, relays, and motors; demonstrate the reading of schematic diagrams and logic; define an open and short condition and perform voltage and current measurements; demonstrate the proper use of the following test equipment in lab to measure voltage, current, resistance and continuity: VOM, DVM, Multi-meters, continuity tester, and amp probe; approximate secondary voltage, secondary current, and primary current of a transformer when given its turns ratio, primary voltage and secondary load; identify the proper wiring configurations of a control transformer's primary current for 240V and 480V operation; and approximate a transformer's maximum primary current for 480V operation, using the nameplate information.

Objectives

After completing this course, students should be able to perform the following tasks:

- Electrical fundamentals and safety
- Input and output devices
- Disconnect devices
- Contactors
- Multimeter use
- Logic devices
- Schematic, logic and ladder diagrams
- Basic machine control systems and build circuits
- Distribution
- Circuit troubleshooting
- Grounded and ungrounded control circuits

Who Should Attend?

Individuals who are responsible for installing, maintaining, and troubleshooting of electromechanical machine controls

Prerequisites

Familiarity with basic electricity

➤ Industrial Electrical Controls Fundamentals

MFG244

1 Day

CEUs 0.7

Course Purpose

This course provides basic electricity knowledge to the novice. Basic electricity theory is explored identifying component operations in energized and de-energized states. The course includes safety fundamentals and safe operation awareness.

Objectives

After completing this course, students should be able to perform the following tasks:

- Fundamental concepts and terms
 - Atoms, charge, valence electrons
 - What is electrical current?
 - Voltage, resistance/impedance
 - Ohm's & Kirchoff's laws
 - Conductors, insulators
 - Semi-conductors
- Sources of electricity
 - DC & AC electricity
 - AC power generations & distribution
 - Electrical power consumption costs
 - Transformers & power supplies
- Wiring devices
 - Switches
 - Terminal strips
 - Connectors
 - Circuit breakers
 - Fuses
 - GFCIs
- Input Devices
 - Sensors
 - Switches
 - Mechanical operators
 - Electronic operators
- Output devices
 - Lamps, pilot lights
 - Solenoids
 - Electromechanical relays
 - Electric motors
 - Disconnect devices
- Use of multimeter
- Arc flash hazards
- Government regulations
 - OSHA
 - NEC
- Personal protective equipment (PPE)

Who Should Attend?

All personnel needing to know basic electricity theory

Prerequisites

There are no prerequisites for this course

➤ Fundamentals of Electricity

MFG244

1 Day

CEUs 0.7

Course Purpose

This course provides basic electricity knowledge to the novice. Basic electricity theory is explored identifying component operations in energized and de-energized states. The course includes safety fundamentals and safe operation awareness.

Objectives

After completing this course, students should be able to perform the following tasks:

- Fundamental concepts and terms
 - Atoms, charge, valence electrons
 - What is electrical current?
 - Voltage, resistance/impedance
 - Ohm's & Kirchoff's laws
 - Conductors, insulators
 - Semi-conductors
- Sources of electricity
 - DC & AC electricity
 - AC power generations & distribution
 - Electrical power consumption costs
 - Transformers & power supplies
- Wiring devices
 - Switches
 - Terminal strips
 - Connectors
 - Circuit breakers
 - Fuses
 - GFCIs
- Input Devices
 - Sensors
 - Switches
 - Mechanical operators
 - Electronic operators
- Output devices
 - Lamps, pilot lights
 - Solenoids
 - Electromechanical relays
 - Electric motors
 - Disconnect devices
- Use of multimeter
- Arc flash hazards
- Government regulations
 - OSHA
 - NEC
- Personal protective equipment (PPE)

Who Should Attend?

All personnel needing to know basic electricity theory

Prerequisites

Understanding of mechanical theory and mechanical systems

Maintain

Basic Mathematics GEN-001 • 5 Days	Scaffolding GEN-002 • 2 Days	System Problem Solving and Troubleshooting GEN-003 • 1 Day	Measurement and Tools MM-101 • 3 Days	Rigging MM-102 • 2 Days	Introduction to Bearings and Lubrication MM-103 • 2 Days	Mechanical Print Reading MM-105 • 3 Days	Combustion MM-106 • 3 Days
Power Transmission - Clutches MM-201 • 1 Day	Power Transmission - Belt Drives MM-202 • 1 Day	Power Transmission - Chain Drives MM-204 • 1 Day	Power Transmission - Gearing MM-205 • 1 Day	Lubrication MM-206 • 3 Days	Bearings MM-207 • 3 Days	Mechanical Crane Inspections MM-208 • 2 Days	Fans, Blowers and Compressors MM-209 • 3 Days
Shaft and Coupling Alignment MM-301 • 5 Days	Pipefitting MM-302 • 5 Days	Seals and Packing MM-303 • 1 Day	Pumps and Pump Repair MM-304 • 3 Days	Hydraulics and Pneumatics MM-400 • 5 Days	Industrial Electricity and Electronics for Mechanics MM-403 • 5 Days	Mechanical Concepts MM-500 • 5 Days	Structural Welding WE-101 • 25 Days
Pipe Welding WE-103 • 25 Days							

LUBRICATION AND BEARINGS	PUMPS	POWER TRANSMISSION	HYDRAULICS AND PNEUMATICS	TROUBLESHOOTING
<p>Introduction to Bearings and Lubrication MM-103 • 2 Days </p>	<p>Introduction to Bearings and Lubrication MM-103 • 2 Days </p>	<p>Introduction to Bearings and Lubrication MM-103 • 2 Days </p>	<p>Mechanical Print Reading MM-105 • 3 Days</p>	<p>Mechanical Print Reading MM-105 • 3 Days</p>
<p>Lubrication MM-206 • 3 Days</p>	<p>Bearings MM-207 • 3 Days</p>	<p>Power Transmission - Clutches MM-201 • 1 Day</p>	<p>Pumps and Pump Repair MM-304 • 3 Days</p>	<p>Electrical Print Reading EM-103 • 3 Days</p>
<p>Bearings MM-207 • 3 Days</p>	<p>Shaft and Coupling Alignment MM-301 • 5 Days </p>	<p>Power Transmission - Belt Drives MM-202 • 1 Day</p>	<p>Hydraulics and Pneumatics MM-400 • 5 Days</p>	<p>System Problem Solving and Troubleshooting GEN-003 • 1 Day</p>
<p>Mechanical Concepts MM-500 • 5 Days </p>	<p>Seals and Packing MM-303 • 1 Day</p>	<p>Power Transmission - Chain Drives MM-204 • 1 Day</p>		
	<p>Pumps and Pump Repair MM-304 • 3 Days</p>	<p>Power Transmission - Gearing MM-205 • 1 Day</p>		
	<p>Mechanical Concepts MM-500 • 5 Days </p>	<p>Bearings MM-207 • 3 Days</p>		
		<p>Shaft and Coupling Alignment MM-301 • 5 Days</p>		
		<p>Mechanical Concepts MM-500 • 5 Days </p>		

➤ Basic Mathematics

GEN-001

5 Days

CEUs 3.5

Course Purpose

This course provides students with information on the concepts associated with basic algebra, basic geometry, measurements, and basic trigonometry.

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain numbers and number systems
- Perform whole number operations and algebraic operations
- Calculate fractions and mixed numbers
- Use polynomials, percentages, measurements and conversions, trigonometry functions, and square roots
- Calculate with exponents and bases
- Measure angles and polygons
- Calculate perimeter, area, and volume
- Apply geometry

Who Should Attend?

Mechanical and electrical
maintenance technicians

Prerequisites

There are no prerequisites for this course

➤ Scaffolding

GEN-002

2 Days

CEUs 1.4

Course Purpose

This course provides students with information on the concepts associated with procedures, precautions, and limitations for safely erecting and/or dismantling fabricated frame scaffolding. There are hands-on exercises for erecting scaffolding.

Objectives

After completing this course, students should be able to perform the following tasks:

- Setup base section
- Build support structure
- Utilize access
- Use fall protection
- Install platform
- Use falling object protection
- Keep it upright
- Avoid electrical hazards
- Discuss case reports

Who Should Attend?

Mechanical maintenance technicians

Prerequisites

There are no prerequisites for this course

➤ System Problem Solving and Troubleshooting

GEN-003

1 Day

CEUs 0.7

Course Purpose

This course provides students with information on the concepts associated with systematic troubleshooting.

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain troubleshooting philosophy
- Use documentation
- Apply the 7 step and 5 step method
- Use, modify, and create, flowcharts
- Effect diagnosis and repair
- List common I&C problems
- Shop and field testing
- Create customized troubleshooting
- Troubleshoot intermittent failures
- Perform root cause analysis
- Utilize cause and effect diagrams
- Explore troubleshooting scenarios

Who Should Attend?

Maintenance technicians

Prerequisites

There are no prerequisites for this course

Curriculum Note:

Many of the lessons in this course are consolidated in course EM-206 in a condensed format. Do not take both courses.

➤ Measurement and Tools

MM-101

3 Days

CEUs 2.1

Course Purpose

This course provides students with information on the proper use of measuring tools to make basic linear and angular measurements, hand tools, and power tools.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define applicable terminology
- Specify accuracy and tolerances
- Utilize standards
- Apply proper vernier scale use and torque techniques
- Use sensors and transducers, dial calipers, micrometers, mechanical indicators, torque wrenches and extensions, hand tools, and portable power tools
- Explain torque theory
- Identify proper torque values

Who Should Attend?

Mechanical technicians

Prerequisites

There are no prerequisites for this course

Curriculum Note:

Many of the lessons in this course are consolidated in course MM-500 in a condensed format. Do not take both courses

➤ Rigging

MM-102

2 Days

CEUs 1.4

Course Purpose

This course provides students with information on the concepts and principles associated with rigging equipment, its use, inspection, planning and proper selection of rigging equipment. There are hands-on exercises used to familiarize students with equipment selection and safety when tasked with rigging a given load.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define rigging terms
- Recognize rigging hazards
- Use wire rope
- Proper sling usage
- Perform sling inspections
- Use hoists properly
- Utilize beans and clamps
- Apply lightning protection
- Use rigging hardware, winches, jacks, rollers, and skids
- Plan and inspect rigging equipment
- Interpret and using hand signals
- Estimate weight

Who Should Attend?

Mechanical technicians

Prerequisites

There are no prerequisites for this course

➤ Introduction to Bearings and Lubrication

MM-103

2 Days

CEUs 1.4

Course Purpose

This course provides students with information on the concepts associated with bearings, bearing function, bearing design, bearing maintenance, installation and removal, expected load and wear patterns, bearing faults, and lubrication. There are hands-on exercises for bearing removal and installation.

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain the basic principles of lubrication and concepts behind forces and stress
- Describe the basic lubricant and the makeup of lubricants
- Understand bearing design
- Define viscosity and use of viscosity terms
- List the basic requirements of any bearing
- Use boundary/thin film lubrication
- Perform various clearance checks on anti-friction and friction bearings
- Apply bearing grease
- Check interference fits
- Recognize lubricant contaminants
- Heat bearings
- Grease bearings
- Cold mount roller bearings

Who Should Attend?

Mechanical technicians

Prerequisites

There are no prerequisites for this course

Curriculum Note:

This course contains many of the lessons in courses MM-206 and MM-207 in a consolidated two-day format. Do not take all three courses.

➤ Mechanical Print Reading

MM-105

3 Days

CEUs 2.1

Course Purpose

This course provides students with an understanding of information found on mechanical drawings and prints, provides the participant with the ability to understand and identify components, and how to identify dimensions of tapered and machined surfaces. There are hands-on exercises for print reading.

Objectives

After completing this course, students should be able to perform the following tasks:

- Interpret title block information, drawing properties, and dimensions
- Recognize line types
- Read screw heads and fastener information
- Identify surface types
- Use numbering systems
- Check revision control
- Locate drawings

Who Should Attend?

Mechanical technicians

Prerequisites

There are no prerequisites for this course

➤ Combustion

MM-106

3 Days

CEUs 2.1

Course Purpose

This course provides students with information on the theory of combustion, associated equipment applied to combustion, safety, and related safety issues associated with combustion. There are hands-on exercises for inspection and identification of equipment.

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain the theory of combustion and coal preheating
- Break down flame structure
- Correlate the relationship between heat, temperature, and specific heat
- Apply the concept of fuel/air ratio
- Measure percent CO₂, O₂, and combustibles
- List general types of burners and the various control valves, blowers, regulators, and switches associated with various burners
- Differentiate the three modes of heat transfer
- State the heat transfer rates

Who Should Attend?

Mechanical technicians

Prerequisites

There are no prerequisites for this course

➤ Power Transmission – Clutches

MM-201

1 Day

CEUs 1.4

Course Purpose

This course provides students with information on the concepts associated with clutches, clutch function, clutch design, clutch maintenance, installation and removal, and basic clutch faults.

Objectives

After completing this course, students should be able to perform the following tasks:

- Describe clutch functions
- Explain torque transfer
- List clutch types
- Identify overrunning clutches
- Understand centrifugal clutches
- Install and inspect clutches
- Perform clutch maintenance
- Apply repair and replacement considerations

Who Should Attend?

Mechanical technicians

Prerequisites

There are no prerequisites for this course

➤ Power Transmission – Belt Drives

MM-202

1 Day

CEUs 0.7

Course Purpose

This course provides students with information on the concepts associated with belt drives, belt drive function, belt drive design, belt drive maintenance, installation and removal, and belt drive faults.

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain pulley functions and positive drives
- Describe torque transfer, flat belts, and v-belts
- List pulley types
- Compare belt drives
- Distinguish variable speed methods
- List advantages and disadvantages of different types of belt arrangements
- Apply belt inspection methods
- Demonstrate alignment checks
- Perform pulley maintenance and belt installation and setup

Who Should Attend?

Mechanical technicians

Prerequisites

There are no prerequisites for this course

Curriculum Note:

Many of the lessons in this course are consolidated in course MM-500 in a condensed format. Do not take both courses.

➤ Power Transmission – Chain Drives

MM-204

1 Day

CEUs 0.7

Course Purpose

This course provides students with information on the concepts associated with chain drives, chain drive function, chain drive design, chain drive maintenance, installation and removal, and chain drive faults.

Objectives

After completing this course, students should be able to perform the following tasks:

- List chain drive functions
- Describe power transfer
- Distinguish chain drive types
- Perform chain drive alignment and inspection
- Install and setup chain drives

Who Should Attend?

Mechanical technicians

Prerequisites

There are no prerequisites for this course

Curriculum Note:

Many of the lessons in this course are consolidated in course MM-500 in a condensed format. Do not take both courses.

➤ Power Transmission – Gearing

MM-205

1 Day

CEUs 0.7

Course Purpose

This course provides students with information on the concepts associated with gears, gear function, gear backlash, gear lubrication, and gear ratios.

Objectives

After completing this course, students should be able to perform the following tasks:

- List gear functions
- Define gear terminology
- Describe gear arrangements and gear backlash
- List gear arrangement advantages and disadvantages
- Explain shaft orientation and power transfer
- Demonstrate inspection methods
- Calculate gear ratios
- Perform lubrication of gears and gear setup and measurement

Who Should Attend?

Mechanical technicians

Prerequisites

There are no prerequisites for this course

Curriculum Note:

Many of the lessons in this course are consolidated in course MM-500 in a condensed format. Do not take both courses.

➤ Lubrication

MM-206

3 Days

CEUs 2.1

Course Purpose

This course provides students with information on the concepts associated with lubrication, lubrication properties, lubrication testing, lubricant contaminants, and gear lubrication.

Objectives

After completing this course, students should be able to perform the following tasks:

- Describe the principle of lubrication
- Explain lubricant characteristics
- Lubricate transmissions, engines, gears, and gearboxes
- Select bearing lubricants
- Apply lubricant application methods
- Perform coupling lubrication and lubricant testing
- Identify equivalent lubricants
- Handle new and used lubricants
- Follow lubrication analysis programs

Who Should Attend?

Mechanical technicians

Prerequisites

There are no prerequisites for this course

Curriculum Note:

Many of the lessons in this course are consolidated in course MM-103 in a condensed format. Do not take both courses.

➤ Bearings

MM-207

3 Days

CEUs 2.1

Course Purpose

This course provides students with information on the concepts associated with bearings, bearing function, bearing design, bearing maintenance, installation and removal, expected load and wear patterns, and bearing faults. There are hands-on exercises for bearing removal and installation.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define force, stress, and friction
- Explain bearing terminology and bearing design
- Describe bearing materials
- Distinguish friction and anti-friction bearings
- Apply lubrication methods and preload considerations
- Perform clearance checks, wear analysis, and failure analysis
- Demonstrate bearing mounting
- Set tapered roller bearings
- Use fixed and float bearings
- Remove roller bearings
- Reduce bearing failures

Who Should Attend?

Mechanical technicians

Prerequisites

There are no prerequisites for this course

Curriculum Note:

Many of the lessons in this course are consolidated in course MM-103 in a condensed format. Do not take both courses.

➤ Mechanical Crane Inspections

MM-208

2 Days

CEUs 1.4

Course Purpose

This course provides students with information on the mechanical inspection of Electrical Overhead Travel (EOT) Cranes.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define EOT crane terms
- List EOT crane hazards
- Operate cranes safely
- Determine inspection frequency
- Perform daily, monthly, and new crane inspections
- Repair EOT Crane
- Use remote control cranes

Who Should Attend?

Mechanical technicians

Prerequisites

Knowledge of Electrical Overhead Travel (EOT) crane operations

➤ Fans, Blowers and Compressors

MM-209

3 Days

CEUs 2.1

Course Purpose

This course provides students with information on the concepts associated with air systems, air system functions, air system design, air system maintenance, installation and removal, and air system faults.

Objectives

After completing this course, students should be able to perform the following tasks:

- List the principles of operation
- Apply fan laws and routine maintenance practices
- Differentiate fan types and operation
- Describe the design of blowers
- Use positive displacement and axial flow blowers
- Perform blower inspection and maintenance
- Define Compressibility
- Distinguish compressor types and operating characteristics
- Perform compressor inspection and maintenance

Who Should Attend?

Mechanical technicians

Prerequisites

There are no prerequisites for this course

➤ Shaft and Coupling Alignment

MM-301

5 Days

CEUs 3.5

Course Purpose

This course provides students with information on the importance of proper alignment and alignment methods, cause of misalignment and how to correct for error such as soft foot and thermal growth using dial indicators, and coupling alignment using dial indicators and lasers where applicable. There are hands-on exercises for shaft and equipment alignments.

Objectives

After completing this course, students should be able to perform the following tasks:

- Recognize symptoms of misalignment
- Identify causes of misalignment
- List effects of misalignment and advantages/disadvantages of alignment methods
- Use alignment tools, alignment methods, dial indicators, and jackshafts
- Identify and correct soft foot
- Perform elevation and horizontal moves
- Recognize and compensate for thermal growth
- Align with multiple feet and couplings

Who Should Attend?

Mechanical technicians

Prerequisites

There are no prerequisites for this course

Curriculum Note:

Many of the lessons in this course are consolidated in course MM-500 in a condensed format. Do not take both courses.

➤ Pipefitting

MM-302

5 Days

CEUs 3.5

Course Purpose

This course provides students with information on the codes and standards, types of piping and associated components, specifications, and fitting and supporting techniques. There are hands-on exercises for bending fitting and installing pipe.

Objectives

After completing this course, students should be able to perform the following tasks:

- Interpret codes and standards
- Define terminology
- Use safe work practices, basic pipefitting tools, welded connections, flanges, and pipe hangers
- Read piping drawings
- Apply bending techniques and tubing joints
- Distinguish metal piping types and tubing versus piping
- Recognize non-metallic piping
- Bend tube
- Make threaded connections
- Prepare and fit joints

Who Should Attend?

Mechanical technicians

Prerequisites

There are no prerequisites for this course

Curriculum Note:

Many of the lessons in this course are consolidated in course MM-500 in a condensed format. Do not take both courses.

➤ Seals and Packing

MM-303

1 Day

CEUs 0.7

Course Purpose

This course provides students with information on identification and installation of packing and mechanical seals and their applications. There are hands-on exercises for removing and installing packing and mechanical seals.

Objectives

After completing this course, students should be able to perform the following tasks:

- Explain the functions of packing
- Describe packing glands
- Perform packing replacement
- Distinguish mechanical seal types
- List advantages and disadvantages of mechanical seals
- Inspect seals and packing
- Troubleshoot causes of seal and packing failure

Who Should Attend?

Mechanical technicians

Prerequisites

Understanding of mechanical theory and mechanical systems

➤ Pumps and Pump Repair

MM-304

3 Days

CEUs 2.1

Course Purpose

This course provides students with information on the concepts associated with pumps and pump application, operation, hazards, troubleshooting and repair common problems, and explains how to draw and label simple pump curves. There are hands-on exercises for inspection and repair of pumps and its associated equipment.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define pump terminology
- Explain centrifugal pump laws
- List rotating equipment and pump hazards
- Explain centrifugal pump and positive displacement pump operation
- Describe centrifugal pump components
- Distinguish pump classifications
- Recognize cavitation and net positive suction head
- Troubleshoot a centrifugal and positive displacement pump
- Perform a pump inspection

Who Should Attend?

Mechanical technicians

Prerequisites

Understanding of mechanical theory and mechanical systems

Curriculum Note:

Many of the lessons in this course are consolidated in course MM-500 in a condensed format. Do not take both courses.

➤ Hydraulics and Pneumatics

MM-400

5 Days

CEUs 3.5

Course Purpose

This course provides students with information on the concepts associated with pneumatics and hydraulic systems, fluid principles, system design, and schematic symbology.

Objectives

After completing this course, students should be able to perform the following tasks:

- List the advantages of hydraulics and pneumatics
- Discuss hydraulic and pneumatic components
- Disassemble, clean, inspect, and reassemble a hydraulic and/or pneumatic control valve
- Operate a hydraulic and/or pneumatic cylinder using a given medium
- Operate multiple hydraulic cylinders using a hydraulic medium
- Operate a pneumatic cylinder or multiple pneumatic cylinders using a pneumatic medium

Who Should Attend?

Mechanical technicians

Prerequisites

Understanding of mechanical theory and mechanical systems

Curriculum Note:

Many of the lessons in this course are consolidated in course MM-500 in a condensed format. Do not take both courses.

➤ Industrial Electricity and Electronics for Mechanics

(Private Delivery Only)

MM-403

5 Days

CEUs 3.5

Course Purpose

This course provides students with information on basic electricity and electronic concepts and devices. There are hands-on exercises for component and circuit operation.

Objectives

After completing this course, students should be able to perform the following tasks:

- Describe electrical basics and 3-phase systems
- Distinguish conductors and insulators
- Explain the properties of magnetism
- Define electromotive force
- Calculate current, resistance and voltage
- Describe the effects of capacitors and inductors on circuits
- Calculate values for resistors, capacitors, and inductors in AC and DC circuits
- Construct AC and DC circuits
- Describe the effects of diodes, transistors, and SCRs on solid-state circuitry
- Connect PLC inputs and outputs
- Interpret PLC program instructions

Who Should Attend?

Mechanical technicians

Prerequisites

Understanding of mechanical theory and mechanical systems

➤ Mechanical Concepts

MM-500

5 Days

CEUs 3.5

Course Purpose

This course provides students with information on the concepts associated with plant maintenance, operation, hazards, troubleshooting and repair common problems. There are hands-on exercises for inspection and repair of equipment associated with this program.

Objectives

After completing this course, students should be able to perform the following tasks:

- List safety precautions
- Use precision measurement tools
- Fasten and torque
- Explain the proper use and maintenance of bearings
- Describe power transmission and Hyd/Pne systems
- Perform belt and chain drive, gear/gearbox, and pump maintenance
- Describe pump construction and operation
- Describe conveyor system maintenance
- Explain fan and blower maintenance
- Perform shaft and coupling alignments

Who Should Attend?

Mechanical technicians

Prerequisites

Understanding of mechanical theory and mechanical systems

Curriculum Note:

This course contains many of the lessons in courses MM-101, MM-103, MM-202, MM-203, MM-204, MM-205, MM-207, MM-301, MM-302, MM-304, and MM-400 in a consolidated five-day format. Do not take all courses.

➤ Structural Welding

WE-101

25 Days

CEUs 17.5

Course Purpose

This course provides students with information on basic welding and welding techniques. There are hands-on exercises and bend test to verify competency.

Objectives

After completing this course, students should be able to perform the following tasks:

- Use fusion welding, resistance welding, filler rods, and electrodes
- Use oxyfuel and arc welding processes, SMAW, GMAW, and GTAW
- Perform different kinds of welds: groove, fillet, plug, slot, spot, and seam
- Use two methods of protecting yourself against the fumes and gases associated with welding
- List personal protective equipment required when welding
- Prep for bend test

Who Should Attend?

Mechanical technicians

Prerequisites

Understanding of mechanical theory and mechanical systems

➤ Pipe Welding

WE-103

25 Days

CEUs 17.5

Course Purpose

This course provides students with information on SMAW pipe welding. There are extensive hands-on exercises for welding.

Objectives

After completing this course, students should be able to perform the following tasks:

- Use fusion welding, resistance welding, filler rods, and electrodes
- Detail oxyfuel and arc welding processes: SMAW, GMAW, and GTAW
- Use different kinds of welds: groove, fillet, plug, slot, spot, and seam
- Apply two methods of protecting yourself against the fumes and gases associated with welding
- Use the personal protective equipment required when welding
- List advantages of welded pipe joints to bolted or screwed connections
- Discuss examples of the uses of preheating and post-heating in pipe welding
- Prep for bend test

Who Should Attend?

Mechanical maintenance technicians

Prerequisites

Understanding of mechanical theory and mechanical systems

UNDERSTAND

PROGRAM OR DESIGN

e-LEARNING

Segmenting an Industrial Ethernet Network
VC-SEGNET-A • (4)
120-Min. Sessions

MAINTAIN OR TROUBLESHOOT

➤ Essentials of Industrial Automation for an IT Professional

CCP810

2 Days

CEUs 1.4

Course Purpose

This course will assist you in building a solid foundation of Industrial Automation and Control Systems (IACS) knowledge. You will learn about and interact with a variety of automation hardware. You will also have an opportunity to use Rockwell Automation software to perform basic system and network tasks. While performing these tasks, you will gain an understanding of how controllers, I/O and HMI products function together on an EtherNet/IP network. This introductory level course will give you a broad understanding of how an IACS leverages the high performance, convenience, and widespread usage of Ethernet networks. After completing this course, you should be able to assess the general network requirements for an IACS communicating on an EtherNet/IP network.

Objectives

After completing this course, students should be able to perform the following tasks:

- Identifying automation devices impacting an EtherNet/IP™ network
- Creating an Ethernet driver using RSLinx® Classic software
- Verifying Ethernet communications using RSLinx Classic software
- Accessing a controller online using Studio 5000 Logix Designer™ software
- Uploading and downloading Studio 5000 Logix Designer projects
- Downloading a FactoryTalk® View Machine Edition (ME) runtime application to a PanelView™ Plus terminal
- Determining the status of an EtherNet/IP device using hardware indicators
- Determining the status of an EtherNet/IP device using Studio 5000 Logix Designer software
- Determining a device configuration in a Studio 5000 Logix Designer project
- Retrieving configuration and performance data using an EtherNet/IP device webpage
- Identifying Industrial Automation and Control System (IACS) traffic on an EtherNet/IP network using a network protocol analyzer

Who Should Attend?

Individuals who have little or no working experience with automation systems and are interested in gaining a broad understanding of industrial automation and control on an EtherNet/IP network should attend this course.

Prerequisites

To successfully complete this course, the following prerequisite is required:

- Ability to perform basic Windows® operating system tasks

➤ EtherNet/IP Configuration and Troubleshooting

CCP183

3 Day

CEUs 2.1

Course Purpose

This course will assist students in developing fundamental knowledge of industrial communications over an EtherNet/IP network. Students will learn basic concepts and learn how to use various tools to assign IP addresses to EtherNet/IP devices. This course prepares students to effectively resolve issues with communications between a controller and the devices it is controlling. Students will troubleshoot EtherNet/IP network media and components, including a Stratix 5700, 8000 and/or 8300 switch. Students will have an opportunity to monitor diagnostic information using web-based technologies and modify web server module data views and tag values.

Objectives

After completing this course, students should be able to perform the following tasks:

- Assign an IP address to a computer
- Ping a module IP address
- Assign IP addresses using:
 - RSLinx classic software and rotary switches
 - BOOTP-DHCP server software
- Isolate an EtherNet/IP network problem
- Diagnose problems with EtherNet/IP modules and network components
- Monitor an EtherNet/IP network using web-enabled technologies

Who Should Attend?

Individuals who are responsible for maintaining Industrial Automation and Control Systems (IACS) networks

Prerequisites

- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix Systems
- Fundamentals course (CCP146) or equivalent experience

Technical Requirements

All technology is provided for student use in the classroom by Rockwell Automation. It is not necessary for students to bring any technology with them when attending this course.

➤ Managing Industrial Networks with CISCO Networking Technologies (Private Delivery Only)

IMINS

5 Days

CEUs 3.5

Course Purpose

Managing Industrial Networks with Cisco® Networking Technologies (IMINS) Version 1.0 is a hands-on lab-based course, which helps students with the foundational skills needed for the management and administration of networked industrial control systems. The IMINS course, developed in conjunction with Rockwell Automation, helps plant administrators, control system engineers, and traditional network engineers understand networking technologies that are needed in today's connected plants and enterprises. This course also helps students prepare for the Cisco Industrial Networking Specialist Certification exam (exam ID 600-601) and qualify for the Cisco Industrial Networking Specialist certification. The goal of this course is to enable students to achieve competency and skills to install, configure, maintain, and troubleshoot industrial network systems while helping to ensure network availability, reliability, and Internet security throughout your company.

Objectives

After completing this course, students should be able to perform the following tasks:

- Describe Cisco Industrial Ethernet (IE) switches, Cisco Connected Grid™ switches and routers, and Rockwell Automation Stratix™ switches
- Interpret designs and drawings, recognize industrial topologies, and access reference materials
- Install industrial network components
- Deploy industrial network components
- Perform basic maintenance tasks
- Troubleshoot network and control issues

Who Should Attend?

IT and operations technology (OT) professionals and control engineers who will be involved with the implementation, operation, and support of networked industrial products and solutions for the manufacturing, process control, and oil and gas industries

Prerequisites

The knowledge and skills that you must have before attending this course include a college degree or non-degreed qualified technician with 2-3 years experience. Also, it is recommended you take the following Cisco Electronic Learning and Training (ELT) courses to achieve a basic understanding of networking and industrial protocols:

- Networking Fundamentals for Industrial Control Systems (INICS)
- Industrial Control Systems Fundamentals for Network Engineers (ICINS)

➤ Essentials of Industrial Ethernet Networks for an OT Professional

CCP182

2 Days

CEUs 1.4

Course Purpose

After completing this course, you should be able to: Demonstrate understanding of basic Ethernet networking skills, terminology and concepts; Apply these skills when performing advanced network specification, configuration and troubleshooting tasks. In this course, you will learn how to verify communications between devices, recognize data transmission types and differentiate between OSI Model Layer 2 and Layer 3 switching functions. You will also identify the routing process, monitor a switch using Device Manager and CLI commands and work with IOS configuration files. This course prepares you to more clearly understand key IT terms and concepts for communicating with other professionals on projects in support of The Connected Enterprise.

Objectives

After completing this course, students should be able to perform the following tasks:

- Interpreting an Ethernet network hardware layout
- Verifying communications between two Ethernet devices
- Interpreting basic data flow of host-to-host Ethernet communications
- Recognizing Ethernet data transmission types
- Recognizing Layer 2 switching functions on an Ethernet network
- Recognizing Ethernet network loop avoidance protocols
- Interpreting the Network Address Translation (NAT) scheme for an Ethernet network
- Accessing Ethernet switch information using CLI commands
- Recognizing Layer 3 switching functions on an Ethernet network
- Copying and removing IOS configuration files on an Ethernet switch

Who Should Attend?

Operations Technology (OT) professionals (such as control engineers) and others responsible for installing, configuring and/or maintaining industrial devices on an Ethernet network should attend this course.

Prerequisites

To successfully complete this course, the following prerequisite is required:

- Ability to perform basic Windows® operating system tasks

➤ Managing Industrial Networks for Manufacturing with Cisco Technologies (IMINS2)

IMINS2

5 Days

CEUs 3.5

(Private Delivery Only)

Course Purpose

Gain the skills you need to successfully implement and troubleshoot the most common industry standard protocols. Our lab-intensive course, Managing Industrial Networks for Manufacturing with Cisco® Technologies (IMINS2), builds on the Managing Industrial Networks with Cisco Networking Technologies (IMINS) course. It teaches students how to deploy best practices used in security and wireless technologies for today's industrial networks. The IMINS2 course caters to plant administrators, control system engineers, and traditional network engineers in the oil and gas, process control, and manufacturing industries who are involved with the convergence of IT and industrial networks. It prepares students for the exam, Managing Industrial Networks for Manufacturing with Cisco Technologies Certification (200-601 IMINS2) and the Cisco Certified Network Associate Industrial (CCNA Industrial) certification. This course is job and role-specific, enabling students to achieve competency and skills to configure, maintain, and troubleshoot industry standard network protocols as well as wireless and security technologies. Learn how to make full use of current infrastructures while developing a converged platform for flexibility to support future business outcomes. IMINS2 exposes students to multiple industrial network technologies in addition to products from Cisco and other industrial suppliers, including Rockwell Automation.

Objectives

After completing this course, students should be able to perform the following tasks:

- Recognize the difference between enterprise and industrial networks
- Understand the functions of the OSI layers and TCP/IP model
- Troubleshoot common issues found in Layers 1, 2, and 3 of the OSI model
- Describe the functions and components of Ethernet and IP protocols
- Configure CIP on Cisco and Stratix managed switches
- Troubleshoot common Ethernet and IP issues
- Describe the functions and components of the PROFINET protocol
- Configure PROFINET protocols on Cisco Industrial Ethernet devices
- Troubleshoot common PROFINET issues
- Identify common network threats and resolutions
- Configure basic security components (access lists and AAA features)
- Configure a wireless network within an industrial environment

Who Should Attend?

This course is designed for IT and operations technology (OT) professionals as well as control engineers involved with the installation, configuration, and troubleshooting of networked industrial products and solutions for the following industries: Manufacturing, Process control, Oil and gas, Other industries as applicable

Prerequisites

Knowledge and skills required:

- College degree, or non-degreeed qualified technician with two– three years' experience in industrial networks
- Familiarity with command-line and web-based interfaces
- Solid understanding of networking and industrial protocols

➤ Segmenting an Industrial Ethernet Network

VC-SEGNET-A

3 Hours

CEUs 0.3

Course Purpose

This course will teach you how to start the transition from industrial Ethernet network designs that use a flat and open infrastructure to ones that are structured, hardened, modular, and future-ready. You will be introduced to the concept of organizing a network as smaller, modular, building blocks that:

- Minimize network sprawl
- Give you a scalable, robust, and future-ready network infrastructure

Once you have defined the building blocks of a network, you will then look at options to segment and manage the required traffic flows of the network. Segmentation techniques will include physical segmentation, VLANs, and Network Address Translation (NAT). Finally, you will make decisions around organizing the IP subnets for the network.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define cell/area zones
- Identify level 3 site operations
- Identify switch requirements
- Decide whether to use NAT
- Decide between physical or VLAN segmentation
- Assign VLANs and subnets to each cell/area zone

Who Should Attend?

Control or network engineers who have to design industrial Ethernet networks should attend this course.

Prerequisites

- To attend this course, you should already have these prerequisite skills and knowledge:
 - Familiarity with the concepts of IP addresses and subnets
 - Working knowledge of common components of an industrial automation system: controllers, drives, I/O, &HMI

SAFETY STANDARDS

PROGRAM OR DESIGN

MAINTAIN OR TROUBLESHOOT

➤ Studio 5000 Logix Designer Level 3: Project Development

CCP143

4 Days

CEUs 2.8

Course Purpose

Given a functional specification for a Logix5000 application, students will be able to develop a project during the course to meet the specification requirements. This course covers tasks common to all controllers that use the Logix5000 control engine or operating system, including ControlLogix, CompactLogix, and SoftLogix™ controllers. This course presents a deeper understanding of project development tasks, such as organizing tasks and routines, organizing controller data, configuring modules, and sharing data. Students will use Producer/Consumer technology to multicast input and output devices, share data between controllers, and control remote I/O.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create and organize a project
- Create periodic and event tasks
- Develop an add-on instruction in ladder diagram
- Organize arrays
- Create a user-defined data type
- Import components
- Enter, edit, and verify ladder logic
- Configure a controller to produce and consume data
- Configure controllers to share data over EtherNet/IP™
- Communicate with a local 1756-I/O module and over an EtherNet/IP network
- Configure a message
- Allocate connections
- Retrieve and set controller status values with GSV/SSV instructions
- Program a BTM instruction
- Handle a major fault
- Manage project files
- Update firmware

Job Aids Included

Studio 5000 Logix Designer and Logix5000 Procedures Guide

ABT-1756-TSJ50

Who Should Attend?

Individuals who need to maintain and troubleshoot Kinetix 6500 motion control systems

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common controller terms and operation through experience or completion of the Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals course (CCP146) or completion of the RSTrainer for ControlLogix Fundamentals computer-based training (9393-RSTCLX)
- Ability to write basic ladder logic with common instructions or through completion of the Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming course (CCP151)

➤ Machine Functional Safety and ISO 13849 System Design: Risk Assessment

VC-MFSISO-01

120 Min.

CEUs 0.2

Course Purpose

This course teaches students to use a structured risk assessment process based on ISO 13849. Students will learn how to identify the hazards of a machine, estimate the level of risk, and choose risk reduction techniques. During the exercises, students will make their decisions using the terms and rating system from ISO 13849. As students work through the process, they will build documentation that they can use throughout the lifecycle of their machines.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define the scope of the risk assessment
- Identify the hazards
- Determine the risk level of each hazard
- Identify potential risk reduction techniques
- Choose risk reduction techniques
- Write a risk assessment report

Who Should Attend?

Design engineers, maintenance managers, or people in health and safety roles

Prerequisites

Experience with the design, development, maintenance, or supervision of industrial automation systems is required

Technology Requirements

A computer and phone

➤ AAdvance Comprehensive System Training

(Private Delivery Only)

PRST9063LD

3 Days

CEUs 2.1

Course Purpose

This course provides a comprehensive overview of AADvance hardware, software, and troubleshooting. Upon successful completion of this course, students should be able to understand how AADvance operates as a fail-safe or fault tolerant controller; understand the configuration limits of the system; examine process I/O requirements and select the appropriate hardware; design and assemble a complete system; use the Workbench to configure and program the system, including communication with external devices; develop functions, function blocks and programs using standard IEC 61131 programming languages; make hardware expansions to an existing system; and isolate faults to the module level by interpreting automatic fault indications.

Objectives

After completing this course, students should be able to perform the following tasks:

- Recognize system architectures
- Identify components
- Install and wire a system
- Develop a program
- Simulate and test a project
- Download and monitor a project
- Create and use functions and function blocks
- Update a running project
- Map a binding between controllers
- Manage version source control
- Protect a project
- Import and export elements
- Archive and restore a project
- Configure OPC communication
- Troubleshoot a system
- Develop a project

Curriculum Note:

Do not take both PRST9063LD and PRST9064LD because they share similar content. If your responsibilities are limited to maintaining and troubleshooting the AADvance system, take this course instead: AADvance Operation, Maintenance, & Troubleshooting (PRST9064LD)

Who Should Attend?

Individuals who are responsible for designing, building, programming, and troubleshooting an AADvance system

Prerequisites

- General knowledge of programmable logic controllers (PLCs)
- Background in industrial electronic control principles and practices

➤ AADvance Operation, Maintenance and Troubleshooting (Private Delivery Only)

PRST9064LD

2 Days

CEUs 1.4

Course Purpose

This course provides an overview of AADvance hardware, software, and troubleshooting. The course consists of a mixture of lecture and hands-on lessons. Upon successful completion of this course, students should be able to understand how AADvance operates as a fail-safe or fault tolerant controller; understand the configuration limits of the system; navigate the workbench; monitor programs; lock/force I/O points; isolate faults to the module level by interpreting automatic fault indications; and hot-replace failed modules without disrupting the systems or process.

Objectives

After completing this course, students should be able to perform the following tasks:

- Recognize system architectures
- Identify components
- Install and wire a system
- Develop a program
- Download and monitor a project
- Update a running project
- Manage version source control
- Troubleshoot a system

Curriculum Note:

Do not take both PRST9063LD and PRST9064LD because they share similar content. If you are responsible for designing, building, or programming an AADvance system take this course instead: AADvance Comprehensive System Training (PRST9063LD)

Who Should Attend?

Individuals responsible for maintaining and troubleshooting the AADvance system

Prerequisites

- General knowledge of programmable logic controllers (PLCs)
- Background in industrial electronic control principles and practices

➤ Safety Relays and Devices Maintenance and Troubleshooting

SAF-COM101

2 Days

CEUs 1.4

Course Purpose

This course will assist students in maintaining and troubleshooting safety relays and devices in relay-based machine functional safety systems. Students will be introduced to safety relays and input and output devices used to configure safety systems according to industry standards for functional safety of machinery. Students will have the opportunity for hands-on experience with Rockwell Automation safety products, including safety relays; opto-electronic presence sensing devices (light curtains and sensors); pressure sensing devices (safety mats); operator interface devices (grip enabling switches and E-stop pushbuttons); electromechanical switches (interlock); and electronic switches (non-contact RFID).

Objectives

After completing this course, students should be able to perform the following tasks:

- Maintain relay-based machine functional safety systems
- Interpret and clear faults:
 - At the safety relay
 - For E-stop pushbuttons and grip enabling switches
 - For interlock and non-contact switches
 - For light curtains and safety sensors
 - For safety mats
 - For safety outputs
 - For wiring in safety systems

Who Should Attend?

Individuals who maintain and troubleshoot electric circuits or machine systems and need to learn more about how to apply their skills to relay-based machine functional safety systems

Prerequisites

Experience

- Interpreting industrial electrical circuit schematics
- Maintaining industrial electrical circuits or machine systems

➤ GuardLogix® Application Development

SAF-LOG101

2 Days

CEUs 1.4

Course Purpose

Upon completion of this course, students will be able to create a Logix Designer project for a GuardLogix system and maintain the system. Students will have the opportunity to develop and practice these skills by: adding and configuring CompactBlock Guard I/O safety modules; creating and configuring a GuardLogix project; generating safety signatures and lock/unlock a GuardLogix controller; and programming safety instructions.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a new GuardLogix project using the Logix Designer application
- Configure CompactBlock Guard I/O safety modules for a GuardLogix project using the Logix Designer application
- Get CompactBlock Guard I/O point status information via explicit messaging using the Logix Designer application
- Configure a GuardLogix controller to produce and consume safety data over EtherNet/IP
- Configure GuardLogix controller safety option
- Program a dual-channel input stop instruction and dual-channel input stop with test and mute instruction
- Program a configurable redundant output instruction
- Program a five position mode selector instruction
- Program a safety mat instruction

Who Should Attend?

Individuals who need to develop Logix Designer projects for GuardLogix controllers

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 3: Project Development course (CCP143) and GuardLogix Fundamentals and Troubleshooting course (SAF -LOG103)
- General experience with industrial controls

➤ GuardLogix® Fundamentals and Troubleshooting

SAF-LOG103

1 Day

CEUs 0.7

Course Purpose

This course will assist students in developing and building a solid foundation with a fundamental knowledge of a GuardLogix system. Upon completion of this course, students should be able to efficiently troubleshoot a previously operational GuardLogix system. Students will have the opportunity to develop and practice these skills by learning basic GuardLogix concepts and terminology and troubleshooting a GuardLogix project.

Objectives

After completing this course, students should be able to perform the following tasks:

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 1: ControlLogix Systems Fundamentals course (CCP146) and Studio 5000 Logix Designer Level 2: ControlLogix Maintenance and Troubleshooting course (CCP153) or equivalent experience with Logix Designer application
- General experience with industrial controls

Who Should Attend?

Individuals who need to monitor and troubleshoot Logix Designer projects and hardware for GuardLogix controllers

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the Studio 5000 Logix Designer Level 3: Project Development course (CCP143) and GuardLogix Fundamentals and Troubleshooting course (SAF -LOG103)
- General experience with industrial controls

➤ NFPA 70E 2015—Arc Flash Awareness

SAF-SFT10615

1 Day

CEUs 0.7

Course Purpose

The purpose of this course is to provide the student with an overall understanding of the current requirements of NFPA 70E Standard for Electrical Safety in the Workplace. A complete review of the standard will be provided, along with a review of the tables used to determine the limited and restricted approach boundaries and tables and calculation methods used to determine the arc flash boundary and for determining proper personal protective equipment (PPE).

Objectives

After completing this course, students should be able to perform the following tasks:

- OSHA final rule
 - Arc flash boundary and arc rating
- Arc flash hazards, statistics, and considerations
 - Electrically safe work condition
 - Incident energy
- Protecting the electrical worker
 - Overcurrent protective devices
 - Safety-related work practices
 - Shock protection (limited and restricted approach) boundaries
 - Electrical safety program
 - Qualified person
 - OSHA general duty clause
 - OSHA 29 CFR 1910 Subpart S requirements
 - Arc flash calculations overview (NFPA 70E 2015)
 - PPE selection per Article 130 tables
 - NFPA 70E 2015 requirements
 - Arc flash boundary calculation
 - 2014 NEC Article 110.16 Arc Flash Hazard Warning
 - Introduction to PPE selection based on incident energy calculations
- Electrical safety terminology

Job Aid Included

NFPA 70E: Standard for Electrical Safety in the Workplace®, 2015 Edition

Who Should Attend?

Individuals that require access to or will be exposed to the work area designated by the arc flash or limited approach boundaries

Prerequisites

- Familiarity with basic electricity
 - Proficiency in student's respective classification
- OR
- Enrolled in an up-grader or apprentice program

➤ NFPA 70E 2015—Electrical Safety and Arc Flash Compliance

SAF-SFT11215

2 Days

CEUs 1.4

Course Purpose

The purpose of this course is to provide the student with an overall understanding of the current requirements of NFPA 70E Standard for Electrical Safety in the Workplace. A complete review of the standard will be provided, along with a review of the tables used to determine the limited and restricted approach boundaries and tables and calculation methods used to determine the arc flash boundary and for determining proper personal protective equipment (PPE).

Objectives

After completing this course, students should be able to perform the following tasks:

- Arc flash ruling
 - Using Article 130 tables
 - Based on incident energy calculations
- Arc flash hazards
 - Facts, statistics, and requirements
 - Thermal intensity, pressure, auditory, projectile and inhalation
- Protecting the electrical worker
 - Company/electrical safety programs and enforcement
 - OSHA general industry regulations
 - OSHA 29 CFR 1910.132, CFR 1910.333, and CFR 1910.335
- Applicable standards
 - Electrically safe work conditions
 - Qualified person
 - 2014 NEC Article 110.16 Flash Protection Labeling
 - NFPA 70E 2015 labeling
- Approach boundary terms
 - Arc flash, limited approach, and restricted approach boundary
- Energized electrical work permit
- PPE selection
 - Arc flash calculations (NFPA 70E)
 - Short-circuit current
 - Power in the arc
 - Arc flash boundary (two methods)
 - Arc in open air incident energy
 - Arc in a cubic box incident energy
 - Calculation limitations
 - Intro to IEEE 1584 methodology
 - IEEE 1584 Arcing Current
 - IEEE 1584 Incident Energy
 - IEEE 1584 Curable Burn Distance
 - Other topics
 - Maintenance
 - Mitigation
 - A turnkey solution
 - Arc flash study benefits
 - Typical third-party vendor arc flash study
 - Overcurrent protective devices
 - Trip coordination

Who Should Attend?

Individuals who:

- Are responsible for ensuring compliance with, developing training on, or supervising employees who are required to work in accordance with NFPA 70E 2015
- Will be exposed to work areas designated by the approach boundaries

Prerequisites

- Familiarity with basic electricity
 - Proficiency in student's respective classification
- OR
- Enrolled in an up-grader or apprentice program

Job Aid Included

NFPA 70E: Standard for Electrical Safety in the Workplace®, 2015 Edition

➤ 2014 National Electrical Code® (NEC®): Update Awareness

SAF-SFT2014A

2 Days

CEUs 1.4

Course Purpose

This course builds on a student's working knowledge of the National Electrical Code and provides a detailed review of the 2014 NEC changes.

Objectives

After completing this course, students should be able to identify changes in the following chapters of the 2014 National Electrical Code:

- Chapter 1 – Article 100
- Chapter 2 – Article 200
- Chapter 3 – Article 300
- Chapter 4 – Article 400
- Chapter 5 – Article 500
- Chapter 6 – Article 600
- Chapter 7 – Article 700
- Chapter 8 – Article 800

Job Aid Included

2014 NEC Paperback edition

Who Should Attend?

Electricians and other individuals working with electrical equipment or enrolled in an up-grader or apprentice program

Prerequisites

- Familiarity with fundamentals of electricity
- A working knowledge of NEC

➤ 2014 National Electrical Code® (NEC®): Comprehensive Awareness

SAF-SFT2014C

4 Days

CEUs 2.8

Course Purpose

This course builds on a student's working knowledge of the National Electric Code and provides a detailed review of the 2014 NEC changes.

Objectives

Review of the NFPA 70 NEC for 2014 will follow the following agenda:

- General Requirements Art. 90-240
- Grounding Vs. Bonding Art. 250
- Wiring Methods Art. 300-392
- Equipment for General Use Art. 400-450
- Special Occupancies Art. 500-590
- Special Equipment Art. 600-702
- Limited Energy and Communication Systems Art. 725-820

Job Aid Included

2014 NEC Paperback edition

Who Should Attend?

Electricians and other individuals working with electrical equipment or enrolled in an up-grader or apprentice program

Prerequisites

Familiarity with fundamentals of electricity

➤ Functional Safety for Machinery Technician Certification (TÜV Rheinland)

SAF-TUV0T

2 Days

CEUs 1.4

Course Purpose

The standards regarding functional safety and relevant laws and directives demand that people and organizations performing responsible (accountable) tasks during relevant life cycle phases of a machine must achieve and prove required competencies. In this training, students will learn how the current standards dictate the selection, assembly, installation, validation, and maintenance of safety devices and components to reduce hazards from machinery and ensure the safety of people and the environment. Practical examples will demonstrate possibilities regarding machine protection. This training will also cover safety topics, such as: redundancy, testing, distance calculations, assigning required level of risk reduction as PL, monitoring moveable guard positions, and fault avoidance for relevant life cycle phases. After completing this course, students should understand and be able to use ISO 12100, IEC 60204-1 and other relevant machine functional safety standards. Students who want Functional Safety for Machinery Technician Certification (TÜV Rheinland) must meet all eligibility requirements and pass the exam scheduled at the end of the second day.

Objectives

After completing this course, students should be able to identify

- Understanding the Functional Safety for Machinery Technician Certification (TÜV Rheinland)
- Defining Legal Guidelines and Standards
- Defining Risk Analysis and Processes (ISO 12100:2010)
- Defining Basic Electrical Safety Principles (IEC 60204-1)
- Defining Basic Safety Principles
- Defining Machine Guarding Principles
- Identifying Safety Functions
- Identifying Safety Devices
- Identifying Circuits, Schematics, and Examples
- Defining New Standards Regarding Safety of Machinery
- Evaluating Machine Safety Using a Practical Example

Who Should Attend?

Machine technicians, application engineers, safety specialists and those responsible for repairing and maintaining machine safety should attend this course.

Prerequisites

Required:

- Minimum of 1 year experience working on industrial machinery
- A completed and approved eligibility form to receive certification (see details in the next section)

Recommended: Basic working knowledge of electrical and electronic control functions for machinery

Recommended: Awareness of basic safety principles

➤ Functional Safety For Machinery Introduction

SAF-TUV1

3 Days

CEUs 2.1

Course Purpose

This is an introduction to the Rockwell Automation/TÜV Rheinland certification course in functional safety for machinery. This course will define the design and proof requirements for functional safety of machines, according to current standards and guidelines. Practical examples will demonstrate possible techniques for machine guarding and protection. This course will introduce organizational measures that can be instituted to protect employees and equipment. The organizational measures include quality assurance techniques and documentation for life-cycle design and validation. After completing this course, students should understand how safety devices and components are assembled and applied to reduce hazards from machinery so the necessary safety for people and the environment is achieved.

Objectives

After completing this course, students should be knowledgeable about the following topics and tasks:

- Understand the Functional Safety for Machinery Certification (TÜV Rheinland)
- Define:
 - European and OSHA guidelines and requirements
 - Risk analysis and processes (ISO 12100:2010)
 - ISO 13894-1, ISO 13849-1/2, and IEC 62061
 - New standards regarding safety of machinery
 - Basic electrical safety principles (IEC 60204-1)
- Identify:
 - Safety devices
 - Safety functions of machines
 - Circuits, schematics, and examples
- Perform ISO 13849/IEC 62061 calculations

Who Should Attend?

Application engineers, system integrators, developers, safety specialists, and authorized experts in machinery

Prerequisites

It is highly recommended that training participants have professional experience in the field of Functional Safety or have attended another introduction course on Functional Safety

➤ Functional Safety For Machinery Engineer Certification (TÜV RHEINLAND)

SAF-TUV2

4 Days*

CEUs 2.1

Course Purpose

In this course, students will learn how current standards dictate the design and proof of functional safety for machines. The participant will learn how safety devices and components are assembled and applied to reduce hazards from machinery so the necessary safety for people and environment is achieved. Practical examples will demonstrate possibilities regarding machine protection. In addition to the technical requirements, students will learn about organizational measures, quality assurance techniques, and documentation for lifecycle design and validation. After completing this course, students should understand and be able to use IEC 60204-1, IEC 62061, ISO 12100, ISO 13849-1, -2, and other relevant machine functional safety standards. The exam is optional for students who would like to attend the training, but do not want certification, are assembled and applied to reduce hazards from machinery so the necessary safety for people and the environment is achieved.

Objectives

After completing this course, students should be knowledgeable about the following topics and tasks:

- Understand the Functional Safety for Machinery Engineer Certification (TÜV Rheinland)
- Define:
 - Legal guidelines and standards
 - Risk analysis and processes (ISO 12100:2010)
 - Basic electrical safety principles (IEC 60204-1)
 - New standards regarding safety of machinery
 - ISO 13849-1, ISO 13849-2, and IEC 62061
- Identify:
 - Safety devices
 - Safety functions of machines
 - Circuits, schematics, and examples
- Perform ISO 13849/IEC 62061 calculations

* additional 0.5 days for exam

Who Should Attend?

Application engineers, system integrators, developers, safety specialists, and authorized experts in machinery

Prerequisites

Recommended completion of the Functional Safety for Machinery Introduction course (SAF-TUV1), but not mandatory

A completed and approved Functional Safety Technician eligibility form from TÜV Rheinland is required for admittance to the exam

Exam And Eligibility Requirements for Tüv Functional Safety Engineer

The following requirements must be met in order to receive the TÜV Functional Safety Engineer certificate:

- A completed and approved eligibility form from TÜV Rheinland proving::
 - Minimum of 3-5 years experience in the field of Functional Safety
 - University engineering degree (master's or bachelor's) or equivalent engineer
- Completion of eligibility form from Rockwell Automation/TÜV Rheinland
- A passing grade of 70% or higher on Functional Safety for Machinery Engineer Certification (TÜV Rheinland) exam

➤ Lockout Tagout

VC-LOTO-A

180 Min

CEUs 0.3

Course Purpose

This training expose students to the lockout-tagout processes and procedures. Students will also become familiar with the regulation's intent, the company's policy on lockout, and how each applies to them and their job function is customized with pictures of the actual equipment in the facility and includes specific tasks that the authorized employees will encounter on a routine basis including a hands-on lockout demonstration guided by our lockout expert.

Objectives

After completing this course, students should be knowledgeable about the following topics and tasks:

- Explain the goals and benefits of lockout-tagout procedures
- Instruction on how to use the lockout-tagout procedures that have been implemented as part of the client's program

Who Should Attend?

This course is recommended for all employees when a new system is put in place, as an annual training requirement, or for newly hired.

Prerequisites

Experience with the design, development, maintenance, or supervision of industrial automation systems is required

Technology Requirements

A computer and phone are required. For minimum computer requirements for the virtual classroom tool, please visit:

<http://support.webex.com/support/system-requirements.html>

➤ NFPA 70E 2015—Arc Flash Awareness

VC-SFT10615-A

(4) 90-Min. Sessions CEUs 0.15 each

Course Purpose

This course will teach students to assess arc flash hazards and act to mitigate them by selecting appropriate PPE and determining shock protection and arc flash boundaries. Students will learn how to use NFPA 70E 2015 and approach boundary calculation methods to determine approach boundaries. This course provides some of the key requirements necessary to become a “qualified” person as defined in OSHA 1910.269, 332, 333, and NFPA 70E, such as: determining approach distances; being capable of using special precautionary techniques, PPE, insulating and shielding materials, and insulated tools; receiving safety training to recognize and avoid hazards.

Objectives

After completing this course, students should be able to perform the following tasks:

- Determine appropriate PPE
- Determine thermal and shock boundaries
- Perform bolted fault arc flash calculations
- Perform arc fault calculations

Who Should Attend?

Individuals required to work in accordance with NFPA 70E or who will be exposed to work areas designated by an arc flash boundary

Prerequisites

- Experience distinguishing exposed live parts from other parts of electrical equipment
- Determining nominal system voltage of exposed live parts
- Skills and knowledge related to the construction and operation of electrical

Technical Requirements

- A computer and phone
- A calculator must be available for Session 2
- A scientific calculator must be available for Session 3 and Session 4

Students can use the calculator found in Microsoft Windows>Programs>Accessories for all sessions.

UNDERSTAND

SAFETY STANDARDS

PROGRAM OR DESIGN

Available
in Spanish

MAINTAIN OR TROUBLESHOOT

➤ Vibration Analysis: Level I

VC-FTVIEW-A

3.5 Days

CEUs 2.5

Course Purpose

The fundamental information necessary to implement and operate a successful predictive maintenance program is presented in this seminar. Vibration basics and the relationship between vibration and machinery condition are reviewed. Proven techniques for specifying meaningful overall and spectrum band alarm limits for a wide variety of machinery are presented. The material in this course is applicable to all vendors' vibration data collection or analysis equipment. Case histories are used extensively throughout the course to emphasize the practical application of the material. An optional certification test is administered during the last half day of this course.

Objectives

After completing this course, students should understand the following topics:

- Characteristics of vibration and review of severity charts
- Relate time waveform and vibration frequency
- Digital vs. analog overall vibration measurement
- Vibration transducer overview and selection criteria
- Role of spike energy, HFD, and shock pulse and alarm levels
- Vibration signature analysis to diagnose machine problems
- How to track rolling element bearing health
- Methods for specifying spectral alarm band levels and frequencies
- Common pitfalls in vibration measurements

Who Should Attend?

- Mechanics, technicians, engineers, or analysts involved in the maintenance or operation of plant machinery

Prerequisites

- 6 months or more of field experience
- Completion of the Vibration Analysis Fundamentals (EK-ICM101), or similar, course

➤ Machine Functional Safety and ISO 13849 System Design: Risk Assessment

VC-MFSISO-A

120 Min.

CEUs 0.2

Course Purpose

This course teaches students to use a structured risk assessment process based on ISO 13849. Students will learn how to identify the hazards of a machine, estimate the level of risk, and choose risk reduction techniques. During the exercises, students will make their decisions using the terms and rating system from ISO 13849. As students work through the process, they will build documentation that they can use throughout the lifecycle of their machines.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define the scope of the risk assessment
- Identify the hazards
- Determine the risk level of each hazard
- Identify potential risk reduction techniques
- Choose risk reduction techniques
- Write a risk assessment report

Who Should Attend?

Design engineers, maintenance managers, or people in health and safety roles

Prerequisites

Experience with the design, development, maintenance, or supervision of industrial automation systems is required

Technology Requirements

A computer and phone

➤ NFPA 70E 2015—Arc Flash Awareness

VC-SFT10615-A

(4) 90-Min. Sessions CEUs 0.15 each

Course Purpose

This course will teach students to assess arc flash hazards and act to mitigate them by selecting appropriate PPE and determining shock protection and arc flash boundaries. Students will learn how to use NFPA 70E 2015 and approach boundary calculation methods to determine approach boundaries. This course provides some of the key requirements necessary to become a “qualified” person as defined in OSHA 1910.269, 332, 333, and NFPA 70E, such as: determining approach distances; being capable of using special precautionary techniques, PPE, insulating and shielding materials, and insulated tools; receiving safety training to recognize and avoid hazards.

Objectives

After completing this course, students should be able to perform the following tasks:

- Determine appropriate PPE
- Determine thermal and shock boundaries
- Perform bolted fault arc flash calculations
- Perform arc fault calculations

Who Should Attend?

Individuals required to work in accordance with NFPA 70E or who will be exposed to work areas designated by an arc flash boundary

Prerequisites

- Experience distinguishing exposed live parts from other parts of electrical equipment
- Determining nominal system voltage of exposed live parts
- Skills and knowledge related to the construction and operation of electrical

Technical Requirements

- A computer and phone
- A calculator must be available for Session 2
- A scientific calculator must be available for Session 3 and Session 4

Students can use the calculator found in Microsoft Windows>Programs>Accessories for all sessions.

➤ Ladder Logic Basics with CompactLogix Starter Workstation

VC-LLB-B

(5) 120-Min. Sessions

CEUs 1.0

Course Purpose

This course will teach students how to write and test basic ladder logic code and how to employ common programming strategies and best practices. Students will learn how to select and program bit, timer, counter, compare, and move instructions. Examples and labs will use Studio 5000 Logix Designer and a CompactLogix controller; however, the general ladder logic concepts covered in this course are applicable to most common programmable controllers.

Objectives

After completing this course, students should be able to perform the following tasks:

- Review basic logic flow
- Convert scenarios to if – then statements
- Convert if – then statements to simple rungs
- Enter ladder logic into software
- Download a project
- Monitor the ladder logic
- Tie the alias to an existing address
- Apply bit instructions and common ladder logic strategies
- Select a class of instruction categories
- Select and integrate timers and counters
- Select and integrate compare and move instructions
- Combine compare with move instructions

Who Should Attend?

Beginning programmers or individuals who are required to edit ladder logic

Prerequisites

A general knowledge of automation, including the general purpose of a controller, data, and I/O; and the purpose of common devices like push buttons, pilot lights, limit switches, relays, contractors, and solenoids is required

Technical Requirements

- A computer and phone
- Studio 5000 Logix Designer (version 21) must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.
- CompactLogix starter workstation (shipped prior to class)

➤ Machine-Level Design Optimization: Drive and Motor Selection

VC-MLDO-A

90 Min.

CEUs 0.15

Course Purpose

This course covers best practices for architecting control solutions for machines. The instructor will show students how to size and select drives and motors and then they will practice these tasks with an example application. The design tools and best practices covered in the course aim to optimize and reduce build time with machine-level design.

Objectives

After completing this course, students should be able to perform the following tasks:

- Configure a motion profile, a mechanism, and transmissions
- Select a motor and drive

Who Should Attend?

Control engineers and OEMs who design machine-level control applications

Prerequisites

There are no prerequisites for this course; however, experience with designing machine-level control applications is helpful

Technical Requirements

- A computer and phone
- Motion Analyzer software, version 6.1, must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

➤ Point I/O Implementation

VC-PIO-A

120 Min.

CEUs 0.2

Course Purpose

This course will teach students how to implement a POINT I/O system from determining the quantity and type of I/O needed to testing your system. This course will also show students how to calculate power requirements and decide whether an expansion power supply will be needed. Students will also add and configure an Ethernet adapter and I/O modules in a Studio 5000 Logix Designer project.

Objectives

After completing this course, students should be able to perform the following tasks:

- Size a POINT I/O control system
- Set the EtherNet/IP address of an Ethernet adapter
- Configure POINT I/O control system components in a Studio 5000 Logix Designer project
- Test POINT I/O control system components

Who Should Attend?

Control engineers who design and develop control applications and who will be working with POINT I/O system components over an EtherNet/IP™ network

Prerequisites

- Studio 5000 Logix Designer experience or one of the following courses:
 - Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting (CCP299)
 - Studio 5000 Logix Designer Level 1: CompactLogix Fundamentals and Troubleshooting (CCP298)
- Knowledge of Ethernet fundamentals
- Knowledge of safe electrical practices
- Knowledge of electrical principles such as voltage, current, and power

Technical Requirements

- A computer and phone
- The Studio 5000 Logix Designer application (version 21) must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

➤ PowerFlex 523/525 Drives with PowerFlex 525 Drive Kit: Communications and Programming

VC-PF523P-A

(2) 90-Min Sessions CEUs 0.3

Course Purpose

After completing this course, students should be able to program drive parameters for a drive application. This course will teach students how to create a custom parameter group based upon drive applications. Throughout this course, the instructor will cover a range of topics from establishing communications with a PowerFlex 523/525 drive via a USB connection and EtherNet/IP network to testing parameters of a PowerFlex 523/525 drive using the HIM.

Objectives

After completing this course, students should be able to perform the following tasks:

- Establish communications with a PowerFlex 523/525 drive via a USB connection
- Establish communications with a PowerFlex 525 drive via an EtherNet/IP network
- Configure a PowerFlex 523/525 drive using the Startup Wizard in Connected
- Components Workbench™ software
- Create a CustomView parameter group
- Edit and test parameters using the HIM

Who Should Attend?

Individuals who have drive programming experience but are new to PowerFlex component-class drives

Prerequisites

- Knowledge of AC/DC drive fundamentals and drives programming experience
- Basic working knowledge of safe electrical practices including, but not limited to:
 - Understanding electricity, how it works, and the dangers involved in working with electricity
 - Identifying hazardous conditions
 - Adhering to all safety regulations

Technical Requirements

- PowerFlex 525 drive kit (shipped prior to class)
- A computer and phone
- Connected Components Workbench software must be installed and activated. The virtual classroom invitation will provide details on how to obtain a temporary installation of the software if students do not have it.

➤ PowerFlex 755 Floor-Mounted Drives: Pre-Installation Planning

VC-PF755H-A

120 Min.

CEUs 0.2

Course Purpose

This course will help students plan for the successful installation of PowerFlex 755 floor-mounted, frame 8 and larger (300 Hp (200 kW) and above) drives. Students will explore common drive pre-installation topics including specific wiring, mounting, fusing, and option card installation considerations for floor-mounted PowerFlex 755 units. During this course, students will use a variety of available technical documents and tools to help them prepare for installation situations unique to these drives.

Objectives

After completing this course, students should be able to perform the following tasks:

- Interpret and verify floor-mounted drive catalog numbers
- Prepare for frame 8 and larger drive mounting
- Verify drive option card locations
- Plan for floor-mounted drive
- Fusing and wiring
- Plan floor-mounted drive integration with a motor control center

Who Should Attend?

Individuals responsible for installing Frame 8 and larger PowerFlex 755 drives

Prerequisites

- Knowledge of safe electrical practices
- Prior experience working with AC drives
- Experience with wall-mounted (frame 1...7) PowerFlex 750-series drives is helpful, but not required

Technical Requirements

A computer and phone

➤ Ladder Logic Basics without CompactLogix Hardware VC-LLBWO-A

120 Min

CEUs 1.0

Course Purpose

This course will teach you how to write and test basic ladder logic code and how to employ common programming strategies and best practices. You will also learn how to select and program bit, timer, counter, compare, and move instructions. Examples and labs will use the Studio 5000 Logix Designer® application and RSLogix™ Emulate 5000 simulation software. Note: There is no hardware provided for this course; however, the general ladder logic concepts covered in this course are applicable to most common programmable controllers and will be simulated using RSLogix Emulate 5000 simulation software.

Objectives

After completing this course, students should be able to perform the following tasks:

- Ladder Logic Basics: If-Then Statements
- Ladder Logic Basics: Ladder Logic Verification
- Ladder Logic Basics: Common Strategies and Best Practices
- Ladder Logic Basics: Timers and Counters
- Ladder Logic Basics: Compare and Move Instructions

Characteristic	Minimum	Recommended
Processor	Pentium 4	Intel Core i5
Speed	2.8 GHz	2.8GHz
RAM Memmory	2 GB	8 GB
Hard Disk Space - Free	16 GB	20 GB
Graphic Device	DirectX 9, with WDDM 1.0 or higher drive	DirectX 9, with WDDM 1.0 or higher drive

Note: The Logix Designer application is currently not supported on Windows® 8 operating systems.

Who Should Attend?

Beginning programmers or individuals who are required to edit ladder logic should attend this course

Prerequisites

- A general knowledge of automation, including the general purpose of a controller, data, and I/O; and the purpose of common devices like pushbuttons, pilot lights, limit switches, relays, contactors, and solenoids is required.

Technical Requirements

- A computer and phone are required. For minimum computer requirements for the virtual classroom tool, please visit: <http://support.webex.com/support/system-requirements.html>
- RSLogix Emulate 5000 software, version 21.
- Studio 5000 Logix Designer software, version 21, must be installed and activated.
 - If you don't have the software, your virtual classroom invitation will provide details on how to obtain a temporary installation.

➤ Segmenting an Industrial Ethernet Network

VC-SEGNET-A

3 Hours

CEUs 0.3

Course Purpose

This course will teach you how to start the transition from industrial Ethernet network designs that use a flat and open infrastructure to ones that are structured, hardened, modular, and future-ready. You will be introduced to the concept of organizing a network as smaller, modular, building blocks that:

- Minimize network sprawl
- Give you a scalable, robust, and future-ready network infrastructure

Once you have defined the building blocks of a network, you will then look at options to segment and manage the required traffic flows of the network. Segmentation techniques will include physical segmentation, VLANs, and Network Address Translation (NAT). Finally, you will make decisions around organizing the IP subnets for the network.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define cell/area zones
- Identify level 3 site operations
- Identify switch requirements
- Decide whether to use NAT
- Decide between physical or VLAN segmentation
- Assign VLANs and subnets to each cell/area zone

Who Should Attend?

Control or network engineers who have to design industrial Ethernet networks should attend this course.

Prerequisites

- To attend this course, you should already have these prerequisite skills and knowledge:
 - Familiarity with the concepts of IP addresses and subnets
 - Working knowledge of common components of an industrial automation system: controllers, drives, I/O, &HMI

➤ Implementing an EtherNet/IP Network of Motion and Standard Drive Axes Using Premiere Integration

VC-CCN300-C

(3) 120 MIN

CEUs 0.6

Course Purpose

This course will teach you how to choose an EtherNet/IP network topology and relevant components, configure controllers and axes, and add Kinetix® 6500 and PowerFlex® 755 drives for control over an EtherNet/IP network (also known as CIP™ motion). This course will also show you how to start up the network, run hookup tests, autotune axes, and test axes with motion direct commands.

Objectives

After completing this course, students should be able to perform the following tasks:

- Choose a network topology
- Choose network components
- Configure a network
- Add the motion group and axes
- Add drives
- Configure axes
- Start up an EtherNet/IP network
- Test hardware
- Autotune axes
- Test axis performance

Who Should Attend?

Control engineers who design and develop motion control applications and who will be working with drives controlled over an EtherNet/IP network should attend this course.

Prerequisites

Experience developing motion control applications and working in the Studio 5000® environment.

Technology Requirements

A computer and phone are required. For minimum computer requirements for the virtual classroom tool, please visit:

<http://support.webex.com/support/system-requirements.html>

➤ Lockout Tagout

VC-LOTO-A

180 Min

CEUs 0.3

Course Purpose

This training expose students to the lockout-tagout processes and procedures. Students will also become familiar with the regulation's intent, the company's policy on lockout, and how each applies to them and their job function is customized with pictures of the actual equipment in the facility and includes specific tasks that the authorized employees will encounter on a routine basis including a hands-on lockout demonstration guided by our lockout expert.

Objectives

After completing this course, students should be knowledgeable about the following topics and tasks:

- Explain the goals and benefits of lockout-tagout procedures
- Instruction on how to use the lockout-tagout procedures that have been implemented as part of the client's program

Who Should Attend?

This course is recommended for all employees when a new system is put in place, as an annual training requirement, or for newly hired.

Prerequisites

Experience with the design, development, maintenance, or supervision of industrial automation systems is required

Technology Requirements

A computer and phone are required. For minimum computer requirements for the virtual classroom tool, please visit:

<http://support.webex.com/support/system-requirements.html>

➤ Effective Maintenance Scheduling

VC-EMS-A

1 Day

CEUs 0.7

Course Purpose

This course teaches you maintenance scheduling best practices to more efficiently use maintenance labor; reduce time needed to search for parts, tools, and drawings; reduce time waiting for jobs to be assigned; and streamline complex downtimes and shutdowns. It covers the benefits of scheduling, the processes of work identification, estimating work, managing backlog, scheduling work, and gathering and analyzing equipment history; and how to track and interpret maintenance metrics. It includes thorough coverage of downtime and outage planning and tracking.

Objectives

After completing this course, students should be knowledgeable about the following topics and tasks:

- Summarize the benefits of maintenance scheduling
- Explain how scheduling frees up labor hours
- Define the requirements of a planned job
- Explain the process of identifying and prioritizing work; performing an equipment walk down; sequencing tasks; estimating time; managing backlog; scheduling routine, daily, weekly, quarterly, and outage maintenance
- Explain the process for tracking complex downtime and outage events
- Identify scheduling metrics and describes their uses

Who Should Attend?

This course is recommended if you are a maintenance planner, backup, or coordinator; and a benefit if you are a maintenance supervisor or a manager wishing to gain a comprehensive understanding of scheduling best practices.

Technology Requirements

A computer and phone are required. For minimum computer requirements for the virtual classroom tool, please visit:

<http://support.webex.com/support/system-requirements.html>

➤ Routine Equipment Care (Autonomous Maintenance) Workshop

VC-REC-A

1 Day

CEUs 0.7

Course Purpose

This workshop teaches you the elements of Routine Equipment Care (also known as Autonomous Maintenance or Operator Inspection) and facilitates you and other participants in workshop fashion, as you identify routine equipment checks, visual controls, and equipment restoration activities. This workshop can be taught generically or with the goal of establishing the routine care system for a specific equipment system.

Objectives

After completing this course, students should be knowledgeable about the following topics and tasks:

- Explain the goals and benefits of Routine Equipment Care
- Describe the maintenance-operations partnership and the roles of each
- List and explain the seven steps of equipment wellness
- Develop a Routine Equipment Care Checksheet and explain anomaly tagging
- Explain each element on a Routine Equipment Care Activity Board
- Identify visual controls and inspection routes

Who Should Attend?

This course is recommended if you are a maintenance or operating supervisor or manager wishing to learn about the methods and benefits of Routine Equipment Care, or if you are a manufacturing employee in a Routine Equipment Care environment.

Technology Requirements

A computer and phone are required. For minimum computer requirements for the virtual classroom tool, please visit:

<http://support.webex.com/support/system-requirements.html>

➤ Effective Maintenance Planning

VC-EMP-A

1 Day

CEUs 0.7

Course Purpose

This course experience teaches you maintenance planning best practices to more efficiently use maintenance labor; reduce time needed to search for parts, tools, and drawings; reduce time waiting for jobs to be assigned; and streamline complex downdays and shutdowns. It covers the benefits of planning, the processes of work identification, estimating work, managing backlog, scheduling work, and gathering and analyzing equipment history; and how to track and interpret maintenance metrics. It includes thorough coverage of downday and outage planning and tracking.

Objectives

After completing this course, students should be knowledgeable about the following topics and tasks:

- Summarize the benefits of maintenance planning
- Explain how planning frees up labor hours
- Define the requirements of a planned job
- Explain the process of identifying and prioritizing work; performing an equipment walk down; sequencing tasks; estimating time; managing backlog; scheduling routine, daily, weekly, quarterly, and outage maintenance
- Explain the process for planning and tracking complex downday and outage events
- Identify planning metrics and describes their uses

Who Should Attend?

This course is recommended if you are a maintenance planner, backup, or coordinator; and a benefit if you are a maintenance supervisor or a manager wishing to gain a comprehensive understanding of planning best practices.

Technology Requirements

A computer and phone are required. For minimum computer requirements for the virtual classroom tool, please visit:

<http://support.webex.com/support/system-requirements.html>

➤ Effective Maintenance Strategy: Preventive and Predictive Maintenance Program Development

VC-MAINPROG-A

1 Day

CEUs 0.7

Course Purpose

You will learn how to select the correct maintenance strategy for a piece of equipment or system, and the knowledge needed to implement the indicated strategy. The course focuses on the correct application of preventive, predictive, and run-to-failure strategies using the Reliability Centered Maintenance and FMEA approach

Objectives

After completing this course, students should be knowledgeable about the following topics and tasks:

- Understand and be able to select the proper maintenance strategy for a given situation (Re-Engineer, PM, PdM, RTF)
- Understand and apply the basic RCM Process to identify failure modes and the interventions needed to address them
- Design specific and effective maintenance standards for preventive and predictive inspections
- Establish specific measures (KPIs) to monitor the evolution and success of their selected maintenance strategies
- Develop and implement a system to audit the execution of preventive and predictive activities

Who Should Attend?

This course is recommended if you are a reliability engineer, maintenance manager, maintenance supervisor, or maintenance planner

Prerequisites

There are no prerequisites for this course; however, experience with designing machine-level control applications is helpful

➤ Configuring and Troubleshooting a Device-Level Ring Network

VC-DLR

2 Hours

CEUs .2

Course Purpose

This course will teach you the process of configuring a device-level ring (DLR) network including determining node counts, supervisor, back up and ring nodes. You will be provided with an understanding of normal operation of a DLR network and how to configure a supervisor node for managing traffic. This course will also show you the troubleshooting tools for diagnosing issues on the network along with resolutions to return a faulted DLR network back to normal operation.

Objectives

After completing this course, students should be able to perform the following tasks:

- Define Supervisor Nodes
- Add an EtherNet/IP Device
- Connect Devices to the Network
- Configure Supervisor Nodes in a Logix Designer Project
- Complete the Physical Connections of the Network
- Verify the Network

Who Should Attend?

Control and automation engineers who are responsible for configuring a DLR network and returning a faulted network back to normal operation.

Prerequisites

- Experience configuring embedded switch technology devices in a Studio 5000 Logix Designer® project.

➤ PLC-5 to ControlLogix Conversions

VC-PLC5-CLX

2 Hours

CEUs .2

Course Purpose

This course will teach you how to convert your PLC-5® program to a project for a ControlLogix® controller as part of a system migration. You will learn to start a phased migration where you leave your existing I/O system in place and connect to it via a ControlLogix Remote I/O communication module

Objectives

After completing this course, students should be able to perform the following tasks:

- Prepare and export the PLC-5 for translation
- Convert text files to a ControlLogix Project
- Resolve program conversion errors
- Configure the 1756-RIO Module
- Map I/O data between the 1756-RIO Module and Logic
- Verify project flow control

Who Should Attend?

Control engineers who have to migrate existing PLC-5 control systems to ControlLogix control systems.

Prerequisites

- Draft ladder logic in the Studio 5000 Logix Designer® application
- Configure common Logix5000™ instructions, such as bit-level, timer, and copy instructions
- Configure an I/O module
- Locate data in an array
- Download a project to a ControlLogix controller

Technical Requirements

A computer and phone are required. For minimum computer requirements for the virtual classroom tool, please visit: <http://support.webex.com/support/system-requirements.html>

CONTROLLOGIX/RSLOGIX 5000

SLC/RSLOGIX 500

RSTrainer for SLC 500 -
Programming Fundamentals
9393-RSTSLCPENE
9393-RSTSLCPENM

Enterprise Edition
9393-RSTSLCPENF
9393-RSTSLCPENFM

RSTrainer for SLC 500
Fundamentals Bundle
9393-RSTSLCALENE
9393-RSTSLCALENM

Enterprise Edition
9393-RSTSLCALENF
9393-RSTSLCALENFM

RSTrainer for RSLogix 500
Software - Bundle
9393-RST500ALENE
9393-RST500ALENM

Enterprise Edition
9393-RST500ALENF
9393-RST500ALENFM

NETWORKS

RSTrainer for RSLogix
5000 Software - Software -
EtherNet/IP Bundle
9393-RSTENETAENE
9393-RSTENMTAENM

Enterprise Edition
9393-RSTENETAENF
9393-RSTENMTAENFM

PLC/RSLOGIX 5

HYDRAULICS

VISUALIZATION

RSTrainer for FactoryTalk
View Machine Edition -
Bundle
9393-RSTVMEALL
9393-RSTVMEALLM

Enterprise Edition
9393-RSTMEALLENF
9393-RSTMEALLENFM

ADDITIONAL PRODUCTS

- RSTrainer licensing options:
- Single license (node-locked)
 - 5 concurrent licenses (Enterprise Edition)

- Note:
- Catalog numbers that end in M :
Physical Delivery Catalog Number.

➤ RSTrainer For RSLogix 500 Software— Documenting And Searching

Node-Locked Edition	
9393-RST500DSENE	9393-RST500DSENM
Enterprise Edition	
9393-RST500DSENF	9393-RST500DSENF
<hr/>	
5 Hours	

Course Purpose

This interactive, computer-based training course teaches the core tasks required for documenting and searching an RSLogix 500 project. Students will learn to enter a variety of project documentation, such as rung comments and page titles, that students can use to improve their own RSLogix 500 projects. Students will learn how to import and export RSLogix 500 databases and how to backup their RSLogix 500 projects. Helpful animations, background information, and links to other reference materials provide students with a variety of knowledge and learning tools. Students will have the opportunity to practice performing software tasks through interactive simulations.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Use RSLogix 500 backup utilities
- Add symbols, address descriptions, instruction, rung comments, and page titles
- Use database tools and import/export a database
- Reporting
- Search an RSLogix 500 project

Related Job Aids Available For Purchase

RSLogix 500 and SLC 500 Procedures Guide

ABT-1747-TSJ52

Who Should Attend?

Individuals who:

- Are users of Rockwell Automation RSLogix 500 Software who need refresher training
- Need to configure and navigate through RSLogix 500 software
- Are interested in the features and capabilities of RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common processor and ladder logic terms and operation is suggested

➤ RSTrainer For RSLogix 500 Software—Online Monitoring

Node-Locked Edition	
9393-RST500ONENE	9393-RST500ONENM
Enterprise Edition	
9393-RST500ONENF	9393-RST500ONENFM

5 Hours

Course Purpose

This interactive, self-paced training course teaches students the core tasks required for communicating with and monitoring an online RSLogix 500 project. Students will learn how to configure communication drivers and upload, download, and go online with an RSLogix 500 project. Students will learn how to go online and use RSLogix Emulator 500 software, which will allow students to test their project in a non-production environment. This course covers how to enter ladder logic online and use a variety of data monitoring tools, such as histograms and trends. Helpful animations, background information, and links to other reference materials provide students with a variety of knowledge and learning tools. Students will have the opportunity to practice performing software tasks through interactive simulations.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Configure communications software
- Transfer an RSLogix 500 project file between a computer and a processor
- Use RSLogix Emulator 500 software
- Edit ladder logic while online with an RSLogix 500 project
- Create and interpret data table monitors
- Create and configure trends and histograms
- Use workspace manager
- Force inputs and outputs

Related Job Aids Available For Purchase

RSLogix 500 and SLC 500 Procedures Guide

ABT-1747-TSJ52

Who Should Attend?

Individuals who:

- Are users of Rockwell Automation RSLogix 500 Software who need refresher training
- Need to configure and navigate through RSLogix 500 software
- Are interested in the features and capabilities of RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common processor and ladder logic terms and operation is suggested

➤ RSTrainer For RSLogix 500 Software–Offline Programming (ALSO AVAILABLE IN SPANISH)

Node-Locked Edition	
9393-RST500OFENE	9393-RST500OFENM
Enterprise Edition	
9393-RST500OFENF	9393-RST500OFENFM
<hr/>	
5 Hours	

Course Purpose

This interactive, self-paced training course teaches students the core tasks required for programming an RSLogix 500 project offline. Students will learn how to create and navigate through an RSLogix 500 project, configure I/O modules, and create program and data files. Students will learn how to enter ladder logic using a variety of methods and verify a project so it will be ready to download. Helpful animations, background information, and links to other reference materials provide students with a variety of knowledge and learning tools. Students will have the opportunity to practice performing software tasks through interactive simulations.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Configure the display
- Navigate through the menus, ladder view, and project view
- Create a new project
- Configure I/O modules in a project
- Create program and data files
- Enter ladder logic
- Assign addresses to ladder logic
- Verify a project
- Copy, paste, and move rungs
- Edit with .SLC library files

Related Job Aids Available For Purchase

RSLogix 500 and SLC 500 Procedures Guide

ABT-1747-TSJ52

Who Should Attend?

Individuals who:

- Are users of Rockwell Automation RSLogix 500 Software who need refresher training
- Need to configure and navigate through RSLogix 500 software
- Are interested in the features and capabilities of RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common processor and ladder logic terms and operation is suggested

➤ RSTrainer For EtherNet/IP— Communications and Diagnostics

Node-Locked Edition	
9393-RSTENET2ENE	9393-RSTENMT2ENM
Enterprise Edition	
9393-RSTENET2ENF	9393-RSTENMT2ENFM
<hr/>	
5 Hours	

Course Purpose

This computer-based training course explains the concepts of Ethernet Industrial Protocol (EtherNet/IP) communications and diagnostics. During this course, students will learn how to establish EtherNet/IP connections, send messages, and perform basic networking diagnostics. Helpful animations, background information, answers to frequently asked questions, and links to other reference materials provide students with a variety of knowledge and learning tools.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Configure an Ethernet/IP module in a local and remote chassis
- Configure digital and analog I/O modules in a chassis
- Modify module parameters
- Add a controller to an I/O configuration
- Produce and consume data over an Ethernet/IP network
- Communicate between multiple controllers on an Ethernet/IP network using an MSG instruction
- Configure the 9300-8EDM Ethernet diagnostic module
- Obtain computer IP addresses
- Access diagnostic information using a web browser

Related Job Aids Available For Purchase

EtherNet/IP Procedures Guide

ABT-N300-TSJ50

Who Should Attend?

Individuals who:

- Are responsible for setting up communications over an EtherNet/IP network
- Are interested in understanding how to send messages over an EtherNet/IP network, and perform basic networking diagnostics

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ RSTrainer For EtherNet/IP—Hardware and IP Addressing

Node-Locked Edition	
9393-RSTENET1ENE	9393-RSTENMT1ENM
Enterprise Edition	
9393-RSTENET1ENF	9393-RSTENMT1ENFM
<hr/>	
5 Hours	

Course Purpose

This computer-based training course covers the fundamentals of Ethernet Industrial Protocol (EtherNet/IP) hardware and IP addressing. During this course, students will learn how to design and optimize an EtherNet/IP network and configure an EtherNet/IP driver and IP addresses for EtherNet/IP devices. Helpful animations, background information, answers to frequently asked questions, and links to other reference materials provide students with a variety of knowledge and learning tools.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Design EtherNet/IP networks
- Configure an EtherNet/IP communications driver using RSLinx
- Ping an IP address
- Configure and modify EtherNet/IP addresses using BOOTP-DHCP server and RSLinx software
- Configure and modify EtherNet/IP addresses using RSLogix 5000 software

Related Job Aids Available For Purchase

EtherNet/IP Procedures Guide

ABT-N300-TSJ50

Who Should Attend?

Individuals who:

- Are responsible for designing EtherNet/IP networks
- Are interested in optimizing EtherNet/IP networks, configuring communications, and configuring EtherNet/IP addresses

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ RSTrainer For ControlLogix Fundamentals

Node-Locked Edition	
9393-RSTCLX	9393-RSTCLXM
Enterprise Edition	
9393-RSTCLXENF	9393-RSTCLXENFM

20 Hours

Course Purpose

This interactive computer-based training course teaches students the core tasks required when working with a ControlLogix control system. This course provides an overview of the Logix5550®, Logix5555®, and Logix5563® controllers, I/O modules, communications modules, and motion modules. Students will learn how to navigate through RSLogix 5000 software and learn about the four RSLogix 5000 programming languages. Through demonstrations, students will learn about the various settings and options in the software and see how to perform the required tasks for example control applications.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- ControlLogix overview
- RSLogix 5000 software overview
- Chassis and power supplies
- Controllers
- I/O, communications, and motion modules
- Module configuration (connections, module configuration)
- Tag structures (digital, analog, DeviceNet, DH/RIO)
- Programming (languages, project file, numbering systems)

Who Should Attend?

Individuals who:

- Are users of the Rockwell Automation ControlLogix family of programmable controllers who need refresher training
- Are interested in the features and capabilities of the Rockwell Automation ControlLogix family of programmable controllers and RSLogix 5000 software

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ RSTrainer For Hydraulics

Node-Locked Edition	
9393-RSTHYD	9393-RSTHYDM
Enterprise Edition	
9393-RSTHYDENF	9393-RSTHYDENFM
<hr/>	
20 Hours	

Course Purpose

This computer-based training course is designed to teach students the fundamental concepts, principles, and equipment used in hydraulic systems. Students gain knowledge about pumps, valves, actuators, and fluids that comprise hydraulic systems through example hydraulic simulations. Problem-solving simulations and troubleshooting situations help students learn about the operation and characteristics of various types of hydraulic equipment.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Basic functions and principles of hydraulic systems
- Pumps (gear, vane, piston)
- Valves (pressure control, flow control, check, directional control)
- Actuators (linear, rotary, hydraulic motors)
- Fluids (hydraulic fluid oil additives, auxiliary equipment, contaminants and filtration, conductors and fittings)

Related Job Aids Available For Purchase

RSLogix 5 and PLC-5 Procedures Guide

ABT-1785-TSJ53

PLC-5 and RSLogix 5 Troubleshooting Guide

ABT-1785-TSJ22

Who Should Attend?

Individuals who:

- Are users of hydraulic systems who need refresher training
- Need to know components, functions, and basic operation of hydraulic systems that include pumping, conducting, filtering, controlling, and actuating

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

➤ RSTrainer For RSLinx Software

Node-Locked Edition	
9393-RSTLINX	9393-RSTLINXM
Enterprise Edition	
9393-RSTLINXENF	9393-RSTLINXENFM

20 Hours

Course Purpose

This interactive, self-paced training course provides students with a basic understanding of the powerful monitoring, configuration, communication, and diagnostic capabilities of RSLinx software. The skills students will learn will enable them to use RSLinx software for the acquisition of PLC data and to integrate the display, archiving, and management of critical data. Students will learn to use RSLinx software to exchange data between Rockwell Automation hardware and software and commercial software applications.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Driver configuration
- Diagnostic tools and utilities (network monitoring tools, configuration tools and security, utilities: backup, restore, EDS hardware installation tools, etc.)
- Client application communications (DDE/OPC topics, Alias topics, DDE/OPC diagnostics)

Related Job Aids Available For Purchase

RSLogix 5 and PLC-5 Procedures Guide

ABT-1785-TSJ53

PLC-5 and RSLogix 5 Troubleshooting Guide

ABT-1785-TSJ22

Who Should Attend?

Individuals who:

- Are users of RSLinx software who need refresher training
- Are interested in RSLinx software
- Have a fundamental knowledge of programmable controller

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Working knowledge of programmable controllers

➤ RSTrainer For RSLogix 5 Software

Node-Locked Edition	
9393-RSTLX5	9393-RSTLX5M
Enterprise Edition	
9393-RSTLX5ENF	9393-RSTLX5ENFM
<hr/>	
20 Hours	

Course Purpose

This interactive, self-paced training course teaches the core tasks required for programming an RSLogix 5 project. This course provides information on how to install, configure, and navigate through RSLogix 5 software. Students will learn how to transfer an RSLogix 5 project from a computer to the processor, document ladder logic, and monitor data. Students will learn about the various settings and options in the software and see how to perform the required tasks for example automation control applications.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Work with RSTrainer software
- Install RSLogix 5 software
- Screen layout, navigation, and help
- Offline programming (new project, ladder logic editing, database documentation, reports, backup utilities)
- Online programming (communications, diagnostics: searching and data table monitoring)
- Upload/download and go online

Related Job Aids Available For Purchase

RSLogix 5 and PLC-5 Procedures Guide

ABT-1785-TSJ53

PLC-5 and RSLogix 5 Troubleshooting Guide

ABT-1785-TSJ22

Who Should Attend?

Individuals who:

- Are users of Rockwell Automation RSLogix 5 Software who need refresher training
- Are interested in the features and capabilities of RSLogix 5 software

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ RSTrainer For RSLogix 5000 Software–Motion

Node-Locked Edition

9393-RSTLX5KMOT

9393-RSTLX5KMOTM

Enterprise Edition

9393-RSTLK MOTENF

9393-RSTLK MOTENFM

5 Hours

Course Purpose

This interactive, self-paced training course teaches the core tasks required to effectively program motion control applications. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to configure servo modules, program motion instructions, and test and tune axes through step-by-step demonstrations. Students will learn about the various settings and options in the software and see how to perform the required tasks for example motion applications.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Define a typical RSLogix 5000 motion control system
- Compare axis control modules
- Configure the servo modules
- Configure the controller
- Add and configure a SERCOS servo drive axis
- Add and configure an analog servo drive axis
- Understand the motion instruction tag structure
- Compare immediate and synchronous instructions
- Test and tune an axis
- Use motion direct commands

Related Job Aids Available For Purchase

Studio 5000 and Logix5000 Procedures Guide

ABT-1756-TSJ50

Who Should Attend?

Individuals who:

- Are users of Rockwell Automation RSLogix 5000 control systems who need refresher training
- Are interested in the features and capabilities of RSLogix 5000 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the following e-Learning training courses or equivalent experience with RSLogix 5000 software is recommended:
 - RSTrainer for RSLogix 5000 Software – Project Configuration (9393-RSTLX5KPRJ/9393-RSTLKPRJENF)
 - RSTrainer for RSLogix 5000 Software – Offline Programming (9393-RSTLX5KOFF/9393-RSTLKOFFENF)
 - RSTrainer for RSLogix 5000 Software – Online Monitoring (9393-RSTLX5KON/9393-RSTLKONENF)

➤ RSTrainer For RSLogix 5000 Software–Offline Programming

Node-Locked Edition	
9393-RSTLX5KOFF	9393-RSTLX5KOFFM
Enterprise Edition	
9393-RSTLKOFFENF	9393-RSTLKOFFENFM

5 Hours

Course Purpose

This interactive, self-paced training course teaches the core tasks required to effectively create and configure automation control projects. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to install and navigate through the software, create and configure a new project, and produce and consume tags through step-by-step demonstrations. Through the demonstrations, students will learn about the various settings and options in the software and see how to perform the required tasks for example automation control applications.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Enter and edit ladder logic elements
- Configure ladder logic display options
- Enter and edit function block diagrams
- Configure function block diagram display options
- Enter and edit structured text
- Configure the structured text display
- Create, deploy, and manage an add-on instruction
- Verify project components
- Search and replace text
- Create a cross reference list

Related Job Aids Available For Purchase

Studio 5000 and Logix5000 Procedures Guide

ABT-1756-TSJ50

Who Should Attend?

Individuals who:

- Are users of Rockwell Automation RSLogix 5000 control systems who need refresher training
- Are interested in the features and capabilities of RSLogix 5000 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the RSTrainer for RSLogix 5000 Software–Project Configuration (9393-RSTLX5KPRJ/9393-RSTLKPRJENF) e-Learning training course or equivalent experience with RSLogix 5000 software is recommended

➤ RSTrainer For RSLogix 5000 Software—Online Monitoring

Node-Locked Edition	
9393-RSTLX5KON	9393-RSTLX5KONM
Enterprise Edition	
9393-RSTLKONENF	9393-RSTLKONENFM

5 Hours

Course Purpose

This interactive, self-paced training course teaches the core tasks required to effectively monitor and edit industrial control projects. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to establish communications, monitor the status of a project, program ladder logic online, and identify and correct faults through step-by-step demonstrations. Students will learn about the various settings and options in the software and see how to perform the required tasks for example automation control applications.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Establish communications
- Monitor status
- Identify and correct faults
- Program ladder logic online

Related Job Aids Available For Purchase

Studio 5000 and Logix5000 Procedures Guide
ControlLogix Troubleshooting Guide

ABT-1756-TSJ50
ABT-1756-TSJ20

Who Should Attend?

Individuals who:

- Are users of Rockwell Automation RSLogix 5000 control systems who need refresher training
- Are interested in the features and capabilities of RSLogix 5000 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the following e-Learning training courses or equivalent experience with RSLogix 5000 software is recommended:
 - RSTrainer for RSLogix 5000 Software – Project Configuration (9393-RSTLX5KPRJ/9393-RSTLKPRJENF)
 - RSTrainer for RSLogix 5000 Software – Offline Programming (9393-RSTLX5KOFF/9393-RSTLKOFFENF)

➤ RSTrainer For RSLogix 5000 Software—Project Configuration

Node-Locked Edition	
9393-RSTLX5KPRJ	9393-RSTLX5KPRJM
Enterprise Edition	
9393-RSTLKPRJENF	9393-RSTLKPRJENFM

5 Hours

Course Purpose

This interactive, self-paced training course teaches the core tasks required to effectively create and configure automation control projects. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to install and navigate through the software, create and configure a new project, and produce and consume tags through step-by-step demonstrations. Students will learn about the various settings and options in the software and see how to perform the required tasks for example automation control applications.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Identify main window components
- Configure the display
- Navigate through the software
- Create and manage project files
- Configure a controller
- Organize tasks, programs, and routines
- Configure a local I/O module
- Produce and consume tags
- Export and import tags

Related Job Aids Available For Purchase

Studio 5000 and Logix5000 Procedures Guide

ABT-1756-TSJ50

Who Should Attend?

Individuals who:

- Are users of Rockwell Automation RSLogix 5000 control systems who need refresher training
- Are interested in the features and capabilities of RSLogix 5000 software

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ RSTrainer Enterprise Edition For Student Manager

Enterprise Edition
9393-RSTSMGRENF 9393-RSTSMGRENFM

Course Purpose

This software is a student tracking and reporting utility for use with the RSTrainer series of computer-based training courses. It provides similar functionality to a learning management system by maintaining, recording, and managing student information for the RSTrainer computer-based training courses. This advanced system maintains every student's progress, scores, and personal information in an easy-to-use interface and database system that eliminates the burden of manually documenting employee training information.

Objectives

This software will allow the following information to be tracked for each student completing the RSTrainer computer-based training courses:

- Passwords and log-on information
- Account and program access
- Progress
- Scores

Related Products

All RSTrainer series of computer-based training courses

Who Should Attend?

Training professionals, managers, or supervisors who maintain several students' records and progress in a training program

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ RSTrainer For FactoryTalk View Machine Edition (ME)—Applications and Displays

Node-Locked Edition	
9393-RSTVMEPT1	9393-RSTVMEPT1M
Enterprise Edition	
9393-RSTMEPT1ENF	9393-RSTMEPT1ENFM
<hr/>	
5 Hours	

Course Purpose

This interactive, self-paced training course provides information about creating FactoryTalk View Machine Edition applications and displays. This course is part of a series of e-Learning courses designed to teach FactoryTalk View ME. Students will learn how to work with default graphic displays, configure application-wide settings, configure RSLinx Enterprise, and work with tags in an application. Helpful animations, background information, answers to frequently asked questions, and links to other reference materials provide students with a variety of knowledge and learning tools.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Work with applications
- Identify main window components
- Use the application explorer and default graphic displays
- Create a new display
- Use the startup editor
- Define project settings
- Configure security and language options
- Use direct-reference tags in an application
- Create new HMI tags
- Use HMI tags

Related Job Aid Available For Purchase

FactoryTalk View ME and PanelView Plus Procedures Guide

ABT-2711P-TSJ50

Who Should Attend?

Individuals who:

- Are responsible for designing FactoryTalk View ME applications
- Are interested in configuring application-wide settings, configuring RSLinx Enterprise software, and working with tags in an application

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ RSTrainer For FactoryTalk View Machine Edition (ME)–Drawing Objects

Node-Locked Edition	
9393-RSTVMEPT2	9393-RSTVMEPT2M
Enterprise Edition	
9393-RSTMEPT2ENF	9393-RSTMEPT2ENFM

5 Hours

Course Purpose

This interactive, self-paced training course provides information about creating FactoryTalk View Machine Edition drawing objects in graphic displays. This course is part of a series of e-Learning courses designed to teach FactoryTalk View ME. Students will be introduced to a variety of basic graphic objects and learn how to modify their properties, animate them, and arrange them on the displays. Students will learn how to use objects from the Graphic Library. Helpful animations, background information, answers to frequently asked questions, and links to other reference materials provide students with a variety of knowledge and learning tools.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Understand drawing objects
- Understand object properties
- Arrange objects
- Add objects from the graphic library
- Use the object explorer
- Animate drawing objects

Related Job Aid Available For Purchase

FactoryTalk View ME and PanelView Plus Procedures Guide

ABT-2711P-TSJ50

Who Should Attend?

Individuals who:

- Are responsible for designing FactoryTalk View ME applications
- Are interested in learning about basic drawing objects

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ RSTainer For FactoryTalk View Machine Edition (ME)–Interactive Objects

Node-Locked Edition

9393-RSTVMEPT3

9393-RSTVMEPT3M

Enterprise Edition

9393-RSTMEPT3ENF

9393-RSTMEPT3ENFM

5 Hours

Course Purpose

This interactive training course provides information about creating FactoryTalk View Machine Edition interactive objects. This course is part of a series of e-Learning courses designed to teach FactoryTalk View ME. Students will learn how to work interactive and advanced objects in graphic displays as well as create and configure data logs, trends, and alarms. Helpful animations, background information, answers to frequently asked questions, and links to other reference materials provide students with a variety of knowledge and learning tools.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Create and configure:
 - Push buttons
 - Indicators
 - Display objects
 - Control list selectors, gauges, and graph objects
 - Display navigation objects
 - Local message displays
 - Data logs
 - Trends
 - Alarms
- Add advanced features to interactive objects
- Create parameter files and tag placeholders
- Test displays and applications
- Use faceplates in an application

Related Job Aid Available For Purchase

FactoryTalk View ME and PanelView Plus Procedures Guide

ABT-2711P-TSJ50

Who Should Attend?

Individuals who:

- Are responsible for designing FactoryTalk View ME applications
- Are interested in learning about interactive objects

Prerequisites

Experience operating a computer within a Microsoft Windows environment

➤ Modular Programming For Machine Applications

Self-Study Training Kit

9393-MODPROG

9393-MODPROGM

Course Purpose

This computer-based training course provides students with the skills and knowledge to produce a software design specification for a machine or line of machines. The modular programming concepts in this course are derived from the ISA-88.01 industry standard and include the OMAC PackML state and data models as defined in the ISA-TR88.00.02 technical report. The specification will follow modular programming guidelines and describe: equipment and control modules for controlling the machine's I/O devices, procedures for supervising and coordinating the modules, data structures for interfacing procedures with modules, state model for machine's overall operation, and naming conventions for software components. By using a modular approach to software design, software becomes much easier to reuse from project to project. As the base of modular code increases, development time decreases. Additionally, the quality of the code increases because students will be able to refine it each time they reuse it.

Objectives

After completing this computer-based training course, students should be knowledgeable about the following tasks:

- Introduce modular programming
- Select modes and states
- Break down states and equipment modules into steps
- Identify equipment and control modules
- Organize unit procedures
- Define interfaces for procedures and modules
- Implement modular programming tools and modular programming into RSLogix 5000 software

Who Should Attend?

- Control engineers who want to improve the efficiency of their software development process
- Plant engineers who need to integrate and maintain lines of machines
- Technicians and other maintenance individuals who need to interpret and maintain modular software programs

Prerequisites

- First-hand knowledge of how your machines operate
- Able to organize data into programs and routines and create user-defined data types in RSLogix 5000 software
- Able to write and program ladder diagrams in RSLogix 5000 software
- Students can use these courses to get the prerequisite RSLogix 5000 skills:
 - RSLogix 5000 Level 2: Basic Ladder Logic Programming (CCP151)
 - RSLogix 5000 Level 3: Project Development (CCP143)

➤ Software

Rockwell Automation software courses address today's diverse plant information needs, such as:

- Production management—real-time coordination across plant-wide production processes
- Data management—tools and methods used for collecting, transforming, and integrating production information
- Asset management—optimizing maintenance and plant operations to improve resource availability
- Performance and visibility—offering a window into the process so plant personnel can make better decisions

Real-time exchange of information between manufacturing and the rest of your company is critical for making business decisions that improve responsiveness, increase productivity, and reduce costs. With Rockwell Automation software courses, you can learn how to integrate your factory floor.

Course Number	Course Title	Course Length
FTAC	FactoryTalk AssetCentre System Design and Implementation	3 Days
FTM	FactoryTalk Metrics Configuration	3 Days
RS-FTHSEC	FactoryTalk Historian Site Edition Configuration and DataCollection	3.5 Days
FTVP	FactoryTalk VantagePoint Configuration and Reporting	3 Days
FTEM	FactoryTalk EnergyMetrix Software Configuration in an Energy Monitoring System	2 Days

➤ FactoryTalk AssetCentre System Design and Implementation (Private Delivery Only)

FTAC

3 Days

CEUs 2.1

Course Purpose

This course provides students with the skills required to use FactoryTalk AssetCentre software to maximize their control system investment and manage assets effectively. Throughout the course, students will learn how to design a FactoryTalk AssetCentre system, install and configure the software, secure access to the control system, track users' actions, manage asset configuration files, provide backup and recovery of operating asset configurations, and troubleshoot their system using FactoryTalk AssetCentre. The instructor will demonstrate how to perform all of the tasks covered in this course. Students will then be given an opportunity to practice these tasks using a procedures guide and a VMware® image designed to imitate a real production facility.

Objectives

After completing this course, students should be able to perform the following tasks:

- Establish a FactoryTalk AssetCentre system architecture
- Identify:
 - Assets, files, and an organization scheme for a FactoryTalk AssetCentre system
 - Basic additional software requirements for a FactoryTalk AssetCentre system
- Install the required software for a FactoryTalk AssetCentre system
- Configure asset tree organization in FactoryTalk AssetCentre software
- Add and configure assets
- Backup and restore critical files
- Archive files and manage archive files
- Configure disaster recovery
- Find a system event using FactoryTalk AssetCentre software
- Plan security for a FactoryTalk AssetCentre system
- Configure basic FactoryTalk security in the FactoryTalk directory
- Configure system and product policy security in the FactoryTalk directory
- Configure security within FactoryTalk AssetCentre software
- Troubleshoot a system using FactoryTalk AssetCentre software

Who Should Attend?

Individuals who need to securely and centrally manage automation production environments using FactoryTalk AssetCentre software.

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of your production environment

➤ FactoryTalk Metrics Configuration

FTM

3 Days

CEUs 2.1

Course Purpose

FactoryTalk Metrics is a complete, windows-based solution for the analysis of time-series process and production data. FactoryTalk Metrics provides a set of tools to analyze the performance of production assets. FactoryTalk Metrics provides a performance rating, based on the widely used Overall Equipment Effectiveness (OEE) model, for every production asset. The OEE metric provides a simple way to quickly determine if a production asset is performing adequately. In this course, students will learn to use the reporting, graphing, and querying functionality that make FactoryTalk a complete and very easy-to-use solution for data collection and analysis.

Objectives

After completing this course, students should be able to perform the following tasks:

- Introduction to MSSQL for FactoryTalk Metrics
- Create a FactoryTalk Metrics database and user
- Configure a system DSN
- Install FactoryTalk Metrics software
- Administrate FactoryTalk Metrics
- Create FactoryTalk Metrics plant model
- Configure FactoryTalk Metrics
 - Workcell
 - Workcell schedules
 - Reports
 - Performance parameter events
 - Fault metrics
- Create FactoryTalk Metrics reports and filters
- Use FactoryTalk Metrics import/export
- Using report expert

Who Should Attend?

- Engineers and plant managers who need to collect, analyze, and report PLC data

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Basic understanding of Allen-Bradley PLC processors
- Knowledge of basic client/server database concepts is recommended, but not required
- Familiarity with basic networking concepts is strongly recommended, but not required
- Knowledge or experience with Microsoft SQL server is helpful

➤ FactoryTalk Historian Site Edition Configuration and Data Collection

RS-FTHSEC

3.5 Days

CEUs 2.5

Course Purpose

This course will provide students with an overview of the various FactoryTalk Historian tools for collecting data. Students will learn how to configure a FactoryTalk Historian Site Edition system and how to use Microsoft Excel to create and modify FactoryTalk Historian tags. During the course, students will learn how to apply exception and compression to filter data to be archived. Students will be given an opportunity to compare the use of Polled versus Advised data collection modes and learn about data buffering, layers/methods of redundancy, archive management and backup. Upon completion of the course, students will have gained exposure to the many aspects of the FactoryTalk Historian system and be able to install and configure FactoryTalk Historian to collect data.

Objectives

After completing this course, students should be able to perform the following tasks:

- FactoryTalk Historian tag types
- Work with digital states
- Backfill data into FactoryTalk Historian server
- Understand Historian tags and use Excel tag configurator, exception & compression
- Buffer disturbed FTLD interface data
- Configure event trigger, event framing, performance equations/totalizers, interface, redundancy, and buffering
- Use BatchView
- Use and display audit information
- Schedule backups of Historian data
- Use FactoryTalk VantagePoint, health points, performance monitor tags, archive management tools, FactoryTalk View SE to display Historian data and server collective

Who Should Attend?

- Field engineers, MPS, pre-sales consultants, and support individuals who need to install and configure FactoryTalk Historian Site Edition for data collection

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the *Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals* course (CCP146) or knowledge of common ControlLogix terminology and the ability to program and interpret basic ladder logic instructions in Logix Designer software

➤ FactoryTalk VantagePoint Configuration and Reporting

FTVP

3 Days

CEUs 2.1

Course Purpose

In this course, students will learn various tools to analyze and display data using FactoryTalk VantagePoint and/or VantagePoint EMI. The course covers how to use the analysis and reporting tools to create trends, Excel reports, and dashboards. Students will have an opportunity to use the Portal and configure it to display content in various ways. The course also focuses on extending the model in the product and configuring security. Upon completion of the course, students will be able to utilize many tools and techniques for the display, analysis and reporting of data using FactoryTalk VantagePoint EMI.

Objectives

After completing this course, students should be able to perform the following tasks:

- Create a FactoryTalk connector
- Create and publish trends and VantagePoint Excel reports
- Create and use types and type reports in VantagePoint
- Pass parameters to reports using hyperlinks
- Create composite and dashboard reports
- Use incuity tags for data entry, calculated tags, and status indicators
- Customize the VantagePoint portal
- Create and use a Microsoft SQL server database connector
- Use VantagePoint security
- Import ControlLogix structures

Who Should Attend?

- Developers or engineers who will work with FactoryTalk VantagePoint EMI applications and need to view, analyze, and create reports

Prerequisites

- Experience with:
 - Microsoft SQL Server 2008
 - Microsoft Office Excel 2010
 - ControlLogix and FactoryTalk products and terminology

➤ FactoryTalk EnergyMetrix™ Software Configuration in an Energy Monitoring System

FTEM

2 Days

CEUs 1.4

(Private Delivery Only)

Course Purpose

With FactoryTalk EnergyMetrix, students can capture, analyze, store, and share energy data across their entire enterprise using a simple Web browser. This makes it easy to distribute the knowledge they need to optimize energy consumption, which can help improve productivity while lowering energy costs. This course provides students with an understanding of FactoryTalk EnergyMetrix. This course also shows students how to navigate the FactoryTalk EnergyMetrix Web interface and understand the information it contains; use FactoryTalk EnergyMetrix software to provide standard and customized reports of energy usage and costs; and configure all the components of an EnergyMetrix software installation.

Objectives

After completing this course, students should be able to perform the following tasks:

- Log in
 - Alarm
- Load profiles
 - Custom page
 - Personalized start page
- View standard reports
- Generate billing reports
- Create:
 - A multi-purpose report using grid & charts
 - Reports
 - Billing Reports
 - A system configuration
- Configure an application and a derived tag
- Create a new domain and group
- Set up a:
 - Device
 - Meter and meter tags
 - Simple rate schedule
 - Role and privileges
 - Manual meter
- Use ChartsPlus and ReportsPlus
- Back up EnergyMetrix database
- Shrink a transaction log
- Run reports automatically
- Copy devices and meters

Who Should Attend?

- Managers, engineers, and technical specialists who need to configure FactoryTalk EnergyMetrix software in order to solve on-going, energy-related challenges

Prerequisites

- Basic understanding of three-phase electric power
- Basic understanding of Rockwell Automation Integrated Architecture products, networks, and software
- Basic understanding of PowerMonitor products
- Basic understanding of internet server applications, Microsoft SQL Server and .NET scripting

➤ Industrial Leadership Skills

Effective leaders consistently seek to learn, change and grow by enhancing their leadership skills.

Industrial Leadership courses are for supervisors and managers working in a plant environment.

There are no prerequisites for these courses.

Course Number	Course Title	Course Length
ILEAD-001	Accountability & Delegation	1 Day
ILEAD-003	Communicate with Clarity	1 Day
ILEAD-004	Feedback: Giving and Receiving	1 Day
ILEAD-005	Coaching for Performance	1 Day
ILEAD-006	Problem Solving and Decision Making	1 Day
ILEAD-007	Conflict Management	1 Day
ILEAD-008	Leading T.E.A.M. work	1 Day
ILEAD-009	Hiring: Right Person Right Job	1 Day
ILEAD-010	Mentoring	0.5 Day
ILEAD-011	Project Management	1 Day
ILEAD-012	Foundational Leadership Skills	4 Days
ILEAD-013	Enhanced Leadership Skills	4 Days

➤ Accountability & Delegation

(Private Delivery Only)

ILEAD-001

1 Day

CEUs 0.7

Course Purpose

This course teaches the skills and explains the attitude that is necessary for creating an accountable organization while also providing managers with the skills to effectively delegate work to others. In today's business climate, it is more important than ever for team members to hold themselves accountable; organizations depend on individuals and teams to implement actions that align with the values, competencies, and strategies of the organization. These values, competencies, and strategies must be demonstrated by every member on a daily basis. While the term "accountability" is commonly heard, there is often a great deal of confusion about what this word means and to whom it applies. Delegation is an overlooked and undervalued tool that managers can use to complete an ever-increasing list of work responsibilities. There is often confusion about the true meaning and nature of delegation. In discussing the definition, students begin to realize that delegation is about assigning meaningful tasks that can challenge employees and provide them with opportunities to build their skills. They recognize many benefits to delegation; However, there are many barriers as well. Certain patterns in thoughts and beliefs may hinder managers from delegating as often as they should.

Objectives

After completing the Accountability portion of this course, students will be able to:

- Define accountability, responsibility, and empowerment
- Rate yourself and your team on the Power Meter
- Discuss the Account-Able Choice
- Identify obstacles to being accountable
- Apply a three-step model to ask self-accountability questions
- Speak the language of empowerment and accountability
- Apply a five-step model to create accountability in others

After completing the Delegation portion of this course, students will be able to:

- Define delegation
- Break your personal barriers to delegation
- Apply situational leadership to delegation
- Decide the tasks to delegate and the tasks to keep
- Determine the right person to whom to delegate the task
- Plan and conduct a four-step delegation meeting
- Follow up on a delegated task
- Obtain the results you expect from a delegated

➤ Communicate with Clarity

(Private Delivery Only)

ILEAD-003

1 Day

CEUs 0.7

Course Purpose

Every function and activity that takes place in an organization involves some form of direct or indirect communication. The success of these functions and activities directly depends on the ability of the people in the organization to communicate effectively. This course focuses on the process of creating open communication that increases rapport and productivity. Most people in organizations take steps to work toward “being a better communicator.” In this course, students will identify concrete steps and processes that will truly help them improve their communications skills. Once these concepts are identified, they will then practice these skills during several role-play and group activities, which will add more depth and solidify their learning. The course begins with an activity where participants work in groups to identify both effective and ineffective communication elements. They will also consider and discuss the impacts of both. It is during this activity that students gain a better understanding of the need to communicate effectively during every interaction. They then are introduced to a five-step process for creating open and effective communication. This process is the foundation for the course, as students will be working through each of the five steps for the rest of the session. Students begin by working in small groups to identify barriers in the workplace that prevent the communication process from flowing smoothly. At the end of the session, students will revisit these barriers with solutions gained through the course content and learning. Next, they will each take a communication assessment that will help pinpoint both areas of strength and improvement in their personal communication skills. After taking a personal look at skills, students will then examine their communication as a group by working through a difficult challenge as a large group. Effective communication is required for success in this challenge. Students gain experiential insight as to where the gaps in skills hurt their opportunity for success and where their strengths in communication as a group helped to move them forward. In the second half of the course, students explore concepts to improve their communication skills, and then immediately apply those concepts through small-group activities and role plays. Through these activities, students learn to identify the goal of a message, create assertive statements, ask for and receive feedback, and utilize strong questioning and listening skills. They will apply their newly acquired skills and concepts to an actual message they need to deliver. Writing effective e-mail messages and delivering messages upwards to leadership is included.

Objectives

After completing this course, students will be able to:

- Describe the five steps to creating open communication
- Assess communication skills and identify areas of strength and development
- Determine the most appropriate method for sharing messages
- Demonstrate the appropriate nonverbal skills to enhance communication with others
- Create assertive statements
- Apply open-ended questioning techniques to increase two-way communication
- Use active listening skills to improve rapport and productivity in the working environment
- Respond effectively when receiving feedback

➤ Feedback: Giving and Receiving

(Private Delivery Only)

ILEAD-004

1 Day

CEUs 0.7

Course Purpose

This course teaches the skills that are necessary to both give and receive constructive and positive feedback in a way that maintains relationships and increases performance. Feedback opens the door to discussion and problem solving, and it is essential to personal growth and development. When feedback is given constructively, the receiver of the feedback is more likely to listen non-defensively and take appropriate action. It is important for learners to discover that the receiver of feedback has equal responsibility in creating a comfortable interaction between the giver and receiver. Students begin the course by defining feedback and identifying why it is so hard to give. The answer identified in class will be a surprise and will begin to develop the learners' awareness of how to provide feedback. Next, students become involved in a role play using a realistic scenario. During this scenario, students are assigned roles and will then provide feedback as either supervisor to employee, or peer to peer. The objective is to explore how to approach individuals when giving feedback; it is a fun but significant learning exercise about what style of feedback people most want from others. An important influence technique in giving feedback of any kind is the ability to speak from the standpoint of observation versus judgment, and use effective language that reflects the appropriate standpoint. Students will learn this important technique using lecture, video, and practice. Two models are provided in the material for students to use as they begin to learn and practice the skills. One model provides a four-step process for giving constructive feedback; a three-step model is also demonstrated and used for providing positive feedback. After these models are taught, students engage in a robust skills practice activity. One of the most challenging aspects of giving constructive feedback is anticipating and responding to the reaction of the receiver. In this activity, students learn methods and techniques for handling situations when the receiver gives a negative response. Students conclude the session by learning the equally important, but sometimes forgotten, skill of effectively receiving feedback. During the What Would You Say? activity, students explore appropriate responses to a variety of feedback scenarios.

Objectives

After completing this course, students will be able to:

- Define feedback
- Identify guidelines for giving feedback
- Demonstrate the ability to use observation versus judgment
- Apply steps to giving constructive feedback
- Apply steps to giving positive feedback
- Apply guidelines for receiving feedback

➤ Coaching for Performance

(Private Delivery Only)

ILEAD-005

1 Day

CEUs 0.7

Course Purpose

Have you ever wondered how to increase the effectiveness of your team? How to attract and retain the best talent? How to fully engage your employees? Successful organizations create environments in which people can achieve their potential through guidance, assistance, and support. Coaching is a skill that can be utilized to create that environment and to support team members in ways that allow them to contribute to their fullest. When coaching becomes an integral part of doing business, employees are engaged; this results in greater productivity and the retention of top talent. This course provides students with the tools to coach effectively, and it enables the performance improvement of all team members. Coaching is often confused with teaching or giving feedback. Students start the course by exploring the true definition of coaching and how it differs from other forms of communication. Coaching is an investment of time and effort; students discuss the many benefits that can be achieved from using this skill in the workplace. They also identify several opportunities to coach in their work environment. Questioning and listening skills are central to effective coaching, so time will be spent learning and practicing these skills. This course allows for several practice opportunities. Students engage in mini-coaching sessions, using actual coaching opportunities that they have identified. They learn and use a four-step process to help them plan and structure their coaching sessions for maximum benefit. Some coaching opportunities are difficult, so students discuss and practice effective techniques to overcome difficult situations that may arise. Students end the session by developing a strategy for personal continuous coaching development, which they then share with a partner. This strategy will help ensure that their coaching skills continue to grow, thereby increasing the skills and productivity of their team members.

Objectives

After completing this course, students will be able to:

- Identify the benefits of coaching
- Follow a three-stage Leader as Coach Model
- Identify coaching opportunities with direct reports and peers
- Solicit the ideas of others using effective questioning skills
- Apply active listening skills
- Apply the four-step GROW Model to coach direct reports and peers
- Respond effectively to difficult situations using one of five techniques
- Implement an action plan for formal and informal follow-up
- Provide reinforcement and developmental feedback to direct reports and peers on a day-to-day basis

➤ Problem Solving and Decision Making

(Private Delivery Only)

ILEAD-006

1 Day

CEUs 0.7

Course Purpose

Employees in any organization find themselves solving problems on a daily basis. The ability to identify the problem, pinpoint the true cause and identify a workable solution is essential for personal, professional, and organizational success. In this course, students will learn to identify problems proactively, correctly state identified problems, identify the most likely cause, and determine innovative solutions. They are also asked to bring a current work problem to class and to be prepared to have fun with problem solving! Students begin the course by working in small groups to solve a problem. During the debrief, they discuss challenges and successes in the process they used to resolve the problem. In this discussion, they identify a problem as being the gap between the current state and the desired state. They also discuss and identify barriers to effective problem solving and their role in overcoming those barriers. Similar small problems are introduced periodically during the day to challenge students' thinking and keep it fresh. In the next segment of the course, students are introduced to a six-step problem-solving process. Using a case study based on an actual problem, they will work step-by-step in small groups and apply the process to the case study. While working through these steps, they will learn multiple tools that they can use to identify causes and solutions in an efficient and effective manner back in the workplace. Once they have had an opportunity to use the tools and the six-step process, students will then apply their learning and the tools to an actual problem that they need to solve. Engaging in this activity allows them to see how powerful and practical the process and tools can be in helping them resolve real issues. Students conclude the session by engaging in individual action planning.

Objectives

After completing this course, students will be able to:

- Define their role in problem solving
- Identify barriers to effective problem solving
- Apply a six-step problem-solving process
- Select appropriate tools to effectively problem-solve
- Coach mistakes without commanding or criticizing

➤ Conflict Management (Private Delivery Only)

ILEAD-007

1 Day

CEUs 0.7

Course Purpose

Conflict is an inevitable dynamic in the work environment. Unfortunately, it usually carries a negative connotation. Conflict, in and of itself, is neither “good” nor “bad”. What makes a conflict situation productive or destructive is the way in which issues and information are analyzed, approached, and communicated. Successful teams and managers have the ability to not only address but utilize differences in a way that increases the overall strength of the team. This course teaches the skills and perspectives that are necessary to effectively manage conflict. Most people view conflict as being highly personal in nature. In this course, students will explore the true definition of conflict, and how this definition can help them better analyze and understand a challenging situation or person. They will also examine the role of personal power and how it influences the level and outcome of a conflict. Next, students complete the Thomas-Kilmann Conflict Mode Instrument. Through this instrument, they will gain insight into their preferred mode of conflict management. They will also gain exposure to, and a better understanding of, the preferred approaches of others in a conflict situation. Working in small groups, they will then explore the best approaches to different types of conflicts, and discuss how their preferred approach can be adapted to best manage the situation. Next, students will be introduced to the Stop, Yield Go Model for conflict resolution. This is a three-step process that they can use to keep their approach and communication focused and on track so that the conflict is resolved in a productive manner. Students will identify a conflict situation that they are currently experiencing or anticipate experiencing in the near future. They will then work through the conflict using the three steps. In each step, students will be engaging in activities and discussions regarding the following topics: assertive language techniques, the power of inquiry and advocacy, and how to effectively manage difficult responses. Students will view a video that demonstrates assertive language techniques. Working with a partner, students will obtain additional feedback and insight into the management of their conflict situation. This will provide students with a detailed and complete action plan that they can implement immediately.

Objectives

After completing this course, students will be able to:

- Define conflict
- Recognize the five styles of conflict resolution and how to best adapt their style and approach to a conflict situation
- Understand their preferred style of conflict resolution
- Apply the Stop, Yield, Go Model to collaborative conflict resolution
- Apply techniques to managing emotions during conflict
- Explain assumptions and their effect on conflict
- Use active-listening skills to improve the working environment
- Apply assertive language techniques to express their needs and respect the needs of others

➤ Leading T.E.A.M.work

(Private Delivery Only)

ILEAD-008

1 Day

CEUs 0.7

Course Purpose

Most of the time when you hear the term team, it's about a group of people who get together to complete a special project. This course is about creating a team environment with the people with whom you work with each day. The team environment that you create can and will contribute to a positive and productive work group. In this course, participants will learn techniques for translating team goals into individual goals, empowering all team members to participate, encouraging collaboration amongst team members, and monitoring the team's progress using structured tools and processes.

Objectives

After completing this course, students will be able to:

- Identify telltale signs that the T.E.A.M.work within their team needs attention
- Apply techniques to translate goals to individual team members
- Apply techniques to empower all team members to participate
- Apply techniques to encourage collaboration amongst all team members
- Discuss techniques to monitor the team's environment and to make adjustments
- Describe how stereotyping team members affects the team environment

➤ Hiring: Right Person Right Job

(Private Delivery Only)

ILEAD-009

1 Day

CEUs 0.7

Course Purpose

Given today's business realities, it is more important than ever for organizations to utilize their resources wisely. In any organization, selecting the right person for the right job is a challenge. When the challenge is met, turnover is low, morale and productivity are high, and great customer service is provided. This course is designed to provide information and skills to assess, build, and conduct high-quality selection interviews in order to decide on the right person for the right job. Participants begin the course by discussing the impact of poor hiring decisions, including the cost of turnover. They then are introduced to a four-step interviewing process that consists of assessing the job requirements, building the interview questions, conducting the interview, and deciding on the right candidate. Throughout this process, participants will utilize their own organization's hiring practices, competencies, and value behaviors, which will allow for greater transfer of the skills when the participant needs to apply them in their work environment. The building of questions is a key skill that participants gain from this course. They explore different types of questions, from traditional to behavior-based, and learn which questions elicit specific responses. Participants then learn to create behavior-based questions that are directly relevant to the job requirements. They also learn and practice how to ask important follow-up questions. Participants will be able to witness these skills and behaviors demonstrated in the video, "More Than a Gut Feeling." Participants then discuss what needs to happen during the actual interview, including the need to maintain a legal line of questioning. They also examine common interview errors and ways to avoid them. Finally, participants have a chance to practice their new skills by preparing and conducting a mock interview for a position that they may actually need to fill.

Objectives

After completing this course, students will be able to:

- Recognize the importance of selecting the right candidate
- Calculate the cost of turnover
- Explain the organization's hiring process
- Apply a four-step interviewing process
- Identify job competencies and value behaviors for an open position
- Create behavior-based interview questions
- Conduct an effective selection interview
- Decide on the best candidate

➤ Mentoring

(Private Delivery Only)

ILEAD-010

0.5 Day

CEUs 0.4

Course Purpose

Mentoring is one way in which to transfer expertise and knowledge to new workers. Mentoring has been proven to reduce turnover and increase employee satisfaction. This course provides an opportunity for a mentor and their protégé to work together, and learn about each other and how to work effectively together. Worksheets are provided to allow mentors and protégés to learn about one another, identify interaction guidelines, and set mentoring goals. Participants will discuss and practice the components of being an effective mentor and protégé.

Objectives

After completing this course, students will be able to:

- Define the role and responsibilities as a mentor or protégé in the mentoring process
- Understand the phases of mentoring and the activities in each phase
- Understand the mentor's or protégé's interaction style
- Set and manage expectations for the mentoring relationship
- Listen with openness and understanding
- Provide supportive feedback
- Coach mistakes without commanding or criticizing

➤ Project Management (Private Delivery Only)

ILEAD-011

1 Day

CEUs 0.7

Course Purpose

Effective management of projects is essential in today's ever-changing business environment. This one-day program will help participants gain a broad understanding of the basic core concepts of the project management process. Each stage of the project life cycle will be explored. Approaches that aid the project manager to complete the project on time and within budget will be identified and discussed. All the elements of project management, as prescribed by the Project Management Institute®, will be reviewed using interactive lecture and class exercise.

Objectives

After completing this course, students will be able to:

- Describe the definition of a project
- Explain the difference between Program Management and Project Management
- Apply project selection and portfolio management techniques to align projects
- With an organization's business strategy
- Define the quadruple constraints of Project Management
- Manage customer requirements, develop project boundaries and define project success criteria
- Understand all aspects of project planning including scope development and planning, scheduling, staffing, budgeting, communication management, risk management, quality management and vendor/procurement management
- Apply interpersonal and communication skills that are critical to project execution and stakeholder/team management including conflict management, team motivation and techniques to effectively lead a cross-functional; cross-organizational team
- Monitor and control projects including managing integrated change control and obtaining project status
- Implement a formal project closing process including project reports and lessons learned

➤ Foundational Leadership Skills

ILEAD-012

4 Days

CEUs 2.8

Course Purpose

Sound leadership skills are the foundation for success in industrial manufacturing environments. The exercise of effective leadership practices has been found to enhance work environments that contribute to engaged employees and high performance. This course offers five foundational leadership skills that new supervisors must develop in order to successfully build and maintain strong relationships with employees, which in turn increases employee productivity. The course combines the concepts of communication, feedback, coaching, accountability and delegation to create a 4-day foundational leadership skills course for new and emerging supervisors and managers. The first element of the course, communication, focuses on the process of creating open communication that increases rapport and productivity. Most people in organizations take steps to work toward “being a better communicator.” In this course, participants will identify concrete steps and processes that will truly help them improve their communications skills. Once these concepts are identified, they will then practice these skills during several role-play and group activities, which will add more depth and solidify their learning.

This course element, feedback, teaches the skills that are necessary to both give and receive constructive and positive feedback in a way that maintains relationships and increases performance. Feedback opens the door to discussion and problem solving, and it is essential to personal growth and development. When feedback is given constructively, the receiver of the feedback is more likely to listen non-defensively and take appropriate action. Coaching is a skill that can be used to create an environment in which people can achieve their potential through guidance, assistance, and support and to support team members in ways that allow them to contribute to their fullest. When coaching becomes an integral part of doing business, employees are engaged; this results in greater productivity and the retention of top talent. This course provides participants with the tools to coach effectively, and it enables the performance improvement of all team members.

The accountability portion of the course teaches the skills and explains the attitude that is necessary for creating an accountable organization. In today’s business climate, it is more important than ever for team members to hold themselves accountable; organizations depend on individuals and teams to implement actions that align with the values, competencies, and strategies of the organization. These values, competencies, and strategies must be demonstrated by every member on a daily basis. Delegation is an overlooked and undervalued tool that managers can use to complete an ever-increasing list of work responsibilities. This course provides managers with the skills to effectively delegate work to others. There is often confusion about the true meaning and nature of delegation. In discussing the definition, participants begin to realize that delegation is about assigning meaningful tasks that can challenge employees and provide them with opportunities to build their skills. They recognize many benefits to delegation.

[Click next to view Objectives for this course.](#)

➤ Foundational Leadership Skills (Cont'd)

ILEAD-012

4 Days

CEUs 2.8

Objectives

After completing the Communication portion of this course, students will be able to:

- Describe the five steps to creating open communication
- Assess communication skills and identify areas of strength and development
- Determine the most appropriate method for sharing messages
- Demonstrate the appropriate nonverbal skills to enhance communication with others
- Create assertive statements
- Apply open-ended questioning techniques to increase two-way communication
- Use active listening skills to improve rapport and productivity in the working environment
- Respond effectively when receiving feedback

Objectives

After completing the Feedback portion of the course, students will be able to:

- Define feedback
- Identify guidelines for giving feedback
- Demonstrate the ability to use observation versus judgment
- Apply steps to giving constructive and positive feedback
- Apply guidelines for receiving feedback

Objectives

After completing the Coaching portion of the course, students will be able to:

- Identify the benefits of coaching
- Follow a three-stage Leader as Coach Model
- Identify coaching opportunities with direct reports and peers
- Solicit the ideas of others during a coaching session using effective questioning skills
- Apply active listening skills during a coaching session
- Apply the four-step GROW Model to coach direct reports and peers
- Respond effectively to difficult situations using one of five techniques
- Implement an action plan for formal and informal follow-up
- Provide reinforcement and developmental feedback to direct reports and peers on a day-to-day basis

[Click next to view Objectives for this course.](#)

➤ Foundational Leadership Skills (Cont'd)

ILEAD-012

4 Days

CEUs 2.8

Objectives

After completing the Accountability portion of this course, students will be able to:

- Define accountability, responsibility, and empowerment
- Rate yourself and your team on the Power Meter
- Discuss the Account-Able Choice
- Identify obstacles to being accountable
- Apply a three-step model to ask self-accountability questions
- Speak the language of empowerment and accountability
- Apply a five-step model to create accountability in others

Objectives

After completing the Delegation portion of this course, students will be able to:

- Define delegation
- Break your personal barriers to delegation
- Apply situational leadership to delegation
- Decide the tasks to delegate and the tasks to keep
- Determine the right person to whom to delegate the task
- Plan and conduct a four-step delegation meeting
- Follow up on a delegated task
- Obtain the results you expect from a delegated

➤ Enhanced Leadership Skills

ILEAD-013

4 Days

CEUs 2.8

Course Purpose

Effective leaders consistently seek to learn, change and grow by enhancing their leadership skills. In fact, leading in organizations requires learning, changing and the ability to adapt to and address the dynamic trends that often affect our internal and external environments. Strong leadership requires the ability to enhance their leadership skills and work environments in order to engage employees and produce high performance. This course offers five enhanced leadership skills that new supervisors must develop to successfully build and maintain strong relationships with employees generating synergy between employees. This, in turn, increases employee productivity. The course combines the concepts of hiring, teamwork, conflict management, and problem solving & decision making to create a 4-day enhanced leadership skills course for new and emerging supervisors and managers.

Given today's business realities, it is more important than ever for organizations to utilize their resources wisely. In any organization, selecting the right person for the right job is a challenge. When the challenge is met, turnover is low, morale and productivity are high, and great customer service is provided. This course is designed to provide information and skills to assess, build, and conduct high-quality selection interviews in order to decide on the right person for the right job. Most of the time when you hear the term team, it's about a group of people who get together to complete a special project. This course is about creating a team environment with the people with whom you work with each day. The team environment that you create can and will contribute to a positive and productive work group. In this course, participants will learn techniques for translating team goals into individual goals, empowering all team members to participate, encouraging collaboration amongst team members, and monitoring the team's progress using structured tools and processes.

Conflict is an inevitable dynamic in the work environment. Unfortunately, it usually carries a negative connotation. Conflict, in and of itself, is neither "good" nor "bad". What makes a conflict situation productive or destructive is the way in which issues and information are analyzed, approached, and communicated. Successful teams and managers have the ability to not only address but utilize differences in a way that increases the overall strength of the team. This course teaches the skills and perspectives that are necessary to effectively manage conflict. Most people view conflict as being highly personal in nature. In this course, participants will explore the true definition of conflict, and how this definition can help them better analyze and understand a challenging situation or person. They will also examine the role of personal power and how it influences the level and outcome of a conflict.

Employees in any organization find themselves solving problems on a daily basis. The ability to identify the problem, pinpoint the true cause and identify a workable solution is essential for personal, professional, and organizational success. In this course, participants will learn to identify problems proactively, correctly state identified problems, identify the most likely cause, and determine innovative solutions. They are also asked to bring a current work problem to class and to be prepared to have fun with problem solving!

[Click next to view Objectives for this course.](#)

➤ Enhanced Leadership Skills (Cont'd)

ILEAD-013

4 Days

CEUs 2.8

Objectives

After completing Hiring portion of this course, students should be able to:

- Recognize the importance of selecting the right candidate
- Calculate the cost of turnover
- Explain the organization's hiring process
- Apply a four-step interviewing process
- Identify job competencies and value behaviors for an open position
- Create behavior-based interview questions
- Conduct an effective selection interview
- Decide on the best candidate

Objectives

After completing the Teamwork portion of the course, students should be able to:

- Identify telltale signs that the TEAMwork within your team needs attention
- Apply techniques to translate goals to individual team members
- Apply techniques to empower all team members to participate
- Apply techniques to encourage collaboration amongst all team members
- Discuss techniques to monitor the team's environment and to make adjustments
- Describe how stereotyping of team members affects the team environment.

Click next to view Objectives for this course.

➤ Enhanced Leadership Skills (Cont'd)

ILEAD-013

4 Days

CEUs 2.8

Objectives

After completing the Conflict Management portion of the course, students should be able to:

- Define conflict
- Recognize the five styles of conflict resolution and how to best adapt their style and approach to a conflict situation
- Understand their preferred style of conflict resolution
- Apply the Stop, Yield, Go Model to collaborative conflict resolution
- Apply techniques to managing emotions during conflict
- Explain assumptions and their effect on conflict
- Use active-listening skills to improve the working environment
- Apply assertive language techniques to express their needs and respect the needs of others

Objectives

After completing the Problem Solving and Decision Making portion of this course, students should be able to:

- Define their role in problem solving
- Identify barriers to effective problem solving
- Apply a six-step problem-solving process
- Select appropriate tools to effectively problem-solve
- Coach mistakes without commanding or criticizing

AUTOMATION FUNDAMENTALS

SLC/RSLOGIX 500

VISUALIZATION

GENERAL INDUSTRIAL

CONTROLLOGIX/RSLOGIX 5000

NETWORKS

Web-Based courses are delivered via the Internet and are activated using ePasses. One ePass is needed to activate a single course and permits unlimited usage for a single user for one year. An Internet connection is required.

Catalog#	Description
EL-WBT1	Web-Based Training 1 Pack
EL-WBT5	Web-Based Training 5 Pack
EL-WBT20	Web-Based Training 20 Pack
EL-WBT50	Web-Based Training 50 Pack
EL-WBT100	Web-Based Training 100 Pack

➤ Fundamentals Of AC/DC Motors And Drives

20 Hours

Course Purpose

This interactive, self-paced, training course is a knowledge-building course that provides students with a basic understanding of AC and DC motor and drive concepts and terminology. Through animated simulations, students will learn the various components and functions of drives and motors. Students will learn to recognize AC and DC drive and motor hardware and functions through example drive applications.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Recognize AC and DC motor hardware and operation
- Select a replacement motor
- Recognize line protection and filtering device hardware and functions
- Prevent electrostatic damage to drive components
- Recognize AC and DC drive hardware and functions
- Recognize AC and DC motor braking methods
- Test a drive using electrical measuring tools
- Perform pre-power and power-on checks
- Monitor and control a drive using a HIM
- Select a drive for basic applications

Who Should Attend?

- Are users of Rockwell Automation AC and DC drives or drive software who need refresher training
- Are interested in the capabilities of AC and DC drive hardware and software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Understanding of basic electrical and electronic concepts
Designer software

Related Job Aids Available For Purchase

- RSLogix 5 and PLC-5 Procedures Guide: ABT-1785-TSJ53

➤ PLC Fundamentals

20 Hours

Course Purpose

This interactive, self-paced, training course delivers a broad-based understanding of important PLC principles and concepts. Students will understand how to connect to PLC hardware and how they function in various control systems. Students will study the various programming conventions, as well as practical issues about automation controls and components.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- What is a PLC?
- PLC hardware
- PLC numbering systems
- How is a PLC structured
- How to program a PLC
- Devices connected to a PLC
- How to use timers
- How to use counters
- Data handling instructions
- Comparison instructions
- Math instructions
- Sequencing instructions
- Specialty instructions
- Practical issues
- Product support

Who Should Attend?

- Individuals who need to understand the basics of programmable logic controllers

Prerequisites

- There are no prerequisites for this web-based training course

Related Job Aids Available For Purchase

- RSLogix 5 and PLC-5 Procedures Guide: ABT-1785-TSJ53

➤ EtherNet/IP – Hardware and IP Addressing

5 Hours

Course Purpose

This interactive, self-paced training course covers the fundamentals of Ethernet Industrial Protocol (EtherNet/IP) hardware and IP addressing. During this course, students will learn how to design and optimize an EtherNet/IP network and configure an EtherNet/IP driver and IP addresses for EtherNet/IP devices. Helpful animations, background information, answers to frequently asked questions, and links to other reference materials provide students with a variety of knowledge and learning tools.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Design and optimize EtherNet/IP networks
- Configure an EtherNet/IP communications driver using RSLinx
- Ping an IP address
- Configure and modify EtherNet/IP addresses using:
 - BOOTP-DHCP server software
 - RSLinx software
 - RSLogix 5000 software

Who Should Attend?

- Are responsible for designing EtherNet/IP networks
- Are interested in optimizing EtherNet/IP networks, configuring communications, and configuring EtherNet/IP addresses

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available For Purchase

- EtherNet/IP Procedures Guide: ABT-N300-TSJ50

➤ EtherNet/IP – Communications and Diagnostics

5 Hours

Course Purpose

This interactive, self-paced training course teaches the concepts of Ethernet Industrial Protocol (EtherNet/IP) communications and diagnostics. During this course, students will learn how to establish EtherNet/IP connections, send messages, and perform basic networking diagnostics. Helpful animations, background information, answers to frequently asked questions, and links to other reference materials provide students with a variety of knowledge and learning tools.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Configure an Ethernet/IP module in a local and remote chassis
- Configure a digital and analog I/O module in a chassis
- Modify EtherNet/IP module parameters
- Add a controller to an I/O configuration
- Produce and consume data over an EtherNet/IP network
- Communicate between multiple controllers on an EtherNet/IP network using an MSG instruction
- Configure the 9300-8EDM Ethernet diagnostic module
- Obtain computer IP addresses
- Access diagnostic information using a web browser

Who Should Attend?

- Are responsible for setting up communications over an EtherNet/IP network
- Are interested in understanding how to send messages over an EtherNet/IP network, and perform basic networking diagnostics

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available For Purchase

- EtherNet/IP Procedures Guide: ABT-N300-TSJ50

➤ FactoryTalk View Machine Edition – Applications and Displays

5 Hours

Course Purpose

This interactive, self-paced training course provides information about creating FactoryTalk View Machine Edition (ME) applications and displays. This course is part of a series of e-Learning courses designed to teach FactoryTalk View ME software. During this course, students will learn how to work with default graphic displays, configure application-wide settings, configure RSLinx Enterprise, and work with tags in an application.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Use the application explorer
- Use default graphic displays
- Create a new display
- Use the startup editor
- Define project settings
- Configure security and language options
- Use direct-reference tags in an application
- Create and use new HMI tags

Who Should Attend?

- Are responsible for designing FactoryTalk View ME applications
- Are interested in configuring application-wide settings, configuring RSLinx Enterprise software, and working with tags in an application

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available For Purchase

- FactoryTalk View ME & PanelView Plus Procedures Guide:
ABT-2711P-TSJ50

➤ FactoryTalk View Machine Edition – Drawing Objects

5 Hours

Course Purpose

This interactive, self-paced training course provides information about creating FactoryTalk View Machine Edition (ME) drawing objects in graphic displays. This course is part of a series of e-Learning courses designed to teach FactoryTalk View ME software. During this course, students will be introduced to a variety of basic graphic objects and learn how to modify their properties, animate them, and arrange them on the displays. Students will learn how to use objects from the graphic library.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Understand drawing objects
- Understand object properties
- Arrange objects
- Add objects from the graphic library
- Use the object explorer
- Animate drawing objects

Who Should Attend?

- Are responsible for designing FactoryTalk View ME displays
- Are interested in learning about basic drawing objects

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available For Purchase

- FactoryTalk View ME & PanelView Plus Procedures Guide:
ABT-2711P-TSJ50

➤ FactoryTalk View Machine Edition – Interactive Objects

5 Hours

Course Purpose

This interactive, self-paced, training course provides information about creating FactoryTalk View Machine Edition (ME) interactive objects. This course is part of a series of e-Learning courses designed to teach FactoryTalk View ME software. During this course, students will learn how to work interactive and advanced objects in graphic displays as well as create and configure data logs, trends, and alarms.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Create and configure:
 - Push buttons
 - Indicators
 - Display objects
 - Control list selectors
 - Gauges
 - Graph objects
 - Display navigation objects
 - Local message displays
 - Data logs
 - Trends
 - Alarms
- Add advanced features to interactive objects
- Create parameter files and tag placeholders

Who Should Attend?

- Are responsible for designing FactoryTalk View ME displays
- Are interested in learning about interactive objects

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available For Purchase

- FactoryTalk View ME & PanelView Plus Procedures Guide: ABT-2711P-TSJ50

➤ SLC 500 – Hardware Fundamentals

5 Hours

Course Purpose

This web-based training course teaches students the core hardware of SLC 500 control systems. This course provides an overview of the SLC 5/01, SLC 5/02, SLC 5/03, and SLC 5/04 programmable controllers, concepts, and terminology. During this course, students will learn about chassis, power supplies, and processors. This course present information about the SLC 500 communication options, discrete and analog I/O modules, and hardware configuration.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- SLC 500 family
- Chassis
- Power supplies
- Processors (status indicators, keyswitch, channel 1, channel 0, battery, and memory module)
- Communication options
- Discrete and analog I/O modules
- Hardware configuration

Who Should Attend?

- Users of Rockwell Automation SLC 500 processors who need refresher training
- Those interested in the features and capabilities of the SLC family of processors and RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

➤ SLC 500 – Programming Fundamentals

7 Hours

Course Purpose

This web-based training course teaches students the core programming concepts of SLC 500 control systems. During this course, students will learn about memory organization, addressing, ladder logic concepts, and the SLC 500 operating cycle. Students will be provided with an overview of RSLogix 500 software.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Memory organization
- Addressing (address types, indexed and indirect addressing)
- RSLogix 500 software overview
- Numbering systems
- Ladder programs
- Operating cycle
- Status file

Who Should Attend?

- Users of Rockwell Automation SLC 500 processors who need refresher training
- Those interested in the features and capabilities of the SLC family of processors and RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available For Purchase

- RSLogix 500 and SLC 500 Procedures Guide: ABT-1747-TSJ52

➤ RSLogix 500 Software – Offline Programming

(Also Available In Spanish)

5 Hours

Course Purpose

This interactive, self-paced, training course teaches the core tasks required for programming an RSLogix 500 project. During this course, students will learn how to create and navigate through an RSLogix 500 project, configure I/O modules, and create program and data files. Students will learn how to enter ladder logic using a variety of methods and verify a project so it will be ready to download. Helpful animations, background information, and links to other reference materials provide students with a variety of knowledge and learning tools. Students will have the opportunity to practice performing software tasks through interactive simulations.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Navigate through the RSLogix 500 software
- Configure the display
- Create a new project
- Configure I/O modules in a project
- Create program and data files
- Enter ladder logic
- Assign addresses to ladder logic
- Verify a project
- Copy, paste, and move rungs
- Edit with .SLC library files

Who Should Attend?

- Users of Rockwell Automation RSLogix 500 software who need refresher training
- Need to configure and navigate through RSLogix 500 software
- Those interested in the features and capabilities of RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common processor and ladder logic terms and operation is suggested

Related Job Aids Available For Purchase

- RSLogix 500 and SLC 500 Procedures Guide: ABT-1747-TSJ52

➤ RSLogix 500 Software – Online Monitoring

5 Hours

Course Purpose

This interactive, self-paced, training course teaches the core tasks required for communicating with and monitoring an RSLogix 500 project online. During this course, students will learn how to configure communication drivers and upload, download, and go online with an RSLogix 500 project. Students will learn how to go online and use RSLogix Emulator 500 software, which will allow students to test their project in a non-production environment. This course covers how to enter ladder logic online and use a variety of data monitoring tools, such as histograms and trends

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Configure communications
- Transfer an RSLogix 500 project file
- Edit ladder logic online
- Monitor data
- Force inputs and outputs

Who Should Attend?

- Users of Rockwell Automation RSLogix 500 software who need refresher training
- Need to configure and navigate through RSLogix 500 software
- Those interested in the features and capabilities of RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common processor and ladder logic terms and operation is suggested

Related Job Aids Available For Purchase

- RSLogix 500 and SLC 500 Procedures Guide: ABT-1747-TSJ52

➤ RSLogix 500 Software – Documenting and Searching

5 Hours

Course Purpose

This interactive, self-paced, training course teaches the core tasks required for documenting and searching an RSLogix 500 project. Students will learn to enter a variety of project documentation, such as rung comments and page titles, that students can use to improve their own RSLogix 500 projects. Students will learn how to import and export RSLogix 500 databases and how to backup their RSLogix 500 projects.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Use RSLogix 500 backup utilities
- Add symbols and address descriptions
- Add instruction comments, rung comments, and page titles
- Use database tools
- Import and export a database
- Print reports
- Search an RSLogix 500 project

Who Should Attend?

- Users of Rockwell Automation RSLogix 500 software who need refresher training
- Need to configure and navigate through RSLogix 500 software
- Those interested in the features and capabilities of RSLogix 500 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Knowledge of common processor and ladder logic terms and operation is suggested

Related Job Aids Available For Purchase

- RSLogix 500 and SLC 500 Procedures Guide: ABT-1747-TSJ52

➤ RSLogix 5000 Software – Project Configuration

5 Hours

Course Purpose

This interactive, self-paced, training course teaches the core tasks required to effectively create and configure automation control projects. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to install and navigate through the software, create and configure a new project, and produce and consume tags through step-by-step demonstrations. Students will learn about the various settings and options in the software and see how to perform the required tasks for example automation control applications.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Install RSLogix 5000 software
- Identify main window components
- Configure the display
- Navigate through the software
- Create and manage project files
- Configure a controller
- Organize tasks, programs, and routines
- Configure a local I/O module
- Organize data
- Produce and consume tags
- Export and import tags

Who Should Attend?

- Users of RSLogix 5000 control systems who need refresher training
- Those interested in the features and capabilities of RSLogix 5000 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment

Related Job Aids Available For Purchase

- Studio 5000 Logix Designer and Logix5000 Procedures Guide:
ABT-1756-TSJ50

➤ RSLogix 5000 Software – Offline Programming

5 Hours

Course Purpose

This interactive, self-paced, training course teaches the core tasks required to effectively create and configure automation control projects. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to install and navigate through the software, create and configure a new project, and produce and consume tags through step-by-step demonstrations. Through the demonstrations, students will learn about the various settings and options in the software and see how to perform the required tasks for example automation control applications.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Enter and edit ladder logic elements
- Configure ladder logic display options
- Print a ladder logic routine
- Enter and edit function block diagrams
- Configure function block diagram display options
- Print a function block diagram
- Enter and edit structured text
- Configure the structured text display
- Print a structured text routine
- Verify project components
- Search and replace text
- Create a cross reference list

Who Should Attend?

- Users of RSLogix 5000 control systems who need refresher training
- Those interested in the features and capabilities of RSLogix 5000 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the RSLogix 5000 Software – Project Configuration web-based training course (ePass/WBT1PACK) or equivalent experience with RSLogix 5000 software is recommended

Related Job Aids Available For Purchase

- Studio 5000 Logix Designer and Logix5000 Procedures Guide: ABT-1756-TSJ50

➤ RSLogix 5000 Software – Online Monitoring

5 Hours

Course Purpose

This interactive, self-paced, training course teaches the core tasks required to effectively monitor and edit industrial control projects. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to establish communications, monitor the status of a project, program ladder logic online, and identify and correct faults through step-by-step demonstrations. Students will learn about the various settings and options in the software and see how to perform the required tasks for example automation control applications.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Establish communications
- Monitor status
- Print a ladder logic routine
- Identify and correct faults
- Program ladder logic online
- Print a function block diagram

Who Should Attend?

- Users of RSLogix 5000 control systems who need refresher training
- Those interested in the features and capabilities of RSLogix 5000 software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the following web-based training courses or equivalent experience with RSLogix 5000 software is recommended:
 - RSLogix 5000 Software – Project Configuration
 - RSLogix 5000 Software – Offline Programming

Related Job Aids Available For Purchase

- Studio 5000 Logix Designer and Logix5000 Procedures Guide: ABT-1756-TSJ50
- ControlLogix Troubleshooting Guide: ABT-1756-TSJ20

➤ RSLogix 5000 Software – Motion

5 Hours

Course Purpose

This interactive, self-paced, training course teaches the core tasks required to effectively program motion control applications. This course is part of a series of e-Learning courses designed to teach RSLogix 5000 software. Students will learn how to configure servo modules, program motion instructions, and test and tune axes through step-by-step demonstrations. Students will learn the various settings and options in the software and see how to perform the required tasks for example motion applications.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Define a typical RSLogix 5000 motion control system
- Compare axis control modules
- Configure the servo modules
- Configure the controller
- Add and configure a SERCOS servo drive axis
- Add and configure an analog servo drive axis
- Understand the motion instruction tag structure
- Compare immediate and synchronous instructions
- Test and tune an axis
- Use motion direct commands

Who Should Attend?

- Users of RSLogix 5000 motion control systems who need refresher training
- Those interested in the features and capabilities of RSLogix 5000 motion control software

Prerequisites

- Experience operating a computer within a Microsoft Windows environment
- Completion of the following web-based training courses or equivalent experience with RSLogix 5000 software is recommended:
 - RSLogix 5000 Software – Project Configuration
 - RSLogix 5000 Software – Offline Programming
 - RSLogix 5000 Software – Online Monitoring

Related Job Aids Available For Purchase

- Studio 5000 Logix Designer and Logix5000 Motion Control Procedures Guide: ABT-1756-TSJ52

➤ Electrical Theory

15 Hours

Course Purpose

This interactive, self-paced, training course begins with the basics — the atom, electrical charge, voltage, current, and more. The basics are followed by an in-depth, theoretical approach to circuit analysis, basic magnetism, magnetic induction, and single- and poly-phase AC circuits.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Electrical fundamentals
- Basic physics
- Circuit fundamentals
- Circuit analysis
- Basic magnetism
- Magnetic circuits
- Single-pass AC circuits
- Magnetic induction
- Poly-phase AC circuits

Who Should Attend?

- Individuals who need to understand electrical theory systems

Prerequisites

- There are no prerequisites for this web-based training course

➤ Industrial Electrical

5 Hours

Course Purpose

This interactive, self-paced, training course delivers a broad-based understanding of the most important electrical concepts. Students will understand basic physics laws as they apply to electricity and basic electrical circuits. Students will study the various components of electrical systems and how they function and interact with each other.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Electrical fundamentals
- Circuit fundamentals
- Circuit analysis
- Basic magnetism
- Circuit components
- Electrical testers
- Schematics

Who Should Attend?

- Individuals who need to understand electrical theory systems

Prerequisites

- There are no prerequisites for this web-based training course

➤ Industrial Safety

15 Hours

Course Purpose

This interactive, self-paced, training course covers the ten common safety concerns in industrial, manufacturing, and construction environments. It delivers an interactive training experience focused on safety from an employee perspective.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Introduction to safety
- Walking and working surfaces
- Prevention and protection plans
- Personal protective equipment
- Electrical safety
- Machine guarding
- Chemical safety
- Powered industrial trucks
- Industrial hygiene
- Ergonomics

Who Should Attend?

- Individuals who need to understand electrical theory systems

Prerequisites

- There are no prerequisites for this web-based training course

➤ Industrial Mechanical

5 Hours

Course Purpose

This interactive, self-paced, training course delivers a broad-based understanding of the most important mechanical concepts. Students will understand basic physics laws as they apply to mechanical power and the systems in which they can be used. Students will study the various components of mechanical systems and how they function and interact with each other.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Basic physics
- Linear actuators
- Clutches
- Brakes
- Clutch/brake combinations
- Bearings
- Gears
- Drives
- Couplings

Who Should Attend?

- Individuals who need to understand electrical theory systems

Prerequisites

- There are no prerequisites for this web-based training course

➤ Industrial Hydraulics

5 Hours

Course Purpose

This interactive, self-paced, training course delivers a broad-based understanding of the most important hydraulic concepts. Students will understand basic physics laws as they apply to hydraulic power and the systems in which they can be used. Students will study the various components of hydraulic systems and how they function and interact with each other.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Basic hydraulic physics
- Pumps
- Actuators
- Pressure control
- Directional control
- Flow control valves
- Modular control valves
- Fluid conditioning
- Check valves
- Accessory components
- Fluid conductors
- Schematics
- Basic system design

Who Should Attend?

- Individuals who need to understand electrical theory systems

Prerequisites

- There are no prerequisites for this web-based training course

➤ Industrial Pneumatics

5 Hours

Course Purpose

This interactive, self-paced, training course delivers a broad-based understanding of the most important pneumatic concepts. Students will understand basic physics laws as they apply to pneumatics, as well as understand schematics and system design. Students will study the various components of pneumatic systems and how they function and interact with each other.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Electrical physics
- Compressors
- Air dryers
- Air preparation
- Air distribution
- Actuators
- Directional control valves
- Accessories
- Air line conductors
- Vacuum
- Schematics

Who Should Attend?

- Individuals who need to understand electrical theory systems

Prerequisites

- There are no prerequisites for this web-based training course

➤ Mobile Hydraulics

(Also Available In Spanish)

5 Hours

Course Purpose

This course delivers an interactive training experience covering the concepts needed to understand and work with the hydraulic systems of mobile equipment. Students will learn various physics laws related to hydraulic power, as well as the hydraulic components and circuits associated with these systems. Students will study the basics of hydrostatic transmissions, as well as valves and maintenance systems common to almost all combustion engine vehicles. Students will study the symbols and language of hydraulic schematics, helping them better understand their systems.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Fluid power physics
- Pumps
- Actuators
- Hydraulic transmissions
- Pressure control
- Directional control valves
- Flow control valves
- Modular control valves
- Fluid conditioning
- Check valves
- Accessory components
- Fluid conductors
- Schematics

Who Should Attend?

- Individuals who need to understand electrical theory systems

Prerequisites

- There are no prerequisites for this web-based training course

➤ Mobile Electrical

(Also Available In Spanish)

5 Hours

Course Purpose

This course delivers an interactive training experience to assist students in working with electrical systems of mobile equipment. Students will learn the various physics laws related to electric power, as well as the electric components and circuits associated with these systems.

Objectives

After completing this web-based training course, students should be knowledgeable about the following tasks:

- Electrical fundamentals
- Circuit fundamentals
- Circuit analysis
- Basic magnetism
- Circuit components
- Electrical testers
- Charging and starting systems

Who Should Attend?

- Individuals who need to understand electrical theory systems

Prerequisites

- There are no prerequisites for this web-based training course

➤ Rockwell Automation Interactive iBooks

Not just a textbook but a new and exciting way to read and learn about industrial automation concepts straight from your iPad®.

Rockwell Automation iBooks are highly engaging and include diverse learning activities:

- Videos/Animations—a wide variety of videos and animations to enhance concepts and provide realworld examples
- Podcasts—listen to interviews with automation workers that offer unique perspectives of various jobs and industries
- Web links—access to supplemental information instantly
- Check Knowledge—relevant questions will test your understanding of concepts

Availability

To purchase Rockwell Automation iBooks, visit the iTunes® Store.

Introduction to Automation iBook®

The Introduction to Automation iBook will provide you with a broad and fundamental understanding of industrial automation. Topics range from an overview of common automation industries to an introduction of basic automated system components, such as controllers, I/O, drives, and HMI (Human Machine Interface). In addition, you will learn common automation terminology, what tools are used with industrial automation, and what careers may be available to them within this field. The variety of learning resources integrated in this iBook will give you a solid foundation with automated systems and prepare you for more advanced automation-related topics.

Introduction to Automation Chapters:

- Identifying Common Industries and Applications in Industrial Automation
- Understanding Industrial Automation Careers
- Identifying Industrial Automation Standards and Regulations
- Understanding Basic Mechanical Components
- Understanding Automation Control Systems
- Understanding Controllers
- Identifying I/O Devices and Modules
- Understanding Networks
- Recognizing Logic
- Recognizing Basic Programming Concepts
- Identifying System Documentation
- Identifying Human Machine Interfaces
- Identifying AC and DC Motors and Drives
- Understanding Safety in Automation
- Understanding Process Control Audience

This book is intended for individuals who have little or no experience with automation systems.

➤ AC and DC Drives iBook

The AC and DC Drives iBook will provide you with an understanding of AC and DC drives, including basic configuring, operating, maintaining, and troubleshooting using a HIM or HMI. You will identify basic components common to industrial drive applications. You will also learn the characteristics of AC and DC drives in various examples of real-world applications. This book includes key concepts, definitions, links to multimedia examples and more to give you an interactive learning experience.

AC and DC Drives Chapters:

- Identifying Drive System Components and Concepts
- Identifying Line Protection and Filtering Methods for AC and DC Drive Systems
- Recognizing DC Motor Functions Controlled by DC Drives
- Identifying DC Drive Hardware and Functions
- Recognizing AC Motor Functions Controlled by AC Drives
- Identifying AC Drive Hardware and Functions
- Identifying Braking Methods for AC and DC Drive Systems
- Comparing AC and DC Drive Systems for Basic Applications
- Preventing Electrostatic Damage to Drive Components
- Identifying Electrical Measuring Tools and Functions
- Identifying Basic Startup Procedures for AC and DC Drives
- Using a HIM to Configure, Control, and Monitor a Drive
- Performing Preventative Maintenance and Basic Troubleshooting for Drives

Audience

This book is intended for individuals who have some experience with electric motors and are interested in understanding AC and DC drives.

➤ Training Workstations

Practice and Reinforce Your Job Skills

Superior tools and technology are the most obvious building blocks of success in today's manufacturing operations. Those with the best tools coupled with strategic innovation tend to get the best results. But this isn't the whole equation because even automated tools are essentially "enablers"... extensions of a machine user whose knowledge, skill, and productivity are the ultimate drivers of your success. Rockwell Automation understands this, which is why we build training workstations to optimize the productivity of both your manufacturing and human assets.

Built from the same proven Rockwell Automation technologies you use every day, our training workstations precisely mirror your manufacturing processes for the most realistic experience possible. Whether you're introducing new skills, bringing skills up-to-date or conducting pre-deployment testing on a new process before going "live," our training workstations effectively get employees up-to-speed, while supporting manufacturing's human dimension for the best results.

Hands-on Training

Workstations provide ideal practice for:

- New hires
- New technologies
- System upgrades
- New production processes
- Transitioning employees
- Competency assessments

➤ Lab Books

For practice exercises related to training workstations, these self-paced lab books are available with a workstation purchase. Note: Lab books must be purchased in conjunction with a workstation. Previously purchased workstations apply.

Lab Book	Lab Book Descriptions	Corresponding Workstations
ABT-CCA161TLB	PowerFlex 700 Configuration Lab Book	
ABT-CCA162TLB	PowerFlex 700 DeviceNet Lab Book	DeviceNet Workstation (ABT-TDDNET2-A)
ABT-CCA163TLB	PowerFlex 700 Maintenance Lab Book	
ABT-CCA164TLB	PowerFlex 700 ControlNet Lab Book	ControlNet Workstation (ABT-CNET1)
ABT-CCA182TLB	PowerFlex 750 Config Lab Book	
ABT-CCA183TLB	PowerFlex 750-Series AC Drive Maintenance and Troubleshooting Lab Book	
ABT-CCN130TLB	Motion Control Fundamentals Lab Book	Kinetix 6000 Servo Drive Workstation (ABT-TD20941) And one of the following: ControlLogix Workstation — No Motion (10-slot chassis) (ABT-TDCLX3-B) ControlLogix Workstation (10-Slot Chassis with Ultra 3000) (ABT-TDCLX3K-A)
ABT-CCN145TLB	Studio 5000 Logix Designer Level 4: Kinetix 6000 (SERCOS) Lab Book	Kinetix 6000 Servo Drive Workstation (ABT-TD20941) And one of the following: ControlLogix Workstation — No Motion (10-slot chassis) (ABT-TDCLX3-B) ControlLogix Workstation (10-Slot Chassis with Ultra 3000) (ABT-TDCLX3K-A)
ABT-CCN201TLB	Kinetix 6500 Troubleshooting and Project Interpretation Lab Book	Kinetix 6500 Workstation with EN2TR (ABT-TDK6500EN2TR) And one of the following: ControlLogix Workstation — No Motion (10-slot chassis) (ABT-TDCLX3-B) ControlLogix Workstation (10-Slot Chassis with Ultra 3000) (ABT-TDCLX3K-A)
ABT-CCP146TLB	ControlLogix Fundamentals Lab Book	ControlLogix Workstation — No Motion (10-slot chassis) (ABT-TDCLX3-B)
ABT-CCP151TLB	Ladder Logix Programming Lab Book	ControlLogix Workstation — No Motion (10-slot chassis) (ABT-TDCLX3-B)
ABT-CCP153TLB	ControlLogix Maintenance Lab Book	ControlLogix Workstation — No Motion (10-slot chassis) (ABT-TDCLX3-B)
ABT-CCP164TLB	DeviceNet,RSNetWorx Lab Book	ControlLogix Workstation — No Motion (10-slot chassis) (ABT-TDCLX3-B)

➤ Lab Books

Lab Book	Lab Book Descriptions	Corresponding Workstations
ABT-CCP164TLB-B	DeviceNet and RSNetWorx Configuration and Troubleshooting Lab Book	ControlLogix Workstation — No Motion (10-slot chassis) (ABT-TDCLX3-B)
ABT-CCP182TLB	Essentials of Industrial Ethernet Networks for an OT Professional Lab Book	EtherNet/IP Workstation (ABT-TDENET5700) and Stratix 8300 switch <i>To perform the Network Address Translation (NAT) lesson in this lab book, two ABT-TDENET5700 workstations are required.</i>
ABT-CCP298TLB	CompactLogix Lab Book	CompactLogix Workstation (ABT-TDIALITE-A)
ABT-CCP299TLB	ControlLogix Fundamentals Lab Book	ControlLogix Workstation — No Motion (10-slot chassis) (ABT-TDCLX3-B)
ABT-CCP711TLB	PhaseManager Project Design Lab Book	ControlLogix Workstation — No Motion (10-slot chassis) (ABT-TDCLX3-B)
ABT-CCP810TLB	Essentials of Industrial Automation for an IT Professional Lab Book	EtherNet/IP Workstation (ABT-TDENET5700)
ABT-CCPS43TLB	SLC 500 Maintenance Lab Book	SLC 500 Workstation – SLC 5/04 Processor (10-slot chassis) and Universal I/O Simulator Workstation – 120V AC Operation
ABT-CCV204TLB	FactoryTalk ViewME, PanelView Plus Lab Book	ControlLogix Workstation — No Motion (10-slot chassis) (ABT-TDCLX3-B) And one of the following: PanelView Plus Workstation (ABT-TDPVPLUSTC01) PanelView Plus 6 Workstation (ABT-TDPVPLUSTC02)
ABT-CCV206TLB	FactoryTalk ViewSE Maintenance Lab Book	ControlLogix Workstation — No Motion (10-slot chassis) (ABT-TDCLX3-B)
ABT-CCV209TLB	FactoryTalk View ME and PanelView Plus Maintenance and Troubleshooting Lab Book	ControlLogix Workstation — No Motion (10-slot chassis) (ABT-TDCLX3-B) And one of the following: PanelView Plus Workstation (ABT-TDPVPLUSTC01) PanelView Plus 6 Workstation (ABT-TDPVPLUSTC02)
ABT-CIA101TLB	Introduction To IA Lab Book	
ABT-SAFLOG101TLB	GuardLogix Application Lab Book	GuardLogix Controller Workstation (ABT-TDGRDLX1-B)
ABT-SAFLOG103TLB	GuardLogix Fundamentals Lab Book	GuardLogix Controller Workstation (ABT-TDGRDLX1-B)

➤ ArmorStart Distributed Motor Controller Workstation

Catalog Number:

ABT-TDARMORDMC

Major Components:

- VFD ArmorStart distributed motor controller:
 - DeviceNet communications and 24V control
- Local CB disconnect
- DeviceNet configuration terminal
- I/O capabilities:
 - 4 DC inputs (sourced from DeviceNet power 24V DC)
 - 2 relay outputs (sourced from control power)

Dimensions:

- Box 1
 - Width: 23 in. (58 cm)
 - Height: 19 in. (48 cm)
 - Depth: 15 in. (38 cm)
 - Weight: 89 lb. (40 kg)

Related Products:

- DeviceNet and RSNetWorx Procedures Guide (ABT-N100-TSJ50)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ Centerline[®] MCC on EtherNet/IP[™] Workstation

Catalog Number:

ABT-TDMCCENET

Major Components:

- **Network hardware:**
 - Stratix 5700 10-port Ethernet switch
 - 2100-ENET Ethernet adapter
- **Control hardware:**
 - PowerFlex 525 AC drive
 - (2) E300[™] electronic overload relays
 - (1) E3 Plus[™] overload relay
- **Flywheel with manual brake**
- **871[™] proximity sensor**
- **Operator panel:**
 - E-stop
 - 6 illuminated push buttons
 - 7 selector switches

Dimensions:

- **Box 1**
 - Width: 29 in. (74 cm)
 - Height: 21 in. (54 cm)
 - Depth: 13 in. (33 cm)
 - Weight: 83 lb. (38 kg)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Note:

- For the approximate dimensions with an optional shipping case, add 5 in. (13 cm) to the width, 6 in. (15 cm) to the height, 3 in. (8 cm) to the depth, and 50 lbs. (23 kg) to the weight.

➤ 5380 CompactLogix and PanelView 5500 Workstation

Major Components:

- Network hardware:
 - CompactLogix™ 5380 Controller:
5069-L310ERM
 - PanelView™ 5500 graphic terminal with
touchscreen operation
 - DC power supply
 - Ethernet cable
 - Hard-shell enclosure

Dimensions:

- Box 1
 - Height: 10 in (25 cm)
 - Width: 16 in (40.5 cm)
 - Depth: 5.5 in (14.5 cm)

Catalog Number:

ABT-TDCMPX-PV5500



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ CompactLogix and PanelView Plus 7 Workstation

Catalog Number:

ABT-TDCMPX-PVP7

Major Components:

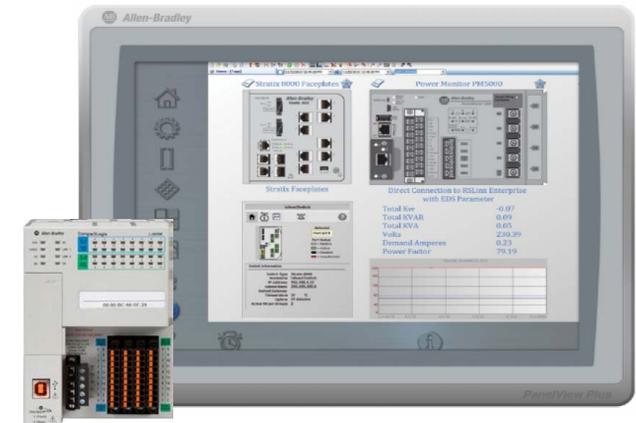
- CompactLogix™ L18ERM processor
- PanelView™ Plus 7 Performance terminal with touchscreen operation
- DC power supply
- Ethernet cable
- Hard-shell enclosure

Dimensions:

- Height: 9 in (23 cm)
- Width: 15.5 in (39 cm)
- Depth: 4.5 in (11.5 cm)

Related Products:

- FactoryTalk View ME and PanelView Plus Procedures Guide (ABT-2711P-TSJ50)
- FactoryTalk View ME & PanelView Plus Programming Lab Book (ABT-CCV204-TLB)
- FactoryTalk View ME & PanelView Plus Maintenance and Troubleshooting LabBook (ABT-CCV209-TLB)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ CompactLogix Workstation

Catalog Number:

ABT-TDIALITE-A

Major Components:

- 0.5 Hp PowerFlex 40 AC Drive
- Operator interface panel
 - 2 dual input and output push buttons
 - 4 digital output pilot lights
 - 1 analog input
 - 1 analog meter
- CompactLogix hardware
 - 1 DIN Rail
 - 1 system power supply
 - 1 CompactLogix controller
 - 1 digital output module
 - 1 analog output module
- Point I/O hardware
 - 1 Ethernet adapter
 - 1 digital input/output module
 - 2 dual input and output push buttons
- PanelView Plus 600 terminal
- Stratix 8-port switch

Dimensions:

- Box 1
 - Height 24 in. (61 cm)
 - Width 20 in. (51 cm)
 - Depth 13in. (33cm)
 - Weight 40 lb. (18kg)

Related Products

CompactLogix System Fundamentals & Troubleshooting Lab Book (ABT-CCP298TLB)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ CompactLogix Lite Workstation

Catalog Number:

ABT-TDCMPXLITE

Major Components:

- 1 CompactLogix™ L30ER processor
- 1 CompactLogix AC power supply
- 1 Digital combo, 6 digital in/4 digital out
- 4 Momentary pushbuttons
- 2 Selector switches
- 1 Compactbus end cap

Dimensions:

- Height: 14 in (36 cm)
- Width: 10 in (25 cm)
- Depth: 6 in (15 cm)
- Weight: 15 lbs (7 kg)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ Connected Components Workstation

Catalog Number:

ABT-TDCONNCOMP

Major Components:

- 1 MicroLogix 1400
- 1 PowerFlex 4M AC drive
- 1 PanelView C600 terminal
- 1 Stratix Ethernet switch
- Dual discrete inputs/outputs
- 3 selector switches
- 4 push buttons
- 1 analog output meter
- 2 photo eyes
- Ethernet cables

Dimensions:

- Box 1
 - Width: 20 in. (51 cm)
 - Height: 29 in. (74 cm)

Related Products

- CompactLogix System Fundamentals & Troubleshooting Lab Book (ABT-CCP298TLB)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ ControlLogix Workstation – No Motion (7-Slot Chassis)

Catalog Number:

ABT-TDCLX2-B

Major Components:

- **Network hardware:**
 - 1 ControlNet™ bridge module
 - 2 ControlNet taps
 - 2 terminators
- **Control hardware:**
 - (1) 7-slot I/O chassis
 - (1) 1756 system power supply
 - 1 ControlLogix controller
 - 1 DC input module
 - 1 DC output module
 - 1 analog input module
 - 1 analog output module
- **Operator interface panel:**
 - 12 illuminated push buttons
 - 2 potentiometers
 - 2 analog voltmeters

Dimensions:

- **Box 1**
 - Width: 20 in. (51 cm)
 - Height: 16 in. (41 cm)
 - Depth: 9 in. (23 cm)
 - Weight: 90 lb. (41 kg)

Related Products:

- All Studio 5000 Logix Designer software procedures guides
- ControlLogix Troubleshooting Guide (ABT-1756-TSJ20)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ ControlLogix Workstation – No Motion (10-Slot Chassis)

Catalog Number:

ABT-TDCLX3-C

Major Components:

- **Network hardware:**
 - 1 EtherNet module
 - 1 ControlNet bridge module
 - 2 ControlNet taps
 - 2 terminators
- **Control hardware:**
 - (1) 10-slot I/O chassis
 - (1) 1756 system power supply
 - 1 ControlLogix controller
 - 1 DC input module
 - 2 DC output module
 - 1 analog input module
 - 1 analog output module
- **Operator interface panel:**
 - 12 illuminated push buttons
 - 2 potentiometers
 - 2 analog voltmeters

Dimensions:

- **Box 1**
 - Width: 20 in. (51 cm)
 - Height: 16 in. (41 cm)
 - Depth: 9 in. (23 cm)
 - Weight: 70 lb. (33 kg)

Related Products:

- All Studio 5000 Logix Designer software procedures guides
- ControlLogix Troubleshooting Guide (ABT-1756-TSJ20)
- Lab books associated with the ControlLogix/Studio 5000 curriculum



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ ControlLogix Workstation – No Motion and No Controller (7-Slot Chassis)

Catalog Number:

ABT-TDCLX2NP-A

Major Components:

- Network hardware:
 - 1 ControlNet™ bridge module
 - 2 ControlNet taps
 - 2 terminators
- Control hardware:
 - (1) 7-slot I/O chassis
 - (1) 1756 system power supply
 - 1 ControlLogix controller
 - 1 DC input module
 - 1 DC output module
 - 1 analog input module
 - 1 analog output module
- Programming Cable
- Operator interface panel:
 - 12 illuminated push buttons
 - 2 potentiometers
 - 2 analog voltmeters

Dimensions:

- Box 1
 - Width: 20 in. (51 cm)
 - Height: 16 in. (41 cm)
 - Depth: 9 in. (23 cm)
 - Weight: 90 lb. (41 kg)

Related Products:

- All Studio 5000 Logix Designer software procedures guides
- ControlLogix Troubleshooting Guide (ABT-1756-TSJ20)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ ControlLogix Workstation – No Motion and No Controller (10-Slot Chassis)

Catalog Number:

ABT-TDCLX3NP-A

Major Components:

- **Network hardware:**
 - 1 EtherNet module
 - 1 ControlNet bridge module
 - 2 ControlNet taps
 - 2 terminators
- **Control hardware:**
 - (1) 10-slot I/O chassis
 - (1) 1756 system power supply
 - 1 DC input module
 - 2 DC output module
 - 1 analog input module
 - 1 analog output module
- **Programming Cable**
- **Operator interface panel:**
 - 12 illuminated push buttons
 - 2 potentiometers
 - 2 analog voltmeters

Dimensions:

- **Box 1**
 - Width: 20 in. (51 cm)
 - Height: 16 in. (41 cm)
 - Depth: 9 in. (23 cm)
 - Weight: 70 lb. (33 kg)

Related Products:

- **All Studio 5000 Logix Designer software procedures guides**
- **ControlLogix Troubleshooting Guide (ABT-1756-TSJ20)**



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ ControlLogix with 5069 Compact I/O Workstation (4-Slot Chassis)

Catalog Number:

ABT-TDCLX4

Major Components:

- **Network hardware:**
 - 1756-EN2T EtherNet/IP module
 - Stratix® 2000 unmanaged switch
 - 5069-AEN2TR EtherNet/IP adapter
- **Control hardware:**
 - 4-slot chassis
 - 5583E ControlLogix® controller
 - 1756-IB16D DC input module
 - 1756-OB16D DC output module
 - 5069-IY4 analog input module
 - 5069-OF4 analog output module
- **Operator interface panel:**
 - 12 illuminated pushbuttons
 - 4 maintained 2-position selector switches
 - 2 potentiometers
 - 2 analog voltmeters

Dimensions:

- **Box 1**
 - Width: 21.5 in. (54.5 cm)
 - Height: 12 in. (30.5 cm)
 - Depth: 6 in. (15.5 cm)
 - Weight: 20 lb. (9 kg)

Related Products:

- All Studio 5000 Logix Designer® Software Procedures Guides
- ControlLogix Troubleshooting Guide (ABT-1756-TSJ20)
- Many labs books in the ControlLogix/Studio 5000® curriculum. Please call for availability or check the Workstations section of our Training Catalog: Workforce Development Catalog.



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ Conveyor Assembly Simulator Workstation

Catalog Number:

ABT-TDAST**

Major Components:

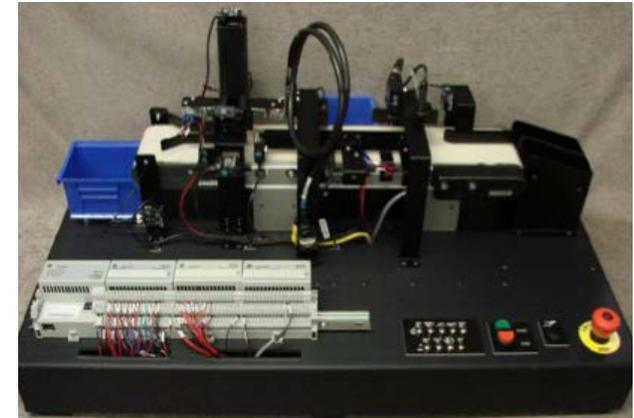
- 2200 Series drive flat belt end drive
- Power supply 24...28V DC
- Push buttons:
 - 1 push-pull illuminated
 - (1) 2-position momentary multifunction
- Switch and photo eye hardware:
 - 3 proximity sensors
 - 7 toggle switches, round actuator
 - 9 photo eyes
 - (1) 2-position selector switch

Dimensions:

- Box 1
 - Width: 35 in. (88.9 cm)
 - Height: 16 in. (41 cm)
 - Depth: 20 in. (52 cm)
 - Weight: 92 lb. (42 kg)

** IMPORTANT ORDERING INFORMATION

- This unit can be ordered in a variety of controller and conveyor configurations detailed below. To order any unit with a case, please add C to the end of the part number:
 - 2 conveyors
 - No controller: ABT-TDAST, Flex I/O
 - 1 conveyor
 - No controller: ABT-TDASTLITE



Lead Time = 9 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ EtherNet/IP™ Workstation

Catalog Number:

ABT-TDENET5700**

Major Components:

- 7-slot ControlLogix chassis with the following modules:
 - ControlLogix Controller
 - EtherNet/IP bridge module
 - EtherNet/IP web server module
 - Digital input module
 - Digital output module
- ControlLogix power supply
- CompactLogix chassis with the following modules:
 - CompactLogix controller
 - 1769 digital input module
 - 1769 digital output module
- 1794-AENT EtherNet/IP adapter module with a four channel non-isolated analog output module
- PanelView Plus 600 terminal
- Stratix switch (select 6000 or 5700)
- 18 dual discrete inputs/outputs
- 6 selector switches
- 1 analog output meter
- 1 photoeye

Dimensions:

- Box 1
 - Width: 30 in. (76 cm)
 - Height: 21 in. (53 cm)
 - Depth: 13 in. (33 cm)
 - Weight: 45 lb. (20 kg)

Related Products:

- EtherNet/IP Procedures Guide (ABT-N300-TSJ50)
- EtherNet/IP Design and Troubleshooting Lab Book (ABT-CCP179TLB)

** IMPORTANT ORDERING INFORMATION

- This unit is available with different switches:
 - For a unit with a Stratix 5700 switch, order ABT-TDENET5700
 - For a unit with a Stratix 8000™ switch, DeviceNet™ scanner, and DeviceNet photo-eye, order ABT-TDENETS8K-A
 - For a unit with a Stratix 6000™ switch, DeviceNet™ scanner, and DeviceNet photo-eye, order ABT-TDENETIP-A



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ GuardLogix Controller Workstation

Catalog Number:

ABT-TDGRDLX1-B

Major Components:

- GuardLogix primary controller
- GuardLogix safety partner
- 7-slot ControlLogix chassis
- ControlLogix power supply
- 8 dual discrete inputs/outputs
- 1 selector switch
- CompactBlock I/O safety modules:
 - 1791ES-IB16 EtherNet/IP module with 16 safety inputs and 16 pulse test outputs
 - 1791DS-IB8XOB8 DeviceNet module with 8 safety inputs, 8 safety solid-state outputs
- Communication modules:
 - EtherNet/IP bridge module
 - DeviceNet bridge module
- Light curtain
- E-stop push button
- Patch connectors
- Stratix 2000™ 5-port Ethernet switch
- MatGuard™ safety mat

Dimensions:

- Box 1
 - Width: 24 in. (61 cm)
 - Height: 20 in. (51 cm)
 - Depth: 12 in. (30 cm)
 - Weight: 58 lb. (27 kg)

Related Products:

- GuardLogix Fundamentals and Maintenance Lab Book (ABT-SAF-LOG101TLB)
- GuardLogix Application Development Lab Book (ABT-SAF-LOG103TLB)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ GuardPLC Workstation

Catalog Number:

ABT-TDGRDPLC1

Major Components:

- GuardPLC 1600 controller
- Distributed I/O expansion module
- Power switch
- 120V / 220V plug receptacle
- E-stop push button
- 6 dual discrete inputs/outputs
- Patch connectors

Dimensions:

- Box 1
 - Width: 19 in. (48 cm)
 - Height: 15 in. (38 cm)
 - Depth: 8 in. (20 cm)
 - Weight: 20 lb. (9 kg)

Related Products:

- RSLogix Guard PLUS and GuardPLC Procedures Guide (ABT-1753-TSJ50)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ Integrated Architecture Basic Workstation

Catalog Number:

ABT-TDCMPX

Major Components:

- 0.5 Hp PowerFlex 40 AC drive
- CompactLogix hardware:
 - 1 DIN Rail
 - 1 system power supply
 - 1 CompactLogix controller
- 1 PanelView Plus 6,600 terminal
- 1 Stratix 8-port switch

Dimensions:

- Box 1
 - Width: 15 in. (38 cm)
 - Height: 18 in. (46 cm)
 - Depth: 12 in. (31 cm)

Related Products

CompactLogix System Fundamentals & Troubleshooting Lab Book (ABT-CCP298TLB)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ Kinetix 6000 Servo Drive Workstation

Catalog Number:

ABT-TD20941 (120V AC)
ABT-TD20942 (230V AC, 20 A)

Major Components:

- 2-axis power rail
- 120V AC operation
- Integrated axis module
- MP-series motors
- SERCOS communication card
- Illuminated mushroom E-stop push button
- Integral surge suppression
- Auxiliary encoder
- Cable package:
 - Universal feedback cable
 - Universal motor power cable
 - Lo-profile I/O connector kit
 - Lo-profile feedback connector kit
 - Lo-profile auxiliary feedback connector kit

Dimensions:

- Box 1
 - Width: 25 in. (64 cm)
 - Height: 19 in. (48 cm)
 - Depth: 10 in. (25 cm)
 - Weight: 70 lb. (32 kg)

Related Products:

- Studio 5000™ Logix Designer and Logix5000 Motion Control Procedures Guide (ABT-1756-TSJ52)
- Motion Programming Using Ladder Logic Lab Book (ABT-CCN145TLB)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ Kinetix 6500 Workstation

Catalog Number:

ABT-TDK6500**
ABT-TDK6500EN2TR (with EN2TR) **

Major Components:

- Kinetix 6500 integrated axis module (460V AC)
- Kinetix 6500 axis module (460V AC)
- 2 Ethernet safe speed monitoring control modules
- 2 MPL motors
- 5-port Stratix Ethernet switch
- 1783- ETAP
- TLS-3-GD2 guard locking switch
- Power supply 24V, 5 A
- Safe-off button
- 2-position selector switch
- 2 photo switches

Important:

- This unit requires a controller and connecting modules. Please see the Important Ordering Information.

Dimensions:

- Box 1
 - Width: 28 in. (71 cm)
 - Height: 20 in. (51 cm)
 - Depth: 17 in. (43 cm)
 - Weight: 113 lb. (51 kg)

**Important Ordering Information:

- This unit must have the following additional equipment to operate:
 - A 10/100 Mbps Ethernet bridge:
 - Order ABT-TDK6500EN2TR for a unit with a bridge
 - Order ABT-TDK6500 for a unit without a bridge (provide your own)
 - A ControlLogix controller to
 - Order ABT-TDCLX3-C (complete ControlLogix workstation)
 - If you chose to buy the Kinetix unit without the ControlLogix workstation, you will need your own controller, I/O, and interface.



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ Kinetix 5700 Workstation

Catalog Number:

ABT-TDK5700

Major Components:

- Kinetix® 5700 DC bus power supply
- Kinetix 5700 dual-axis inverter module (460 V AC)
- 1769-L18ERM-BB1B CompactLogix™ Controller
- 2 VPL motors
- Power supply (24V, 5A)
- Safe-off button
- 2 photoswitches
- Operator interface panel:
 - 9 illuminated pushbuttons
 - 3 illuminated selector switches
 - 1 three-position selector switch

Dimensions:

- Box 1
 - Width: 24.80 in. (62.99 cm)
 - Height: 20.87 in. (53.07 cm)
 - Depth: 15.23 in. (38.68 cm)
 - Weight: 75 lb. (34.47 kg)

Related Products

- Studio 5000 Logix Designer and Logix5000 Motion Control Procedures Guide (ABT-1756-TSJ52)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ Package Sorting Simulator Workstation

Catalog Number:

ABT-TDSORTER**

Major Components:

- 8 proximity switches
- 2 E-stop push buttons
- 2 start/stop push buttons
- 20 contacts for push buttons
- 1 encoder
- 1 encoder cable
- 1 encoder coupling
- (1) 2-hole push button enclosures
- (1) 3-hole push button enclosures
- 3 photo-eyes
- 1 selector switch

Dimensions:

- Box 1
 - Width: 40 in. (102 cm)
 - Height: 18 in. (46 cm)
 - Depth: 16 in. (41 cm)
 - Weight: 125 lb. (57 kg)

** IMPORTANT ORDERING INFORMATION

- For a complete workstation inside a shipping case, add a C to the end of the catalog number. Example: ABT-TDSORTER becomes ABT-TDSORTERC



Lead Time = 9 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

Note:

- For the size with an optional shipping case, add 3 in. (8 cm) to width/depth and 8 in. (20 cm) to height for the given dimensions.

➤ PanelView Plus 6 Workstation

Catalog Number:

ABT-TDPV61000 (1000 terminal)

ABT-TDPV6700 (700 terminal)

Major Components (Control Workstation):

- PanelView Plus 6 terminal with touch screen operation
- Ethernet cable
- Swing stand
- Hard-shell enclosure

Dimensions:

- Box 1
 - Width: 22 in. (55 cm)
 - Height: 22 in. (56 cm)
 - Depth: 14 in. (36 cm)
 - Weight: 124 lb. (56 kg)

Compatibility:

- The PanelView Plus 6 workstation can be used with the ControlLogix Workstation – No Motion (ABT-TDCLX3-C)

Related Products:

- FactoryTalk View ME and PanelView Plus Procedures Guide (ABT-2711P-TSJ50)
- FactoryTalk View ME & PanelView Plus Programming Lab Book (ABT-CCV204TLB)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ PanelView Plus 1000 Workstation

Catalog Number:

ABT-TDPVPLUSTC02

Major Components:

- PanelView Plus terminal keypad and touch operation
- DH+™, DH-485
- Serial Interface cable
- Hard-shell enclosure

Dimensions:

- Box 1
 - Width: 13 in. (33 cm)
 - Height: 10 in. (25 cm)
 - Depth: 3 in. (6 cm)
 - Weight: 6 lb. (3 kg)



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ PlantPax™ Process System Workstation

Catalog Number:

ABT-TDPAX

Major Components (Control Workstation):

- Redundant controller chassis
- Redundant Stratix 8000 switches
- 15 in. VersaView with touch screen

Major Components (I/O Workstation):

- Remote ControlLogix digital and HART I/O modules
- 3 simulated valves with open and closed feedback
- 7 hand switches
- 2 HART potentiometers
- 4...20 mA potentiometer
- 4...20 mA digital ammeter
- 24V DC motor with HOA switch
- 3-color stack light
- Fluke 87 multimeter

Major Components (MCC Workstation):

- PowerFlex 40 drive
- E1 Plus overload relay with EtherNet/IP module
- Stratix 6000 switch
- 220V AC motor with hand brake
- 115V AC motor with hand brake and Hand/Off/Auto switch

Dimensions (HART Workstation):

- Box 1
 - Width: 39 in. (97 cm)
 - Height: 22 in. (56 cm)
 - Depth: 14 in. (36 cm)
 - Weight: 177 lb. (80 kg)

Dimensions (FieldBus Workstation):

- Box 2
 - Width: 29 in. (73 cm)
 - Height: 22 in. (56 cm)
 - Depth: 14 in. (36 cm)
 - Weight: 139 lb. (63 kg)

Dimensions (MCC Workstation):

- Box 3
 - Width: 22 in. (55 cm)
 - Height: 22 in. (56 cm)
 - Depth: 14 in. (36 cm)
 - Weight: 124 lb. (56 kg)



Lead Time = 9 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

* Related Products:

– PlantPax Process System Troubleshooting Guide (ABT-P100-TSJ20)

➤ Safety Components Workstation

Catalog Number:

ABT-TDSAFCOMP

Major Components:

- Guardmaster safety relay with one dual-channel input
- 2 Guardmaster safety relays with two dual-channel inputs
- Guardmaster EMD safety relay expansion module with time delay
- Safety-wired 4-port distribution box
- 4 safety-wired shorting plugs
- GuardShield™ safety light curtain
- Guardmaster safety sensor
- MatGuard safety mat
- Guardmaster grip enabling switch
- Guardmaster guard locking switch
- Guardmaster safety limit switch
- Cadet™ tongue interlock switch
- 3 SensaGuard™ non-contact safety switches
- Allen-Bradley E-stop push button
- Allen-Bradley power supply
- Stackable banana jacks
- Patchcord connectors

Dimensions:

- Box 1
 - Width: 24.5 in. (62 cm)
 - Height: 20.5 in. (52 cm)
 - Depth: 13 in. (33 cm)
 - Weight: 65 lb. (30 kg) without shipping case
111 lb (51 kg) with shipping case



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ SLC 500 Workstation—SLC 5/03 Processor (7-Slot Chassis)

Major Components:

- SLC 5/03 processor
- 7-slot I/O chassis
- Power supply (rack mount)
- Digital I/O
 - 1 DC input module (16 pt.)
 - 1 DC output module (16 pt.)
- Analog I/O
 - 1 analog input/output combo module
- 2 panel meters (0...10V)
- (2) 1K pots
- 4 selector switches

Dimensions:

- Box 1
 - Width: 19 in. (48 cm)
 - Height: 14 in. (36 cm)
 - Depth: 7 in. (18 cm)
 - Weight: 32 lb. (15 kg)

Related Products:

- All SLC 500 processors, procedures, and troubleshooting guides.

Catalog Number:

ABT-TDSL CN2



Lead Time = 7 Weeks*

* Contact your local Rockwell Automation sales office or Allen-Bradley distributor to check availability for immediate shipment.

➤ Job Aids

Rockwell Automation recognizes that one of the keys to superior performance on-the-job is the ability to become efficient and highly effective using support resources. Rockwell Automation's award-winning job aids provide essential job task information, thereby minimizing errors that can occur at the most inopportune moments. Job aids provide immediate hardware and software information when it is needed so production is not impacted. Our job aids are written at a level of detail to ensure that you are consistently using best practices. The right job aid can make the difference between productive time and downtime and between maximum performance and minimum operation.

Standard Guides

Standard job aids are designed to assist individuals with software and hardware job tasks. While these tools are very good at covering tasks associated with Rockwell Automation hardware components, they are not designed to take into consideration every possible custom system configuration or state.

Custom Guides

Custom guides are designed and developed to work with plant-specific systems and applications. Common operator-related hardware and software errors can be eliminated by using custom designed procedures and guides. Rockwell Automation can assist you with the design and creation of the guides you need to achieve maximum efficiency and minimize operator-related errors. Contact your local Rockwell Automation sales office or Allen-Bradley distributor to discuss creating custom guides for your needs.

Quick Reference Guides

Quick reference guides provide hardware and software-specific information that users can quickly reference when configuring Rockwell Automation equipment. Parameter-specific information can typically be found in a quick reference guide.

Job Aid	Catalog Number
1336 IMPACT Quick Reference Guide	ABT-1336E-TQR90
1336 PLUS and PLUS II AC Drive Parameters Quick Reference Guide	ABT-1336SF-TQR90
PowerFlex 700 Standard and Vector Control Quick Reference Guide	ABT-20AB-TQR90

➤ Procedure Guides

Procedure guides provide detailed step-by-step instructions on the most common software and hardware-related job tasks that help users to program, configure, troubleshoot, and test Rockwell Automation control equipment.

Job Aid	Catalog Number
1395 Drive Installation Guide	ABT-1395-TSH50
ControlNet™ and RSNetWorx Procedures Guide	ABT-N200-TSJ50
ControlNet and RSNetWorx Procedures Guide - Spanish	ABT-N200-TSJ50ES
DeviceNet™ and RSNetWorx Procedures Guide	ABT-N100-TSJ50
DriveExplorer Software Procedures Guide	ABT-D500-TSJ51
DriveTools32 Software Procedures Guide	ABT-D500-TSJ50
EtherNet/IP Procedures Guide	ABT-N300-TSJ50
FactoryTalk View ME and PanelView Plus Procedures Guide	ABT-2711P-TSJ50
FactoryTalk View ME and PanelView Plus Procedures Guide - Spanish	ABT-2711P-TSJ50ES
FactoryTalk View SE Procedures Guide	ABT-9701SE-TSJ50
FactoryTalk View SE Procedures Guide - Spanish	ABT-9701SE-TSJ50ES
CENTERLINE® MCC and IntelliCENTER Software Procedures Guide	ABT-MCC-TSJ50
Motion Control Fundamentals Procedures Guide	ABT-M100-TSJ50
PanelView 300/550/600/900/1000/1400 and PanelBuilder32 Procedures Guide	ABT-2711-TSJ50

Job Aid	Catalog Number
PanelView 1000e/1200e/1400e and PanelBuilder 1400e Configuration Procedures Guide	ABT-2711E-TSJ50
PowerFlex 700 Standard and Vector Control Procedures Guide	ABT-20B-TSJ50
RSLogix 5 and PLC-5 Procedures Guide	ABT-1785-TSJ53
RSLogix 5 and PLC-5 Procedures Guide - Spanish	ABT-1785-TSJ53ES
RSLogix 500 and SLC 500 Procedures Guide	ABT-1747-TSJ52
RSLogix 500 and SLC 500 Procedures Guide - Spanish	ABT-1747-TSJ52ES
Studio 5000 Logix Designer and Logix5000 Motion Control Procedures Guide	ABT-1756-TSJ52
Studio 5000 Logix Designer and Logix5000 Procedures Guide	ABT-1756-TSJ50
Studio 5000 Logix Designer and Logix5000 Procedures Guide - Spanish	ABT-1756-TSJ50ES
Studio 5000 View Designer and PanelView 5500 Procedure Guide	ABT-2715-7SJ50
RSLogix Guard PLUS and GuardPLC Procedures Guide	ABT-1753-TSJ50
RSView32 Procedures Guide	ABT-9301-TSJ50

➤ Troubleshooting Guides

Rockwell Automation troubleshooting guides contain flowcharts that walk you through faults that can occur on a system. These guides are specifically designed for use on the plant floor and their pocket-size design allows for easy portability. Troubleshooting guides are filled with procedures, error code information, and status indicator listings with recommended actions, reference charts, and hardware/software diagrams.

Features

- Detailed illustrations with pertinent troubleshooting information
- Location indicators where action is needed or where possible problems exist
- Consistent starting point from which to logically begin troubleshooting
- Logical progression of questions, causes, and actions to determine the problem
- Important safety considerations, precautions, and general warnings

Job Aid	Catalog Number
1336 PLUS™ II AC Drive Troubleshooting Guide	ABT-1336F-TSJ20
ControlLogix Troubleshooting Guide	ABT-1756-TSJ20
ControlLogix Troubleshooting Guide - Spanish	ABT-1756-TSJ20ES
ControlNet and RSNetWorx Troubleshooting Guide	ABT-N200-TSJ20
ControlNet and RSNetWorx Troubleshooting Guide - Spanish	ABT-N200-TSJ20ES

Job Aid	Catalog Number
DeviceNet and RSNetWorx Troubleshooting Guide	ABT-N100-TSJ20
PlantPAx Process System Troubleshooting Guide	ABT-P100-TSJ20
PLC-5 and RSLogix 5 Troubleshooting Guide	ABT-1785-TSJ22
PowerFlex 700 Standard and Vector Control Troubleshooting Guide	ABT-20B-TSJ20
SLC 500 and RSLogix 500 Troubleshooting Guide	ABT-1747-TSJ22
SLC 500 and RSLogix 500 Troubleshooting Guide - Spanish	ABT-1747-TSJ22ES

➤ Logix, Drives, and Motion Certificate Programs

Apply Logix, Drives, and Motion technology to help improve the quality, efficiency, and productivity of your plant systems.

The Logix, Drives, and Motion Certificate Programs are intended for maintenance and programming professionals who want to develop their knowledge and skills using the latest technology. This program combines a number of up-to-date training courses.

You can choose to complete one or both of the Certificate Programs. As a certificate candidate, you will follow a series of Rockwell Automation training courses offering practical, hands-on exercises and take a final assessment. Participants will be trained on Logix, Drives, or Motion skills and competencies. They will understand theoretical concepts, and learn to maintain and/or program Logix, Drives, or Motion equipment. Depending on the combination of training courses followed, it will lead you to the desired level and type of certificate.

Upon completion of the program requirements, please contact your local Rockwell Automation Enrollment Specialist to review your training record.

Once approved, you can enroll for the assessment through your local Allen-Bradley distributor or Rockwell Automation Enrollment Specialist. You will be given access to the online, web-based assessment (fee requirement), the final step leading to your Certificate of Achievement. A passing score on the assessment will entitle you to the rewards and benefits of the Certificate Program you completed.

Program Rewards

- Recognition Award - Certificate of Achievement
- Custom Rockwell Automation polo shirt with certificate logo

Program Value-Add

- Job aids
- Continuing education units
- Tools to maintain skills and knowledge:
 - CompactLogix starter workstation (available with specific ControlLogix courses)

Benefits

- Competency
- Recognition
- Knowledge assessment
- Competitive edge
- Education credits
- Improved on-the-job skills

➤ Certificate Programs Menu

Please click on any of the links listed to view more information.

Core Courses

Studio 5000 Logix Designer Level 1: ControlLogix System Fundamentals

CCP146 • 2 Days
1.4 CEUs

Studio 5000 Logix Designer Level 2: Basic Ladder Logic Programming

CCP151 • 2 Days
1.4 CEUs

Studio 5000 Logix Designer Level 3: Project Development

CCP143 • 4 Days
2.8 CEUs

Choose 1 Elective Course

Logix Programmer Assessment

T-CLXPT

Elective Courses

(Choose 1 Course)

Studio 5000 Logix Designer Level 1: ControlLogix Fundamentals and Troubleshooting

CCP299 • 4.5 Days
3.2 CEUs

Motion Control Fundamentals

CCN130 • 2 Days
1.4 CEUs

Studio 5000 Logix Designer Level 4: Kinetix 6000 (SERCOS) Programming

CCN145 • 4 Days
2.8 CEUs

Studio 5000 Logix Designer Level 5: Advanced Motion Programming

CCN190-LD • 2 Days
1.4 CEUs

Introduction to the Integrated Architecture System

CIA101 • 2 Days
1.4 CEUs

GuardLogix Application Development

SAF-LOG101 • 2 Days
1.4 CEUs

Studio 5000 Logix Designer Level 4: Function Block Programming

CCP152 • 2 Days
1.4 CEUs

Studio 5000 Logix Designer Level 4: Structured Text/Sequential Function Chart Programming

CCP154 • 2 Days
1.4 CEUs

Studio 5000 Logix Designer Level 4: Kinetix 6500 (CIP) Programming

CCN144 • 4 Days
2.8 CEUs

Managing Industrial Networks with Cisco Networking Technologies

IMINS • 5 Days
3.5 CEUs

Managing Industrial Networks for Manufacturing with Cisco Technologies

IMINS2 • 5 Days
3.5 CEUs

FactoryTalk View ME and PanelView Plus Programming

CCV204-A • 4 Days
2.8 CEUs

Essentials of Industrial Ethernet Networks for the OT Professional

CCP182 • 2 Days
1.4 CEUs

EtherNet/IP Configuration and Troubleshooting

CCP183 • 3 Days
2.1 CEUs

Private
Delivery
Only

Private
Delivery
Only

Private
Delivery
Only

Private
Delivery
Only

Logix Maintainer Certificate Curriculum

**Studio 5000 Logix Designer Level 1:
ControlLogix System Fundamentals**
CCP146 • 2 Days • 1.4 CEUs

**Studio 5000 Logix Designer Level 1:
ControlLogix Fundamentals
and Troubleshooting**
CCP299 • 4.5 Days • 3.2 CEUs

OR

**Studio 5000 Logix Designer Level 2:
ControlLogix Maintenance
and Troubleshooting**
CCP153 • 4 Days • 2.8 CEUs

**Studio 5000 Logix Designer Level 3:
Basic Ladder Logic Interpretation**
CCCL21 • 2 Days • 1.4 CEUs

Choose 1
Elective Course

Logix Maintainer Assessment
T-CLXMT

Elective Courses (Choose 1 Course)

**Motion Control
Fundamentals**
CCN130 • 3 Days • 1.4 CEUs

**Essentials of Industrial Automation
for the IT Professional**
CCP810 • 2 Days

**Kinetix 6000 Troubleshooting
and Project Interpretation**
CCN200 • 2 Days • 1.4 CEUs

**Essentials of Industrial Ethernet
Networks for the OT Professional**
CCP182 • 2 Days

**GuardLogix Fundamentals
and Maintenance**
SAF-LOG103 • 1 Day • 0.7 CEUs

**EtherNet/IP Configuration
and Troubleshooting**
CCP183 • 3 Days

**Kinetix® 6500 Troubleshooting and
Project Interpretation**
CCN201 • 3 Days

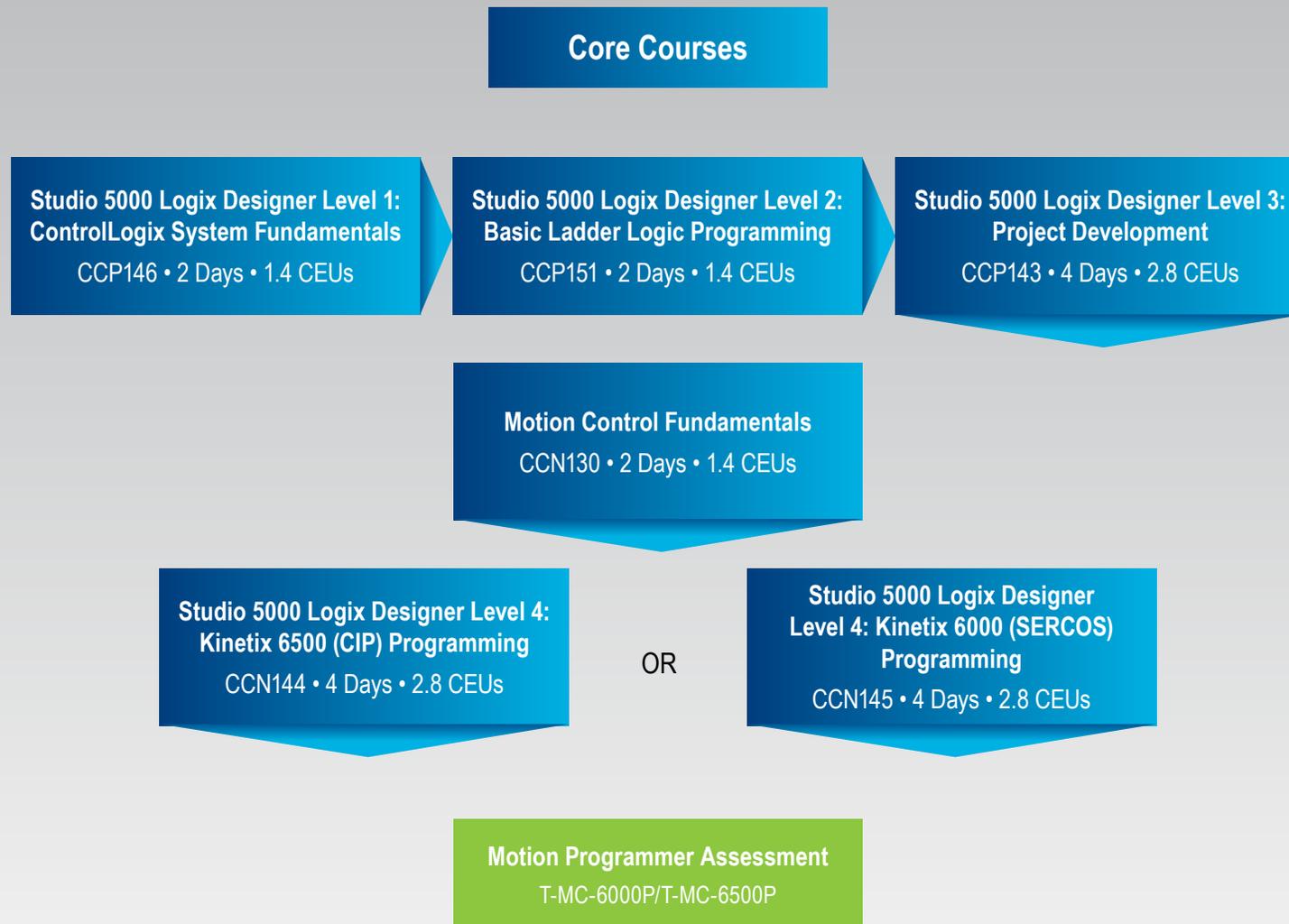
**Managing Industrial Networks with
Cisco Networking Technologies**
IMINS • 5 Days

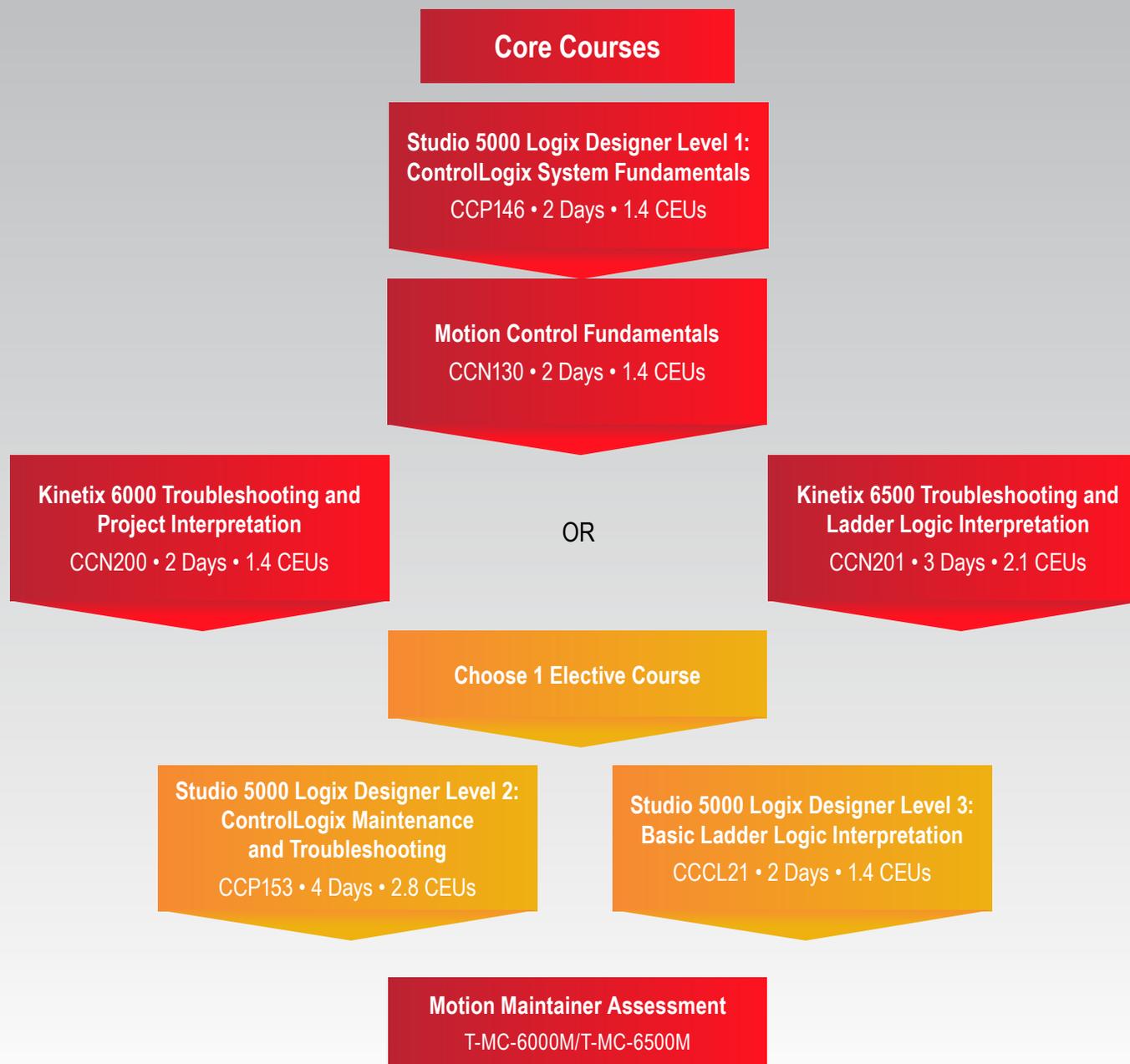
**FactoryTalk® View ME and
PanelView™ Plus Maintenance and
Troubleshooting**
CCV209-A • 2 Days

**Managing Industrial Networks
for Manufacturing with
Cisco Technologies**
IMINS2 • 5 Days

Private
Delivery
Only

Private
Delivery
Only





PowerFlex 750-Series Configuration and Startup

CCA182 • 2 Days • 1.4 CEUs

PowerFlex 750-Series Maintenance and Troubleshooting

CCA183 • 2 Days • 1.4 CEUs

**Choose any 2 Drives, Medium Voltage,
or Motion Courses as Elective Courses**

PowerFlex 750 Assessment

T-PF750

Rockwell Automation, Inc. (NYSE:ROK), the world's largest company dedicated to industrial automation, makes its customers more productive and the world more sustainable. Throughout the world, our flagship Allen-Bradley® and Rockwell Software® product brands are recognized for innovation and excellence.



1336 FORCE, 1336 IMPACT, 1336 PLUS, AADvance, ArmorBlock, ArmorStart, CompactBlock, CompactLogix, Connected Components Workbench, ControlLogix, CustomView, Data Highway Plus, Datapac, DH+, DriveExecutive, DriveExplorer, DriveLogix, DriveObserver, DriveTools, E3 Plus, E300, ElectroGuard, Emonitor, EnergyMetrix, Enpac, FactoryTalk, GML, GuardLogix, GuardPLC, Integrated Architecture, IntelliCENTER, Kinetix, Logix5000, MatGuard, MaXum, Micro850, MicroLogix, PanelBuilder, PanelView, PanelView 5500 Procedures Guide, Pavilion8, PhaseManager, PlantPAx, PLC-5, POINT I/O, PowerFlex, RightSight, RSLinx, RSLogix, RSMACC, RSNetWorx, RSTestStand, RSTrainer, RSView, SLC, SMC, SoftLogix, Stratix, Stratix 2000, Stratix 5700, Stratix 6000, Stratix 8000, Studio 5000 Logix Designer, Studio 5000 View Designr, Synchlink, Ultra, and XM are trademarks of Rockwell Automation, Inc. Trademarks not belonging to Rockwell Automation are property of their respective companies.

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Steet, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, DeKleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax (32) 2 663 0640

Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (832) 2508 1846